

# Energy Tidbits

Oct 3, 2021

Produced by: Dan Tsubouchi

## Iran says US Should Release \$10b in Frozen Money to Show its Serious on a Return to the JCPOA

**Welcome to new Energy Tidbits memo readers.** We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. 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 just focusing on daily trading. Our priority was and still is to not just report on events, but also try to 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. Our target is to write on 48 to 50 weekends per year and to post by noon mountain time on Sunday.

This week's memo highlights:

1. Iran's Foreign Minister says the US should release \$10b in frozen money to show its serious about wanting a return to the JCPOA ([Click Here](#))
2. Uniper CEO doesn't see German approvals coming soon enough for Nord Stream 2 to help on Europe's natural gas shortage ([Click Here](#))
3. Baker Hughes CEO has a hugely bullish view for LNG, sees need to add +45 bcf/d liquefaction by 2030 ([Click Here](#))
4. TotalEnergies forecasts oil demand to peak in mid-2020s, but sees demand in 2030 that is still above pre-Covid levels ([Click Here](#))
5. Raymond James says need more US oil drilling "or risk a slow, but sure, decline in production" ([Click Here](#))
6. 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.
7. 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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**Natural Gas – Natural gas injection of 88 bcf, storage now -575 bcf YoY deficit**

The EIA reported a 88 bcf injection (vs 75 bcf injection expectations) for the Sept 24 week, which was above the 5-yr average injection of 74 bcf, and above last year’s injection of 76 bcf. Storage is 3.170 tcf as of Sept 24, reducing the YoY deficit to 575 bcf from 589 bcf last week and storage is 213 bcf below the 5-year average vs 229 bcf below last week. Below is the EIA’s storage table from its Weekly Natural Gas Storage Report. [\[LINK\]](#).

**YoY storage at -595 bcf YoY deficit**

Figure 1: US Natural Gas Storage

| Region        | Stocks<br>billion cubic feet (Bcf) |          |            |              | Year ago<br>(09/24/20) |          | 5-year average<br>(2016-20) |          |
|---------------|------------------------------------|----------|------------|--------------|------------------------|----------|-----------------------------|----------|
|               | 09/24/21                           | 09/17/21 | net change | implied flow | Bcf                    | % change | Bcf                         | % change |
| East          | 779                                | 751      | 28         | 28           | 869                    | -10.4    | 831                         | -6.3     |
| Midwest       | 934                                | 904      | 30         | 30           | 1,030                  | -9.3     | 958                         | -2.5     |
| Mountain      | 201                                | 196      | 5          | 5            | 230                    | -12.6    | 211                         | -4.7     |
| Pacific       | 243                                | 240      | 3          | 3            | 315                    | -22.9    | 298                         | -18.5    |
| South Central | 1,013                              | 990      | 23         | 23           | 1,301                  | -22.1    | 1,085                       | -6.6     |
| Salt          | 239                                | 228      | 11         | 11           | 357                    | -33.1    | 266                         | -10.2    |
| Nonsalt       | 774                                | 762      | 12         | 12           | 943                    | -17.9    | 819                         | -5.5     |
| Total         | 3,170                              | 3,082    | 88         | 88           | 3,745                  | -15.4    | 3,383                       | -6.3     |

Source: EIA

**Natural Gas – AccuWeather expecting colder second half of winter and weaker La Nina**

On Wednesday, AccuWeather released their annual winter weather forecast for the US [\[LINK\]](#). AccuWeather doesn’t give an overall view for US, but it looks to be a roughly normal overall winter outlook. AccuWeather expects La Nina to have a weaker impact than the one experienced last year; this opens the door for other elements to factor into the forecast, especially in the second half of the season. For the key northeastern states, winter is expected to arrive early in the region. AccuWeather wrote *“last winter, temperatures across these areas were right around normal, but this year, the winter as a whole is likely to average 1 to 3 degrees Fahrenheit below normal.”* January is expected to be the coldest month with temperatures increasing into February. There is potential for another polar vortex towards the end of February that would extend the winter weather well past the meteorological spring of March 1. The Great Lakes and Midwest are expected to have a colder than normal winter with above average snow spells throughout most of the season. For the southeast, there is the risk for cold snaps in late January or February, but not expected to be as severe as the Feb 2021 cold snap. Good news for the Pacific NW with an expected wet winter. Our Supplemental Documents package includes the AccuWeather winter forecast.

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Figure 2: AccuWeather Forecast D/J/F Temperature Departures From Normal



Source: AccuWeather

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**Natural Gas – US July gas production up 3.7 bcf/d YoY, up MoM**

EIA released its Natural Gas Monthly on Thursday, [LINK](#), which includes its estimates for “actuals” for July gas production. US gas production in July was 93.4 bcf/d, up slightly MoM from a revised June of 93.0 bcf/d, and up 3.7 bcf/d YoY. Note that June data was revised down 0.1 bcf/d. May (+0.4 bcf/d) also had a revision. As expected, the combination of stronger oil and natural gas prices has led to some modest production increases in the past few months. And there continues to be a solid YoY surplus of +3.7 bcf/d and +4.7 bcf/d for the month of July and June, respectively. But July production is down 3.6 bcf/d since the Dec/19 peak of 97.0 bcf/d and still -1.2 bcf/d below March 2020 of 94.6 bcf. Below is our running table of US dry natural gas production. Our Supplemental Documents package includes excerpts from the EIA Natural Gas Monthly.

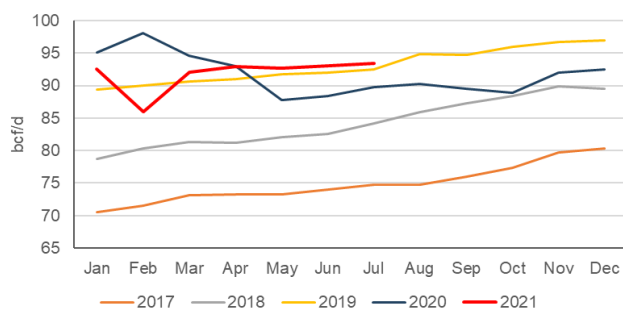
**US July gas production up 3.7 bcf/d YoY**

Figure 3: US Dry Natural Gas Production

| bcf/d   | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| Jan     | 56.0 | 60.0 | 66.0 | 65.3 | 66.8 | 73.4 | 73.6 | 70.6 | 78.7 | 89.4 | 95.1 | 92.5 |
| Feb     | 57.2 | 58.8 | 67.0 | 65.4 | 68.4 | 73.8 | 77.3 | 71.5 | 80.4 | 90.0 | 98.1 | 86.0 |
| March   | 57.3 | 61.5 | 65.0 | 65.3 | 68.9 | 74.1 | 73.8 | 73.2 | 81.3 | 90.6 | 94.6 | 92.0 |
| Apr     | 57.6 | 62.3 | 64.8 | 66.1 | 70.5 | 75.2 | 73.7 | 73.3 | 81.2 | 91.0 | 92.9 | 92.9 |
| May     | 58.0 | 62.4 | 65.0 | 65.9 | 70.2 | 74.1 | 72.9 | 73.3 | 82.1 | 91.7 | 87.8 | 92.7 |
| June    | 57.2 | 62.1 | 64.6 | 65.8 | 70.5 | 74.0 | 72.2 | 74.0 | 82.5 | 92.0 | 88.4 | 93.0 |
| July    | 58.2 | 62.5 | 66.3 | 67.1 | 72.0 | 74.2 | 72.8 | 74.7 | 84.2 | 92.5 | 89.8 | 93.4 |
| Aug     | 58.9 | 63.2 | 66.0 | 66.9 | 72.4 | 74.3 | 72.2 | 74.7 | 85.9 | 94.8 | 90.2 |      |
| Sept    | 59.1 | 63.1 | 66.4 | 66.8 | 72.4 | 74.7 | 71.7 | 76.0 | 87.3 | 94.7 | 89.5 |      |
| Oct     | 60.1 | 65.1 | 66.5 | 67.0 | 73.1 | 74.2 | 71.4 | 77.3 | 88.4 | 96.0 | 88.9 |      |
| Nov     | 60.1 | 65.9 | 66.6 | 67.7 | 72.6 | 73.9 | 72.0 | 79.8 | 89.9 | 96.7 | 92.0 |      |
| Dec     | 61.0 | 65.6 | 66.0 | 66.5 | 73.2 | 73.9 | 71.2 | 80.4 | 89.5 | 97.0 | 92.5 |      |
| Average | 58.4 | 62.7 | 65.9 | 66.3 | 70.9 | 74.2 | 72.9 | 74.9 | 84.3 | 93.0 | 91.6 |      |

Source: EIA

Figure 4: US Dry Natural Gas Production



Source: EIA

**Natural Gas – US LNG exports up MoM at 9.7 bcf/d in June**

The big driver to stronger US natural gas prices has been the ramp up in US LNG exports, which are up ~7 bcf/d over the past 3 years. This is over 2.5 tcf a year of added gas demand. On Thursday, the EIA Natural Gas Monthly reported “actuals” for US LNG exports were 9.7 bcf/d in July, which is up +6.6 bcf/d YoY and down -0.6 bcf/d from June of 9.0 bcf/d. After recording record highs in the first half of 2021, exports increased in July because of pipeline maintenance coming to an end. The EIA expects exports will remain “at high levels” for the remaining months of 2021. Note our table rounds to one decimal and the actual is 9.682 bcf/d for July. Below is our table of EIA’s monthly LNG exports.

**US July LNG exports +0.7 bcf/d MoM**

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Figure 5: US LNG Exports (bcf/d)

| (bcf/d)       | 2016  | 2017  | 2018    | 2019    | 2020    | 2021 |
|---------------|-------|-------|---------|---------|---------|------|
| Jan           | 0.0   | 1.7   | 2.3     | 4.1     | 8.1     | 9.8  |
| Feb           | 0.1   | 1.9   | 2.6     | 3.7     | 8.1     | 7.4  |
| March         | 0.3   | 1.4   | 3.0     | 4.2     | 7.9     | 10.4 |
| Apr           | 0.3   | 1.7   | 2.9     | 4.2     | 7.0     | 10.2 |
| May           | 0.3   | 2.0   | 3.1     | 4.7     | 5.9     | 10.2 |
| June          | 0.5   | 1.7   | 2.5     | 4.7     | 3.6     | 9.0  |
| July          | 0.5   | 1.7   | 3.2     | 5.1     | 3.1     | 9.7  |
| Aug           | 0.9   | 1.5   | 3.0     | 4.5     | 3.6     |      |
| Sept          | 0.6   | 1.8   | 2.7     | 5.3     | 5.0     |      |
| Oct           | 0.1   | 2.6   | 2.9     | 5.7     | 7.2     |      |
| Nov           | 1.1   | 2.7   | 3.6     | 6.4     | 9.4     |      |
| Dec           | 1.3   | 2.7   | 4.0     | 7.1     | 9.8     |      |
| Full Year     | 0.5   | 1.9   | 3.0     | 5.0     | 6.6     |      |
| Full Year bcf | 186.8 | 707.5 | 1,083.1 | 1,819.4 | 2,390.0 |      |

Source: EIA

**Natural Gas – US pipeline exports to Mexico -0.25 bcf/d MoM to record 6.4 bcf/d in July**

The EIA Natural Gas Monthly also provides its “actuals” for gas pipeline exports to Mexico, which were 6.4 bcf/d in July, which was +0.5 bcf/d YoY and decreasing from last month -0.25 bcf/d from a revised June of 6.6 bcf/d. Mexico natural gas production remains stuck below 5 bcf/d and the completion of new pipeline infrastructure such as the Wahalajara system [\[LINK\]](#) increases US penetration further into Mexico. Below is our table of the EIA’s monthly gas exports to Mexico.

**US July pipeline exports to Mexico -0.25 bcf/d MoM**

Figure 6: US Pipeline Gas Exports To Mexico (bcf/d)

| bcf/d     | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------|------|------|------|------|------|------|------|------|
| Jan       | 1.7  | 2.2  | 3.2  | 3.9  | 4.4  | 4.9  | 5.2  | 5.6  |
| Feb       | 1.8  | 2.3  | 3.5  | 4.0  | 4.5  | 4.8  | 5.4  | 4.9  |
| March     | 1.9  | 2.4  | 3.3  | 4.2  | 4.3  | 4.8  | 5.4  | 5.9  |
| Apr       | 1.9  | 2.6  | 3.5  | 3.7  | 4.4  | 4.7  | 4.6  | 6.0  |
| May       | 2.0  | 2.8  | 3.7  | 4.0  | 4.4  | 5.0  | 4.7  | 6.1  |
| June      | 2.2  | 3.0  | 3.9  | 4.5  | 4.6  | 5.2  | 5.4  | 6.5  |
| July      | 2.2  | 3.3  | 4.0  | 4.4  | 4.9  | 5.4  | 5.8  |      |
| Aug       | 2.1  | 3.3  | 4.3  | 4.4  | 5.0  | 5.4  | 6.0  |      |
| Sept      | 2.2  | 3.3  | 4.1  | 4.2  | 5.0  | 5.4  | 6.1  |      |
| Oct       | 1.9  | 3.2  | 4.2  | 4.2  | 4.9  | 5.5  | 6.0  |      |
| Nov       | 1.9  | 3.0  | 4.0  | 4.5  | 4.7  | 5.3  | 5.5  |      |
| Dec       | 2.1  | 3.2  | 3.6  | 4.4  | 4.5  | 4.9  | 5.3  |      |
| Full Year | 2.0  | 2.9  | 3.8  | 4.2  | 4.6  | 5.1  | 5.5  |      |

Source: EIA

**Natural Gas – Big support for strong 2022/23 HH & AECO gas prices**

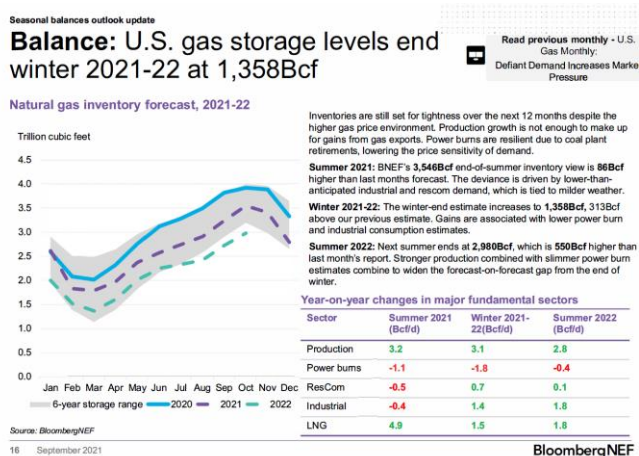
Given the big run on natural gas prices in the last two months, we have had to change our description from the title of our July 25, 2021 Energy Tidbits memo “*Big Potential Upside to 2022 HH/AECO Prices, New US LNG Export Capacity Could Reduce Gas Storage By 1 Tcf in 2022*” to “big support for strong 2022/2023 HH & AECO gas prices. The concept for the July 25 comment is the same – there will be a big additional support for 2022/23 gas prices by the start up of two new LNG export projects with the 0.7 bcf/d Sabine Pass LNG train 6 and the 1.3 bcf/d Calcasieu Pass LNG. It was BloombergNEF’s US Gas Monthly report that led to our July 25 comment. This week, BloombergNEF released its US Gas Monthly and there was a similar very bullish call but not quite as wildly bullish as in July. BloombergNEF forecasts US gas storage to start winter gas season Oct 31, 2021 at 3.546 tcf, and then next year at an extremely 2.980 tcf on Oct 31, 2022. The 2.980 is very bullish but not as wildly bullish as the July forecast of 2.640 tcf. The last time Oct 31 storage was under 3 tcf was Oct 31/2000 when HH went over \$10 the winter 2000/2001. Even if storage is 3 tcf, its hugely bullish for HH and AECO gas prices. The key reason for this lower storage forecast in 2022 is

**Big support for strong 2022/23 HH & AECO prices**

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the start up of Calcasieu Pass LNG (1.3 bcf/d) and Sabine Pass LNG Train 6 (0.7 bcf/d) around year end 2021. We want to reiterate that even if the global LNG markets don't absorb all the added LNG volumes (>700 bcf) and BloombergNEF's 2.98 tcf storage forecast isn't met, an Oct 31/2022 US storage forecast in the low 3 tcf's is very strong support for high HH and AECO gas prices. Our Supplemental Documents package includes excerpts from BloombergNEF US Gas Monthly.

Figure 7: US Natural Gas Storage Forecast



Source: BloombergNEF

**Natural Gas – RBN reminds of North America west coast LNG advantages to Asia**

As gas markets around the world continue to face shortages, the opportunity for North American LNG to access these markets continues to grow, specifically in Asia. On Tuesday, RBN posted a good blog "Go West - Red-Hot Natural Gas Markets Help Push North American LNG To Asia" [LINK]. With increasing gas imports from Russia and slowly decreasing demand, long-term gas import prospect from NA to the region look bleak. This makes access to the Asian markets a crucial selling point for new LNG projects. There are no current LNG export terminals on the Pacific coast, but two projects LNG Canada in BC and Sempra Energy's ECA LNG in Mexico, are currently under construction and due online mid decade. Most LNG exports to Asia from NA leave through the Gulf Coast and are hampered by the high transport costs of the Panama Canal or the additional voyage delay of travelling around the CGH in South Africa. The blog wrote, "a round-trip voyage between any of the Gulf Coast LNG terminals and Japan, China or South Korea — the Far East destinations where the bulk of LNG demand is concentrated — via the Panama Canal takes around 60 days, including port loading/unloading and transit time. Of course, delays at the Panama Canal, like those seen last winter, can add additional days to the voyage. If a vessel wants or needs to avoid the Panama Canal, the most common alternative would be to go around the Cape of Good Hope (CGH) in South Africa, which takes about 75 days for a round trip, 25% longer than the Panamanian route." The greatest advantage to the Pacific coast projects is proximity, which is a huge driver of transport cost, they are simply closer to the Asian markets. The cost factor hampering west coast LNG plants is access to low cost basins in relation to feedgas and pipeline options. Regulatory barriers in on the US West Coast currently has LNG export as a non-starter; previously proposed Jordan Cove in Oregon is officially on pause after failing to receive local and state permits. With Asian demand becoming increasingly more important, opportunity in NA, specifically in Mexico

**Gas supply shortages to push NA LNG to Asia**

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where they face less regulatory barriers, continues to grow. Our Supplemental Documents Package includes the RBN blog.

### Natural Gas – Mexico’s natural gas production still stuck below 5 bcf/d, -5.4% YoY

On Monday, Pemex reported its oil and gas data for August. Pemex reported natural gas production of 4.656 bcf/d, which was down -5.4% YoY and down slightly -1.46% MoM, from July. The lower MoM is likely linked to the offshore oil shut-ins. For the past 3 years, an ongoing theme of the Mexican energy sector, has been their inability to grow domestic natural gas production. As a result, Mexico has relied on imports from the US which are reaching record levels; US pipeline exports to Mexico have increased ~2 bcf/d since Jan 1, 2018. We continue to believe Pemex is in the “natural gas production [that] is stuck below 5 bcf/d” phase, as it has since Sept 2017. Pemex does not provide any commentary along with its production data. Below is our ongoing table of Pemex reported monthly natural gas production.

**Mexico natural gas still stuck below 5 bcf/d**

Figure 8: Mexico Natural Gas Production (bcf/d)

| Natural Gas Production bcf/d | 2015  | 2016  | 2017  | 2018  | 2019  | 19/18 | 2020  | 20/19 | 2021  | 21/20 |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Jan                          | 6.584 | 6.162 | 5.326 | 4.910 | 4.648 | -5.3% | 5.005 | 7.7%  | 4.848 | -3.1% |
| Feb                          | 6.676 | 6.122 | 5.299 | 4.853 | 4.869 | 0.3%  | 4.942 | 1.5%  | 4.854 | -1.8% |
| Mar                          | 6.558 | 6.030 | 5.383 | 4.646 | 4.857 | 4.5%  | 4.946 | 1.8%  | 4.839 | -2.2% |
| Apr                          | 6.257 | 5.921 | 5.334 | 4.869 | 4.816 | -1.1% | 4.827 | 0.2%  | 4.671 | -3.2% |
| May                          | 6.202 | 5.841 | 5.299 | 4.827 | 4.841 | 0.3%  | 4.460 | -7.9% | 4.730 | 6.1%  |
| June                         | 6.390 | 5.881 | 5.253 | 4.840 | 4.843 | 0.1%  | 4.754 | -1.8% | 4.727 | -0.6% |
| July                         | 6.374 | 5.785 | 5.216 | 4.856 | 4.892 | 0.7%  | 4.902 | 0.2%  | 4.725 | -3.6% |
| Aug                          | 6.366 | 5.686 | 5.035 | 4.898 | 4.939 | 0.8%  | 4.920 | -0.4% | 4.656 | -5.4% |
| Sept                         | 6.477 | 5.619 | 4.302 | 4.913 | 5.017 | 2.1%  | 4.926 | -1.8% |       |       |
| Oct                          | 6.397 | 5.583 | 4.759 | 4.895 | 4.971 | 1.6%  | 4.928 | -0.9% |       |       |
| Nov                          | 6.316 | 5.515 | 4.803 | 4.776 | 5.015 | 5.0%  | 4.769 | -4.9% |       |       |
| Dec                          | 6.236 | 5.380 | 4.811 | 4.881 | 5.024 | 2.9%  | 4.846 | -3.5% |       |       |

Source: Pemex

### Natural Gas – Baker Hughes forecasts added +45 bcf/d LNG capacity needed by 2030

On Thursday, we tweeted on an extremely bullish view from an LNG player, Baker Hughes. Baker Hughes may not be an LNG supplier, but its been involved in most LNG liquefaction projects over the past few years as well as going forward. It is likely plugged in to LNG supplies more than anyone else. After we went to press last week, Reuters reported “APPEC Baker Hughes sees global required LNG capacity at 800 mln tonnes by 2030” [\[LINK\]](#). Baker Hughes may not be a LNG supplier, but is as plugged in as anyone on the LNG outlook given it is involved in basically every major LNG supply project in progress or under consideration. Baker Hughes has been bullish on LNG but is increasing their bullish outlook. Reuters reported CEO Simonelli saying “We’ve taken up our estimate of the required installed based of LNG by 2030 up to 800 million tonnes”. That is truly huge and didn’t seem to get much market attention. Its why we tweeted [\[LINK\]](#) “1/2. hugely bullish #LNG #NatGas for 2020s. @SonaliPaul2 reports "we've taken up our estimate of the required installed base of #LNG by 2030 up to 800 million tonnes" & need to bring on 100-150 mtpa in the next few years says @bakerhughesco @simonelli\_1. can't be done ... #OOTT”, and [\[LINK\]](#) “2/2. think of massive demand pull for 2020s on #LNG #NatGas. Vs @GIIGNL liquefaction capacity 454 mtpa, that's growth of 346 mtpa (45 bcf/d) to 2030. #Renewable can't fill in fast enough, will need #Coal for longer for reliable power. #EnergyTransition will be very expensive #OOTT”. This is what anyone would call a huge increase at +45 bcf/d in capacity in less than 10 years. And means a massive demand pull in the 2020s for LNG and natural gas. The reality is that we don’t see how it is possible for the world to add +45 bcf/d in capacity for 2030, but it will be a huge demand pull. Our tweet also noted that the reality is that it means the coal will be required for longer. Wind/solar are already challenged to grow anywhere as fast as hoped

**Baker Hughes sees massive need for LNG**

for by the Net Zero drivers. And new nuclear doesn't happen quickly. Our Supplemental Documents package includes the Reuters report.

### Natural Gas – TotalEnergies hopes to get Mozambique LNG on track for 2026 cargoes

TotalEnergies held their 2-day investor outlook this week that included their longer term outlook, which had to include what are they now assuming for first LNG cargoes from Mozambique LNG. We have been highlighting how the entry of Rwandan troops has been the key driver for pushing out the rebels and re-establishing security in the LNG centered northern regions. Prior to this week, we had not seen TotalEnergies estimate a restart date. But this week, they presented their long term outlook including first Mozambique LNG in 2026. That is two years later than the original start year of 2024 but one year later in their revised timing before the force majeure. In their prepared remarks, mgmt said *"This forecast of upstream production in 2026 includes Mozambique LNG production only in 2026. This relies on the assumption that the project activity will review in 2022."* No surprise there were a number of questions on this assumption. And mgmt did caution *"You know that we do not control all the situation, a security situation in Cabo Delgado. This would impact the '26 target by \$500 million"* ie. a 1 year delay in Mozambique from this assumption reduces 2026 cash flow by \$500 million. In the Q&A, mgmt seemed to exercise caution on this assumption. Mgmt replied *"We have some -- there are some positive evolutions on the ground, but it has to be consolidated. There is a war. So we will not -- what we will not do on Mozambique is remobilizing to remobilize. That's clear. So if we are not able to remobilize beginning next year, then the delay in Mozambique LNG this \$500 million could go to 27%."* We believe TotalEnergies wants to avoid what happened in Dec 2020 thru March 2021. Recall, previously that, in Dec 2020, TotalEnergies had shut down development for 3 months due to the security risk and then had restarted on Wednesday, March 24, 2021. Then there were 3 days of violence and attacks followed, and TotalEnergies suspended operations on the Saturday and started to pull all staff out of Mozambique. That was when construction stopped and then a month later TotalEnergies declared force majeure. At that time, we thought TotalEnergies would want to have a longer period (ie. 6 months or so) of perceived security/stability before agreeing to restart. So at least for now, TotalEnergies is hopeful that construction restart can happen in early 2022. Our Supplemental Documents package includes the TotalEnergies LNG slide noting the Mozambique delay.

**1<sup>st</sup> Mozambique LNG hopefully in 2026**

### Reminder Mozambique LNG delays are 5 bcf/d, not 1.7 bcf/d Total Phase 1

We think it is important to note that the delays to TotalEnergies Mozambique Phase 1 are more than just a delay to the 1.7 bcf/d Phase 1, its actually a delay of 5 bcf/d. This was the reason why, on April 28 2021, we posted a 7-pg blog *"Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?"* [\[LINK\]](#) We thought, and still think, there has been a major change to the outlook for LNG supply in the 2020s and one that is still being overlooked – there is a big new LNG supply gap starting around 2025 that is hitting faster and bigger than anyone expects. We saw Total's April 27, 2021 announcement of force majeure at its Mozambique Phase 1 LNG of 1.7 bcf/d was much more significant that viewed. We just didn't see market focused on the fact that this situation backs up an additional 3.3 bcf/d of LNG supply that is also being counted on in all LNG supply forecasts. Total's Phase 2 of 1.3 bcf/d was to follow, and Exxon's Rozuma Phase 1 of 2.0 bcf/d was originally expected to go FID in 2019 but is now not expected to have a FID decision until 2022 at the earliest. Mozambique is considered a premium LNG supply region for Asia and is in LNG supply forecasts. Total's original in service for Phase 1 is 2024. We had been warning that Mozambique has a major LNG market impact and its why we posted the

April 28 blog. Our blog reminds that even if Total makes a restart development decision in 12 months, it will take months just to get back to where they left off including rehiring services so any return to where they were in the construction process is at least more likely 18 months at a minimum. This is going to create a bigger and sooner LNG supply gap and the reality is that the only projects that can step up in any reasonable time frame will be brownfield LNG projects. Its why we also said what about LNG Canada Phase 2. There is much more in the 7-pg blog. Our Supplemental Documents package includes our April blog.

### **Natural Gas – Putin reiterates Russia to increase LNG supply by ~14 bcf/d by 2035**

This was not a new Russian LNG supply goal, rather it was Putin reiterating the Russia's plan to increase LNG supply by over 14 bcf/d by 2035. On Thursday, Kremlin posted the transcript of Putin's comments at the 17th Russia-Kazakhstan Interregional Cooperation Forum [\[LINK\]](#) *"Considerable attention is also being given in Russia to expanding the use of gas fuel, as I have already mentioned, and the development of the relevant infrastructure. We continue working to diversify natural gas, including LNG, deliveries. We plan to increase its production – I will provide the figure now, and I am not just hopeful but confident that it is a realistic plan – to 140 million tonnes a year by 2035. We believe that we can work together with our Kazakhstani friends in this sphere as well."* That would be LNG supply of 18.4 bcf/d in 2035, which would be up over 14 bcf/d from BP data that shows Russia LNG supply was 3.9 bcf/d in 2020.

**Russia to significantly increase LNG production**

### **Natural Gas – Qatar's new long term 15-yr LNG 0.5 bcf/d to China's CNOOC**

We continue to see confirmation of a key indicator for LNG strength thru the 2020s – Asian LNG buyers have pivoted to locking in long term LNG supply. On Wednesday, Qatar Petroleum announced [\[LINK\]](#) it had entered into a 15 year SPA with China's CNOOC, to supply of 0.5 bcf/d (3.5 mmtpa) of LNG beginning January 2022. Qatar Minister Al-Kaabi said in a statement, *"we are pleased to further build upon our strong relationship with CNOOC with the signing of this new long-term LNG supply agreement. We are especially proud to continue to meet the People's Republic of China's growing need for cleaner energy that LNG provides, and are thankful to CNOOC for partnering with us as their trusted LNG supplier."* This deal generates bullish support for LNG and natural gas in Asia throughout the remainder of the decade. We tweeted [\[LINK\]](#) *"key indicator for strong #LNG #NatGas thru 2020s. [@qatarpetroleum](#) 15-yr supply 0.5 bcf/d w/ China #CNOOC. See SAF blog "Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs" #OOTT."* Qatar's relationship with CNOOC dates back to September 2009 and has delivered a total of 715 LNG cargoes to China, 270 of which were delivered to CNOOC at an estimated 24 mm tonnes. Our Supplemental Documents package includes the Qatar release.

**15-yr LNG supply deal to China**

### **Asian LNG buyers abruptly change and lock in long term supply**

We don't think anyone could have predicted the JKM spot price rise in the past couple months but, we have been highlighting the key indicator of LNG supply/demand tightness in the 2020s – Asian LNG buyers are now rushing to lock up long term supply. On July 14, 2021 we posted our 8-pg *"Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs"*. Here is an excerpt from the blog *"The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals"*

to spot/short term sales. Why? We think they did the same math we did in our April 28 blog “Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?” and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum’s massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.” Our Supplemental Documents package includes our July 14 blog.

#### Natural Gas – Petronas says it will deliver ‘carbon neutral’ LNG to China

One of the concerns we have noted on companies saying they will deliver carbon neutral LNG or oil is how they plan to do it, is it verifiable as being specific to them and not something that is general and could be double or triple counted. On Wednesday, Malaysia’s Petronas said it will deliver three ‘carbon neutral’ liquefied natural gas (LNG) cargoes from its Bintulu export complex to China’s Shenergy at terminals in Shanghai between October 2021 and March 2022 [LINK](#). The deal marks Petronas first delivery, of what it claims to be carbon neutral LNG, to China. Last month, Petronas claimed it shipped its first carbon neutral LNG cargo to Japan. Shenergy Vice President, Wang Zhehong said, “as a long-term LNG partner and consumer, we are excited to receive PETRONAS’ delivery of carbon neutral LNG to China that aligns with the country’s ambition of hitting peak carbon dioxide emissions by 2030. This is a meaningful milestone for both our companies in our respective endeavours to be more environmentally conscious and reducing our carbon footprints.” Petronas did not provide details on how they will get to carbon neutral for these cargoes. Our Supplemental Documents package includes the Petronas release.

**Petronas to deliver carbon neutral LNG to China?**

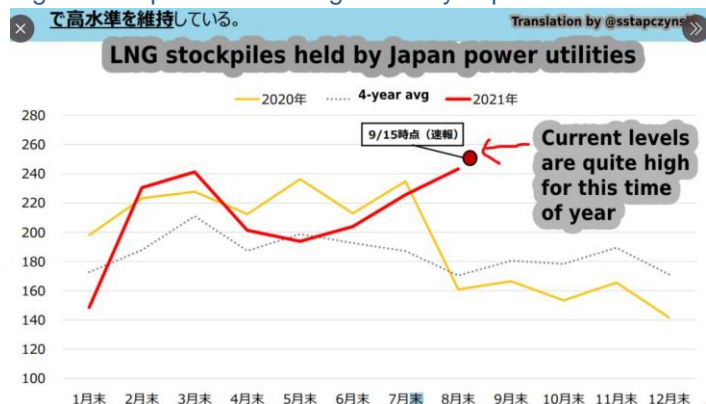
#### Natural Gas – Japan utilities redirecting LNG cargoes to China

Good timing for Japan’s LNG tanks to be full. Last week’s (Sept 26, 2021) Energy Tidbits noted Bloomberg’s Stephen Stapczynski tweet [LINK](#) that included the blow METI graph showing LNG stocks held by regional power utilities are well above normal levels and at approx. 2.5 to 2.6 metric tons of LNG, which is 120 to 125 bcf. The vast majority of Japan power utilities LNG is under long term indexed contracts ie. not subject to spot JKM prices. And it looks like some of these utilities are taking advantage of having high LNG storage and gaining the big arbitrage profit by redirecting some LNG cargoes to China. On Friday, Bloomberg reported “Japanese utilities are stepping in to help ease China’s fuel crisis, selling excess liquefied natural gas at sky-high prices as Beijing orders its top energy companies to secure supplies at all costs. Vessels typically chartered by Japanese companies including

**Japan LNG storage**

Jera Co., Tokyo Gas Co. and Kyushu Electric Power Co. delivered as many as six spot cargoes to Chinese ports in September, said BloombergNEF analyst Lujia Cao. State-owned Chinese firms are among the buyers that have negotiated purchases, including Sinopec, which called a tender for November to March supplies earlier last week.” Our Supplemental Documents package includes the Bloomberg Oct 1 report.

Figure 9: Japan LNG Storage Held by Japan Power Utilities



Source: METI, Bloomberg

### Natural Gas –Uniper thinks any Nord Stream 2 relief will be too late to help winter

We would expect Uniper CEO Klaus-Dieter Maubach to have good insight into the Nord Stream 2 view on start up given Uniper is one of its financing partners for Nord Stream 2 so it was interesting to see Uniper CEO Klaus-Dieter Maubach comments on Nord Stream 2. Friday morning, we saw the Handelsblatt report and tweeted [\[LINK\]](#) “No near term relief likely from #NordStream2. “certification of the pipeline, according to all that I know, will definitely be so late that this pipeline will no longer help us this winter” says @uniper\_energy CEO. Support for #LNG #NatGas prices. #OOTT”. Maubach was pretty clear that he didn’t see German certification coming soon enough for Nord Stream 2 to provide any relief to European natural gas prices this winter. On Sept 20, we tweeted [\[LINK\]](#) “Europe better hope its not a cold start to winter. @business @bjennen1 report DE regulator BNA now has 4 mths to review on 5.3 bcf/d #NordStream2 certification. Given high profile, hard to see a quick rubber stamp. if so, NS2 won't bring near term relief to #NatGas #LNG prices.” Our tweet was based on Sept 20 Bloomberg report “Nord Stream 2 has submitted all the necessary documents, triggering the start of the certification process by Germany’s Federal network regulator BNA, a spokesman for the agency said by phone. \* BNA now has four months to send a decision draft to the European Commission.” At that time (see our Sept 26, 2021 Energy Tidbits), we said that, in theory, there is nothing stopping BNA from a quick certification but, we would assume that, given the high profile of Nord Stream 2, any certification is closer to the 4 months than 1 month. It looks like Uniper is assuming at least a 4 month certification process. Our Supplemental Documents package includes the Handelsblatt report.

**Uniper: Nord Stream 2 too late to help winter**

### Natural Gas – Europe storage 74.63% full vs 5 year average of 89.56%

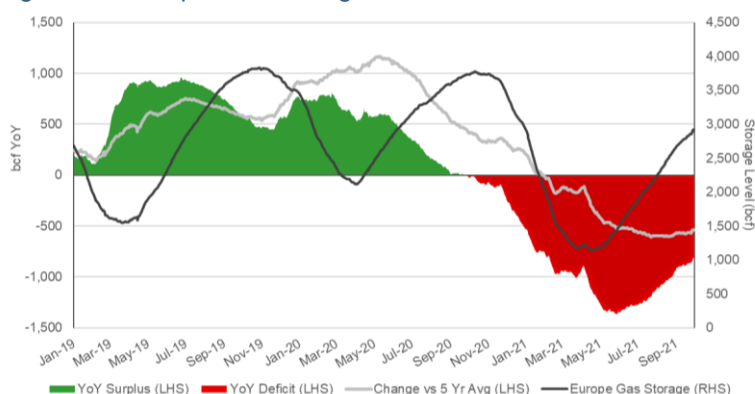
Injection season for Europe gas storage for the winter continues to look weak which indicating high winter Europe natural gas prices unless it is a very warm winter. Inventory withdrawals typically begin at the end of the month, depending on the weather. Current forecasts indicate seasonal norms for October. Flows from Russia to Germany declined at the beginning of the heating season with no extra capacity being booked at an auction on

**Europe gas storage 74.63% full; lowest levels in a decade**

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Thursday. Europe gas storage won't be at normal levels, the question continues to be what the level will be come the start of winter. Inventories are at their lowest level in more than a decade. The set up for winter natural gas prices in Europe looks strong. The key indicator for winter Europe natural gas prices, and also global LNG prices is Europe storage. Europe gas storage started the winter (Nov 1) at basically full levels at 94.66% and had dropped by 65.77% to be 28.89% at Apr 1. This 65.77% decline since Nov 1, compares to the 5 yr average that would be down 53.99% in the same period or to last winter that was only down 43.29% in the same period. We are now seeing storage start to build, but the build is slow due to the above reasons. Europe storage levels bottomed in late Apr at 29%, which was the lowest level since Apr 2018. Storage as of Sept 30 is 74.63%, which is -20.08% less than last year levels of 94.71%, and are -14.93% below the 5-year average of 89.56%. Europe storage levels over the next few weeks will be the key item to watch for indications on LNG markets going into the winter. Below is our graph of Europe Gas Storage Level.

Figure 10: Europe Gas Storage Level



Source: Bloomberg

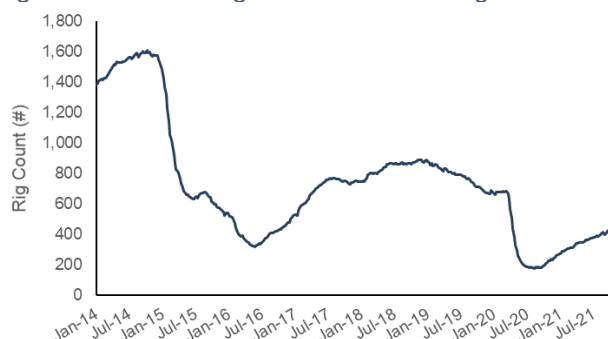
**Oil – US oil +7 WoW at 428 oil rigs**

Baker Hughes released its weekly North American drilling activity data at 11am Friday. This week US oil rigs were up +7 rigs WoW at 428 rigs. Oil rigs are +256 off the bottom of 172 in Aug14/2020 week. It was interesting to see Louisiana was +4 rigs but not in the Haynesville. We suspect these were oil rigs tucked into the “Other” category, which makes us suspect they might be a return of some rigs to the Tuscaloosa shale play. We shall see. No surprise, the Permian was +3 this week as it is the oil basin expected to drive growth. We expect to see continued solid growth in rigs up to the holiday season as producers are flush with extra cash flow. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 255 to 428 oil rigs (-37.3%). The biggest contributor to the decrease is the Permian being down 156 oil rigs from the March 13, 2020 peak (-37.2%), although we are seeing it start to ramp up a bit. Also note the Bakken is down 29 oil rigs to 23 active oil rigs (-55.8% from March 13, 2020). Below is our graph of US oil rigs since 2020, which highlights the big decreases in Permian and Bakken oil rigs.

**US oil rigs +7  
WoW**

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Figure 11: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

**Oil – Frac spreads +5 to 262 as of Oct 1**

Mark Rossano (C6 Capital Holdings) provided his US frac spread recap for week ended Oct 1 on the Primary Vision network. The YouTube video is at [\[LINK\]](#). US frac spreads were +5 to 262 for the week ended Oct 1. He noted his prior comments that 135 to 137 frac spreads in the Permian was a good level and we are not getting very close to that level so we could soon start to see a slow down in the Permian spreads. He seeing an acceleration in the Anadarko and expects that to continue. And also seeing increases in the western Gulf (normally means Eagle Ford) and in the Haynesville (no surprise given natural gas prices). He didn't mention this time, but his expectation has been that October will be a very strong month reaching 275 in October/November, and then see some seasonal decline but not to the level as seen in the past.

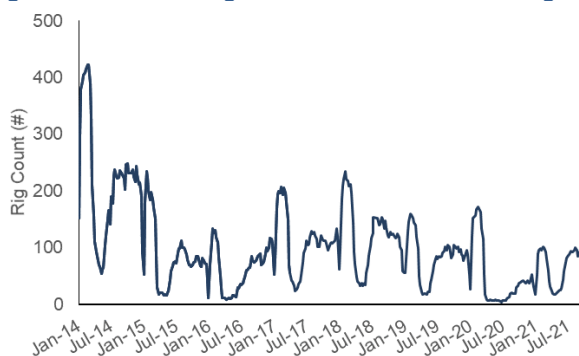
**Frac spreads +5 to 262**

**Oil – Total Cdn rigs +3 to 165 total rigs and +90 rigs YoY**

Total Cdn rigs were +3 this week to 165 total rigs. Cdn oil rigs were +1 at 97 rigs. Cdn gas rigs were + to 68 gas rigs. Total rigs are now +152 since the June 26, 2020 all-time low. We have been expecting a ramp up with the normal Aug/early Sept pause comes to an end. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 37 and Cdn gas rigs were 38 for a total Cdn rigs of 75, meaning total Cdn rigs are +90 YoY and total rigs are up +21 vs 2019.

**Cdn rigs +3 WoW**

Figure 12: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

**Oil – US weekly oil production up +0.500 mmb/d WoW at 10.60 mmb/d**

US oil production was up +0.500 mmb/d to 11.1 mmb/d for the Sept 24 week, driven by Lower 48 production WoW increase of +0.500 mmb/d to 10.700 mmb/d. Hurricane Ida

**US oil production up WoW**

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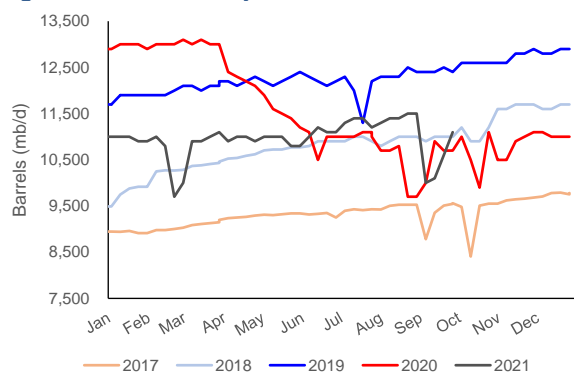
decimated U.S. crude production, as output fell by -1.500 mmb/d three weeks ago, the biggest weekly drop in EIA data going back nearly four decades. Production continued to return as Gulf platforms resume operations and mend facility damage caused by Ida. Oil Inventories increased for the first time in 8 weeks by 4.58 mmb. US oil production is up YoY at +0.400 mmb/d, and is down significantly at -2 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. The EIA DPR has the effectively flat expectations for Sept/Oct for the major shale/tight oil plays.

Figure 13: EIA's Estimated 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  |
| 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 |          |        |
| 2019-Oct   | 10-04    | 12,600 | 10-11    | 12,600 | 10-18    | 12,600 | 10-25    | 12,600 |          |        |
| 2019-Nov   | 11-01    | 12,600 | 11-08    | 12,800 | 11-15    | 12,800 | 11-22    | 12,900 | 11-29    | 12,900 |
| 2019-Dec   | 12-06    | 12,800 | 12-13    | 12,800 | 12-20    | 12,900 | 12-27    | 12,900 |          |        |
| 2020-Jan   | 01-03    | 12,900 | 01-10    | 13,000 | 01-17    | 13,000 | 01-24    | 13,000 | 01-31    | 12,900 |
| 2020-Feb   | 02-07    | 13,000 | 02-14    | 13,000 | 02-21    | 13,000 | 02-28    | 13,100 |          |        |
| 2020-Mar   | 03-06    | 13,000 | 03-13    | 13,100 | 03-20    | 13,000 | 03-27    | 13,000 |          |        |
| 2020-Apr   | 04-03    | 12,400 | 04-10    | 12,300 | 04-17    | 12,200 | 04-24    | 12,100 |          |        |
| 2020-May   | 05-01    | 11,900 | 05-08    | 11,600 | 05-15    | 11,500 | 05-22    | 11,400 | 05-29    | 11,200 |
| 2020-Jun   | 06-05    | 11,100 | 06-12    | 10,500 | 06-19    | 11,000 | 06-26    | 11,000 |          |        |
| 2020-Jul   | 07-03    | 11,000 | 07-10    | 11,000 | 07-17    | 11,100 | 07-24    | 11,100 | 07-31    | 11,000 |
| 2020-Aug   | 08-07    | 10,700 | 08-14    | 10,700 | 08-21    | 10,800 | 08-28    | 9,700  |          |        |
| 2020-Sep   | 09-04    | 10,000 | 09-11    | 10,900 | 09-18    | 10,700 | 09-25    | 10,700 |          |        |
| 2020-Oct   | 10-02    | 11,000 | 10-09    | 10,500 | 10-16    | 9,900  | 10-23    | 11,100 | 10-30    | 10,500 |
| 2020-Nov   | 11-06    | 10,500 | 11-13    | 10,900 | 11-20    | 11,000 | 11-27    | 11,100 |          |        |
| 2020-Dec   | 12-04    | 11,100 | 12-11    | 11,000 | 12-18    | 11,000 | 12-25    | 11,000 |          |        |
| 2021-Jan   | 01-01    | 11,000 | 01-08    | 11,000 | 01-15    | 11,000 | 01-22    | 10,900 | 01-29    | 10,900 |
| 2021-Feb   | 02-05    | 11,000 | 02-12    | 10,800 | 02-19    | 9,700  | 02-26    | 10,000 |          |        |
| 2021-Mar   | 03-05    | 10,900 | 03-12    | 10,900 | 03-19    | 11,000 | 03-26    | 11,100 |          |        |
| 2021-Apr   | 04-02    | 10,900 | 04-09    | 11,000 | 04-16    | 11,000 | 04-23    | 10,900 | 04-30    | 10,900 |
| 2021-May   | 05-07    | 11,000 | 05-14    | 11,000 | 05-21    | 11,000 | 05-28    | 10,800 |          |        |
| 2021-Jun   | 06-04    | 11,000 | 06-11    | 11,200 | 06-18    | 11,100 | 06-25    | 11,100 |          |        |
| 2021-Jul   | 07-02    | 11,300 | 07-09    | 11,400 | 07-16    | 11,400 | 07-23    | 11,200 | 07-30    | 11,200 |
| 2021-Aug   | 08-06    | 11,300 | 08-13    | 11,400 | 08-20    | 11,400 | 08-27    | 11,500 |          |        |
| 2021-Sep   | 09-03    | 10,000 | 09-10    | 10,100 | 09-17    | 10,600 | 09-24    | 11,100 |          |        |

Source: EIA

Figure 14: US Weekly Oil Production

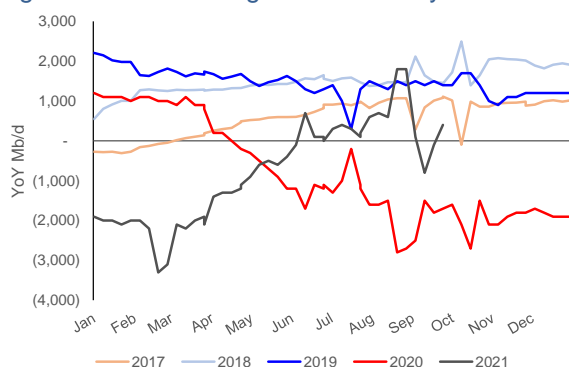


Source: EIA, SAF

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Figure 15: YoY Change in US Weekly Oil Production



Source: EIA, SAF

**Oil – EIA Form 914 July actuals only marginally lower vs weekly production estimates**

The EIA released its Form 914 data [\[LINK\]](#) on Thursday, which is the EIA’s “actuals” for July US oil and natural gas production. Form 914 shows July production of 11.307 mmb/d, up slightly from June production of 11,276 mmb/d after being revised down -31,000 b/d, and up +0.351 mmb/d YoY from July 2020 of 10.956 mmb/d. Three key items to highlight. (i) The actuals for July were basically right in line with the weekly estimates, and only 18,000 b/d below the weekly estimates that are noted in our Energy Tidbits memos. The actuals are also 0.300 mmb/d higher than the EIA STEO August had for July. (ii) This is the third consecutive month with YoY increases, and we expect to see this continue through the remainder of the summer. (iii) On the back of the strengthening oil prices, we believe that July’s increase in production was a function of the on-going depletion of DUC inventory wells, rather than new drilling, which requires ramp-up time to translate increasing rigs into actual oil production. Other specific state info: Texas and New Mexico had the largest MoM increase, both up +28,000; both states are the top 2 producers in the US. North Dakota was down -9,000 b/d to 1.055 mmb/d, remaining the # 3 producer for the second consecutive week. ND is still 39,000 b/d below Jan levels, meaning it has still not fully recovered from the February freeze-out. Note, the temporary decrease in production is believed to be temporary as the cause of the downturn was a series of plant outages for summer maintenance events. ND’s lower production does not come as a surprise; summer months are the typical turnaround time for scheduled maintenance and ND experienced five plants outages as they underwent work on infrastructure [\[LINK\]](#). The July actuals were 18,000 b/d below the weekly estimates average of 11.325 mmb/d for July, decreasing for the first time since the February freeze out.

**EIA Form 914 July**

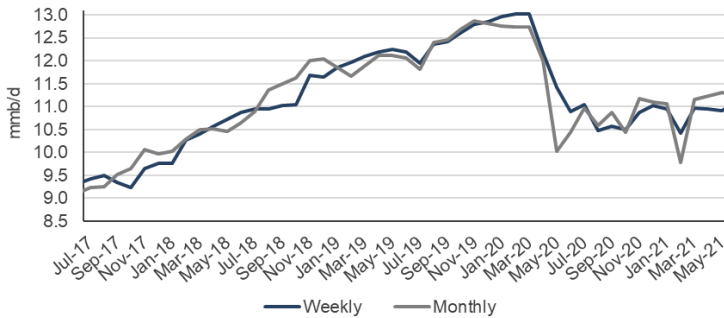
Figure 16: EIA Form 914 US Oil Production

| thousand barrels per day | Jan    | Feb    | Mar    | Apr    | May    | Jun    | Jul    | Aug    | Sep    | Oct    | Nov    | Dec    |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2021                     | 11,056 | 9,773  | 11,160 | 11,230 | 11,334 | 11,276 | 11,307 |        |        |        |        |        |
| 2020                     | 12,785 | 12,826 | 12,816 | 11,911 | 9,711  | 10,420 | 10,956 | 10,558 | 10,868 | 10,413 | 11,121 | 11,084 |
| 2019                     | 11,848 | 11,653 | 11,899 | 12,125 | 12,141 | 12,179 | 11,896 | 12,475 | 12,572 | 12,771 | 12,966 | 12,910 |
| 2018                     | 9,996  | 10,276 | 10,461 | 10,493 | 10,424 | 10,628 | 10,888 | 11,373 | 11,422 | 11,488 | 11,868 | 11,924 |
| 2017                     | 8,873  | 9,109  | 9,168  | 9,103  | 9,184  | 9,110  | 9,246  | 9,245  | 9,516  | 9,659  | 10,077 | 9,979  |
| 2016                     | 9,201  | 9,063  | 9,088  | 8,871  | 8,832  | 8,672  | 8,660  | 8,688  | 8,542  | 8,802  | 8,901  | 8,814  |
| 2015                     | 9,382  | 9,504  | 9,582  | 9,658  | 9,474  | 9,358  | 9,446  | 9,409  | 9,480  | 9,400  | 9,332  | 9,275  |

Source: EIA

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Figure 17: EIA Form 914 US Oil Production vs Weekly Estimates



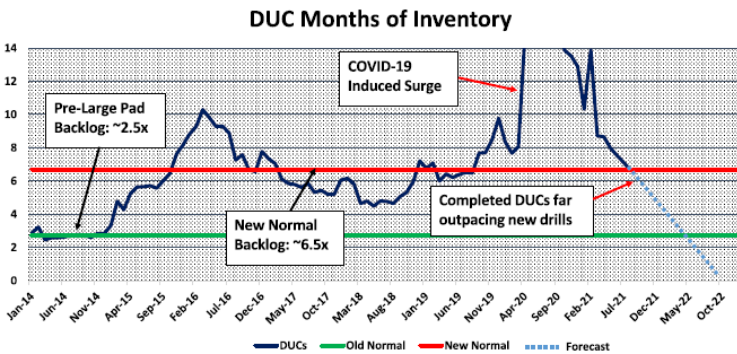
Source: EIA

**Oil – RJ: need more oil drilling “or risk a slow, but sure, decline in production”**

On Monday, there was an excellent Raymond James (John Freeman) comment “*Energy Stat: From ‘Drill Baby Drill’ to ‘Complete Baby Complete’ — DUC Drawdown Reaching Critical Level*”. The title says it all. We tweeted [\[LINK\]](#) “*Operators must devote additional capital towards new drills (soon) or risk a slow, but sure, decline in [#Oil] production. Will also impact Associated #NatGas outlook. DUCs need to be replenished soon. Positive for Oil. Thx @RaymondJames John Freeman, NickPocrnic. #OOTT*”. His conclusion was “*Bottom Line: In just 12 months, the U.S. DUC count, nearly 9,000 strong in July 2020, has fallen by ~3,300, the largest (and quickest) drawdown to date. E&Ps are completing wells at record rates, with current DUC inventories now crossing the critical “normal level”. Over the last year, completions have outpaced new drills by nearly 250 wells/month, an unsustainable delta of which has never occurred. Since July 2020, operators have largely maintained production levels by tapping their vast supply of DUCs, opting to forego costlier new drills in favor of cheaper completions. Similar to the sentiment echoed in our most recent oil forecast, for production levels to sustain current rates (let alone grow), a substantial influx in rigs, and therefore new drills, are needed. Operators must devote additional capital towards new drills (soon) or risk a slow, but sure, decline in production.*”

**RJ: DUCs not crossing critical normal line**

Figure 18: DUC Months of Inventory



Source: Raymond James

**RJ also shows how there will be visibility to how quick US can grow oil**

Thanks to RJ’s John Freeman for getting back to us on our questions on his comment. Freeman highlighted two key trends – “*frac efficiency*” or the number of monthly wells completed per frac crew has “*dramatically*” increased from ~2.9x pre-pandemic and “*skyrocketed to roughly 4.3x*” post pandemic yet “*On the other hand,*

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*post-pandemic rig efficiency has taken a slight, but material, step back versus its pre-pandemic average. Looking at the chart below, pre-pandemic rig efficiency averaged 1.28 rigs per-well drilled, falling to 1.16x post-pandemic.” We asked Freeman if the increasing frac efficiency and decreasing rig efficiency is linked to private operators adding back rigs more than publics (ie. small operators not as likely to do pad drilling, etc)? but publics had built up more DUCs and are running them down so frac efficiency is good? Freeman confirmed that is the key reason for these trends. This is good for markets being able to have visibility to how quickly US can grow its oil. The public companies have been working down DUCs and have to increase drilling to rebuild DUCs. And public companies provide regular updates and guidance on their drilling program. Its why there should be visibility to how quickly and sustainably US oil production can grow in 2022.*

### **Oil – Line 3 Replacement project completed and set to be fully operational**

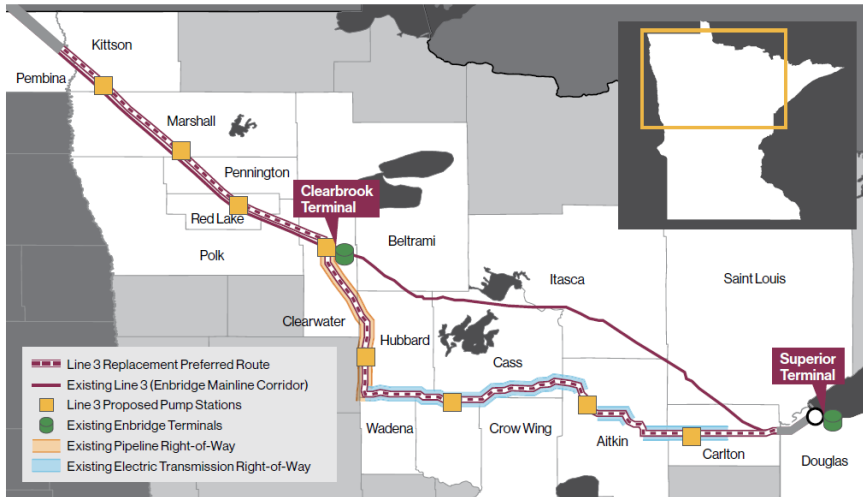
Enbridge announced on Wednesday [\[LINK\]](#), that the Line 3 Replacement project is substantially completed and is set to be fully operational on October 1. The 1,765 km pipeline includes new-state-of-the-art thicker walled pipe that will ensure safe and reliable energy transportation for millions of North Americans. The recently completed 542 km segment returns the pipeline to its full 762,000 b/d capacity to meet the demand of various groups of the American Midwest. Enbridge CEO commented, *“after more than eight years of many people working together, extensive community engagement, and thorough environmental, regulatory and legal review, we are pleased that Line 3 is complete and will soon deliver the low cost and reliable energy that people depend on every day. From day one, this project has been about modernizing our system and improving safety and reliability for the benefit of communities, the environment and our customers.* Enbridge said the Line 3 project was the most studied pipeline in Minnesota state history, including 71 public comment regulatory meetings and 3,500 community engagement meetings with 30 indigenous tribes taking part in the consultation process. Our Supplemental Documents package includes the Enbridge release.

**Enbridge Line 3  
to be fully  
operational**

### **Line 3 Project Overview**

Enbridge says the replacement of Line 3, which was built in the 1960's, is *“to maintain [their] high safety high safety standards, reduce future maintenance activities and create fewer disruptions to landowners and the environment, and restore the historical operating capabilities of Line 3,”*[\[LINK\]](#). In 2008, Enbridge implemented voluntary pressure restrictions to the pipeline reducing capacity of deliveries from 760,000 b/d to 370,000 b/d. The Line 3 replacement program includes a new 36-inch diameter pipeline, replacing the existing 34-inch diameter pipeline. The new 1,031-mile pipeline follows the existing Line 3 route from Joliette, North Dakota to Clearbrook, Minnesota, and then follows existing pipeline and transmission routes from Clearbrook to Superior, Wisconsin. The Program was a ~\$7.5bn private investment, making it one of the largest infrastructure programs in North America. Below is the map of the Line 3 Replacement project. Our Supplemental Documents Package includes excerpts from the Enbridge Line 3 Project Overview.

Figure 19: Enbridge Line 3 Replacement Project



Source: Enbridge

**Oil – Covid outbreaks in oil sands facilities unchanged at 6 as of Sept 30**

Wood Buffalo posted a Sept 30 Covid update [\[LINK\]](#). Versus their Sept 21 update, the number and names of oil sands facilities on the Covid outbreak list are unchanged. The 6 outbreak oil sands facilities are: CNRL Albion, CNRL Horizon, CNRL Kirby Jackfish, MEG Christina Lake, Suncor Firebag and Suncor Fort Hills.

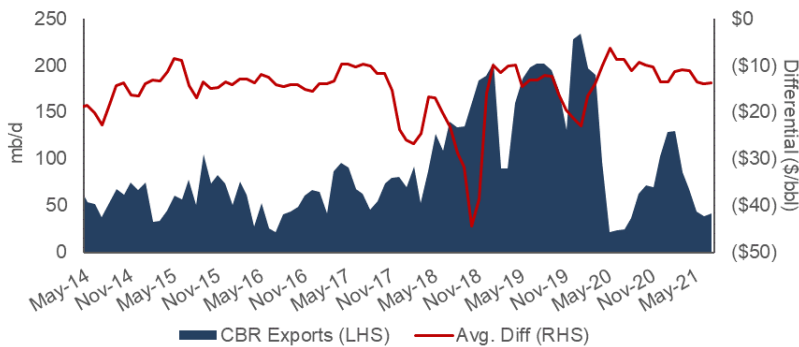
Covid in oil sands

**Oil – Cdn crude by rail imports to Gulf Coast up 17,000 b/d YoY in July to 42,000 b/d**

The EIA posted its monthly “U.S. Movements of Crude Oil by Rail” [\[LINK\]](#) on Thursday, which also had good insights on Cdn crude by rail. Canadian CBR volumes to PADD 3 (Gulf Coast) were 42,000 b/d in July, which is up 3,000 b/d MoM from June, and up 17,000 b/d YoY vs July 2020. May volumes were revised upward by 1,000 b/d from 67,000 b/d reported last month. Tighter YoY WCS to WTI differentials were the key factor in the low crude by rail volumes since December. Below is our graph of Cdn CBR exports to the Gulf Coast.

Cdn crude by rail imports to Gulf Coast up 17,000 b/d YoY

Figure 20: Canada CBR Exports to US Gulf Coast vs WCS Differential



Source: EIA, Bloomberg

**Oil – Refinery inputs +1.745 mmb/d YoY at 15.415 mmb/d, up WoW**

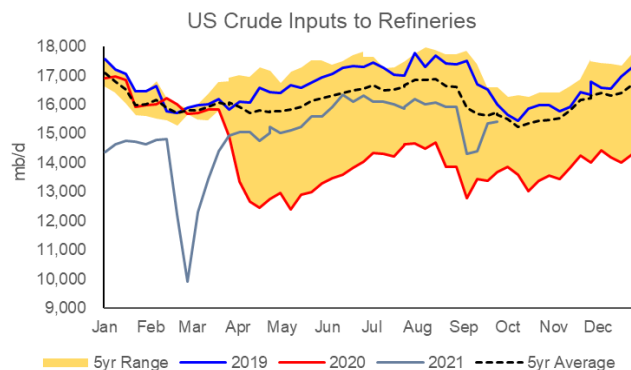
There was a slight increase in refinery inputs as refineries along the US Gulf Coast slowly return to full operations post Hurricane Ida. Crude inputs to refineries were up slightly at

Refinery inputs flat WoW

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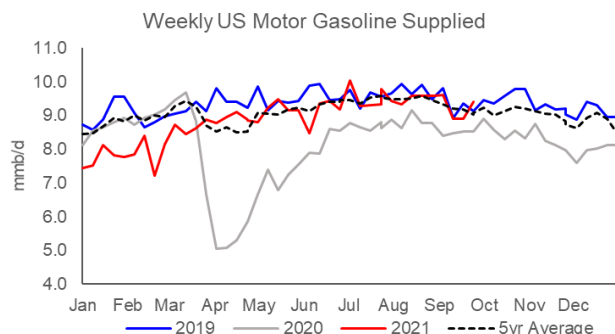
+0.067 mmb/d for the Sept 24 week to 15.415 mmb/d and are +1.745 mmb/d YoY. Refinery utilization was up 0.06% to 88.1%, which is +13.36% YoY. Total products supplied (i.e., demand) was down WoW -0.754 mmb/d to 20.391 mmb/d. Total demand is +6.594 mmb/d from the April 10, 2020 low of 13.797 mmb/d. Motor gasoline was up +0.502 mmb/d at 9.399 mmb/d from 8.896 mmb/d last week. Gasoline supplied, a proxy for demand, was down last week Not a surprise. With the driving season over, demand tends to fall. The four-week average of production supplied increased to 7.480 mmb/d, up from last year. Below is our graph of crude inputs to US refineries and our graph of US motor gasoline supplied.

Figure 21: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA, SAF

Figure 22: US Motor Gasoline Supplied (mmb/d)



Source: EIA, SAF

**Oil – US “net” oil imports down -0.124 mmb/d WoW at 3.352 mmb/d**

US “NET” imports were down -0.124 mmb/d to 3.352 mmb/d for the Sept 24 week. US imports were down +0.087 mmb/d to 6.552 mmb/d. US exports were up +0.211 mmb/d to 3.020 mmb/d. The WoW increase in US oil imports was driven by US’s top 10 imports by country, which was down +0.085 mmb/d. Some items to note on the by country data. (i) Canada was down this week by -0.109 mmb/d to 3.034 mmb/d, which is now ~0.659 mmb/d below the average levels in Jan/Feb of 2020. (ii) Saudi Arabia was up +0.162 mmb/d to 0.561 mmb/d this week. (iii) Colombia was down +43,000 b/d to 0.255 mmb/d. (iv) Ecuador increased imports this week, up +133,000 b/d. (v) Iraq was down -42,000 b/d to 0 b/d. (vi) Venezuela remained at 0 due to US sanctions. (vii) Mexico was down by -71,000 b/d to 0.764 mmb/d.

**US “net” oil down WoW**

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Figure 23: US Weekly Preliminary Oil Imports By Major Countries

| US Weekly Preliminary Crude Imports By Top 10 Countries (thousand b/d) |            |            |            |           |           |           |           |            |            |            |            |      |
|--|------------|------------|------------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------|
|  | July 16/21 | July 23/21 | July 30/21 | Aug 06/21 | Aug 13/21 | Aug 20/21 | Aug 27/21 | Sept 03/21 | Sept 10/21 | Sept 17/21 | Sept 24/21 | WoW  |
| Canada   | 3,611      | 3,476      | 3,228      | 3,371     | 3,057     | 3,555     | 3,612     | 3,580      | 3,200      | 3,143      | 3,034      | -109 |
| Saudi Arabia   | 359        | 363        | 351        | 302       | 363       | 286       | 345       | 296        | 369        | 399        | 561        | 162  |
| Venezuela  | 0          | 0          | 0          | 0         | 0         | 0         | 0         | 0          | 0          | 0          | 0          | 0    |
| Mexico   | 797        | 621        | 634        | 601       | 629       | 595       | 674       | 372        | 538        | 835        | 764        | -71  |
| Colombia   | 144        | 144        | 141        | 293       | 143       | 370       | 71        | 145        | 0          | 212        | 255        | 43   |
| Iraq   | 480        | 145        | 82         | 120       | 150       | 77        | 174       | 106        | 50         | 42         | 0          | -42  |
| Ecuador  | 171        | 168        | 46         | 150       | 197       | 261       | 195       | 0          | 174        | 102        | 235        | 133  |
| Nigeria  | 195        | 55         | 212        | 150       | 214       | 95        | 43        | 116        | 82         | 95         | 64         | -31  |
| Kuwait   | 0          | 0          | 0          | 0         | 0         | 0         | 0         | 0          | 0          | 0          | 0          | 0    |
| Angola   | 0          | 0          | 0          | 0         | 0         | 0         | 0         | 0          | 0          | 0          | 0          | 0    |
| Top 10   | 5,757      | 4,972      | 4,694      | 4,987     | 4,753     | 5,239     | 5,114     | 4,615      | 4,413      | 4,828      | 4,913      | 85   |
| Others   | 1,340      | 1,535      | 1,738      | 1,409     | 1,597     | 918       | 1,226     | 1,195      | 1,348      | 1,637      | 1,639      | 2    |
| Total US   | 7,097      | 6,507      | 6,432      | 6,396     | 6,350     | 6,157     | 6,340     | 5,810      | 5,761      | 6,465      | 6,552      | 87   |

Source: EIA, SAF

**Oil – Mexico August production down 2.59% YoY, production at 1.657 mmb/d**

As expected August production was down MoM due to the outage at the offshore platform. On Monday, Pemex reported August crude oil production of 1.657 mmb/d, an increase of +1.5% YoY and -2.59% MoM. August was expected to be lower due to a fire at an offshore platform estimated to be 421,000 b/d of output, but the impact was far less than we, and we suspect most others, expected. On Aug 30, we tweeted [\[LINK\]](#) “have to admit, was surprised to see #Pemex announce it restored all 421,000 b/d of shut in oil after the Aug 22 fire. #OOTT.” Pemex continues to post YoY increases though this is attributed to Covid induced production decreases last fall and not necessarily actual growth.

**Pemex August  
production  
down 2.59%  
YoY**

Figure 24: Pemex Mexico Oil Production

| Oil Production (thousand b/d) | 2015  | 2016  | 2017  | 2018  | 18/17 | 2019  | 19/18  | 2020  | 20/19 | YTD 2020 | 2021  | 21/20 |
|-------------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|----------|-------|-------|
| Jan                           | 2,251 | 2,259 | 2,020 | 1,909 | -5.5% | 1,623 | -15.0% | 1,724 | 6.2%  | 1,724    | 1,651 | -4.2% |
| Feb                           | 2,332 | 2,214 | 2,016 | 1,876 | -6.9% | 1,701 | -9.3%  | 1,729 | 1.6%  | 1,726    | 1,669 | -3.5% |
| Mar                           | 2,319 | 2,217 | 2,018 | 1,846 | -8.5% | 1,691 | -8.4%  | 1,745 | 3.2%  | 1,714    | 1,697 | -2.8% |
| Apr                           | 2,201 | 2,177 | 2,012 | 1,868 | -7.2% | 1,675 | -10.3% | 1,703 | 1.7%  | 1,711    | 1,693 | -0.6% |
| May                           | 2,227 | 2,174 | 2,020 | 1,850 | -8.4% | 1,663 | -10.1% | 1,633 | -1.8% | 1,695    | 1,688 | 3.4%  |
| June                          | 2,247 | 2,178 | 2,008 | 1,828 | -9.0% | 1,671 | -8.6%  | 1,605 | -3.9% | 1,680    | 1,698 | 5.8%  |
| July                          | 2,272 | 2,157 | 1,986 | 1,823 | -8.2% | 1,671 | -8.3%  | 1,595 | -4.5% | 1,668    | 1,701 | 6.6%  |
| Aug                           | 2,255 | 2,144 | 1,930 | 1,798 | -6.8% | 1,683 | -6.4%  | 1,632 | -3.0% | 1,663    | 1,657 | 1.5%  |
| Sept                          | 2,271 | 2,113 | 1,730 | 1,808 | 4.5%  | 1,705 | -5.7%  | 1,643 | -3.6% | 1,667    |       |       |
| Oct                           | 2,279 | 2,103 | 1,902 | 1,747 | -8.1% | 1,655 | -5.3%  | 1,627 | -1.7% | 1,663    |       |       |
| Nov                           | 2,277 | 2,072 | 1,867 | 1,697 | -9.1% | 1,696 | -0.1%  | 1,633 | -3.7% | 1,660    |       |       |
| Dec                           | 2,275 | 2,035 | 1,873 | 1,710 | -8.7% | 1,706 | -0.2%  | 1,650 | -3.3% | 1,659    |       |       |

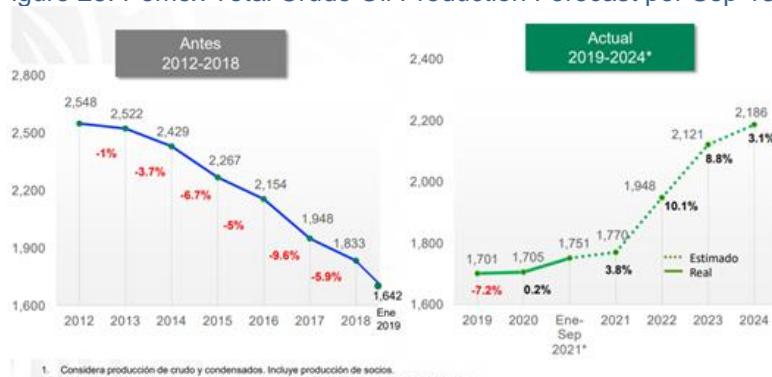
Source: Pemex

**Pemex is still behind its Sept 13 revised lower 2021 oil production forecasts**

We are not surprised to see that Pemex is still behind its recently lowered 2021 production forecasts. Our September 19 2021 Energy Tidbit noted; on September 13, Pemex posted a new investor presentation [\[LINK\]](#). There are only insignificant changes to production forecasts with slight reductions to both 2021 and 2022. Pemex now forecasts 2021 production at 1.770 mmb/d, was 1.801 mmb/d. Pemex now forecasts 2022 production at 1.948 mmb/d, was 1.974 mmb/d. The new slide deck also noted exports were down a bit in August due to the fire, but expected to return in Sept. Separately, Bloomberg reported [\[LINK\]](#), that the country's finance minister lowered preliminary estimates of output, to 1.857 mmb/d, from 2.027 mmb/d in an April estimate. Bloomberg reported “it seems that they have not learned,” he said, predicting that Pemex will fail to meet the lower target. The Finance Ministry estimates oil prices will average \$42.10 a barrel next year, up from a preliminary forecast of \$30 a barrel at the start of April. The numbers are part of a budget proposal that would increase Pemex's spending by just 0.6% next year, to 544.6 billion pesos (\$25 billion).

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Figure 25: Pemex Total Crude Oil Production Forecast per Sep 13 slide deck



Source: PEMEX September 13, 2021 Investor Presentation

**Oil – Mexico August oil exports -7.6% YoY to 1.099 mmb/d**

As expected, on Monday Pemex also reported lower MoM crude oil exports in August. Mexico oil exports in August were 1.099 mmb/d, which -7.6% YoY, and -6.3% from July of 1.173 mmb/d. As expected, August exports have decreased due to a fire on the E-Ku-A2 platform that saw 421,000 bp/d taken offline. Below is our table of the Pemex oil export data.

**Pemex August oil exports down 7.6% YoY**

Figure 26: Pemex Mexico Oil Export

| Oil Exports (thousand b/d) | 2015  | 2016  | 2017  | 2018  | 2019  | 19/18  | 2020  | 20/19  | YTD 2020 | 2021  | 21/20  |
|----------------------------|-------|-------|-------|-------|-------|--------|-------|--------|----------|-------|--------|
| Jan                        | 1,261 | 1,119 | 1,085 | 1,107 | 1,071 | -3.3%  | 1,260 | 17.6%  | 1,260    | 979   | -22.3% |
| Feb                        | 1,305 | 1,241 | 1,217 | 1,451 | 1,475 | 1.7%   | 1,093 | -25.9% | 1,179    | 1,006 | -8.0%  |
| Mar                        | 1,228 | 1,062 | 1,001 | 1,176 | 1,150 | -2.2%  | 1,144 | -0.5%  | 1,167    | 925   | -19.1% |
| Apr                        | 1,035 | 1,081 | 1,017 | 1,266 | 1,023 | -19.2% | 1,179 | 15.2%  | 1,180    | 923   | -21.7% |
| May                        | 1,114 | 1,204 | 958   | 1,222 | 1,205 | -1.4%  | 1,062 | -11.9% | 1,156    | 1,031 | -2.9%  |
| June                       | 1,047 | 1,098 | 1,157 | 1,110 | 995   | -10.4% | 1,114 | 12.0%  | 1,149    | 1,106 | -0.7%  |
| July                       | 1,187 | 1,146 | 1,255 | 1,156 | 1,079 | -6.7%  | 1,051 | -2.6%  | 1,135    | 1,173 | 11.6%  |
| Aug                        | 1,261 | 1,261 | 1,114 | 1,181 | 1,082 | -8.4%  | 1,190 | 10.0%  | 1,142    | 1,099 | -7.6%  |
| Sept                       | 1,169 | 1,425 | 1,159 | 1,206 | 995   | -17.5% | 1,023 | 2.8%   | 1,132    |       |        |
| Oct                        | 1,280 | 1,312 | 1,342 | 1,027 | 963   | -6.2%  | 908   | -5.7%  | 1,110    |       |        |
| Nov                        | 1,178 | 1,273 | 1,388 | 1,135 | 1,114 | -1.9%  | 1,171 | 5.1%   | 1,115    |       |        |
| Dec                        | 1,008 | 1,115 | 1,401 | 1,198 | 1,115 | -6.9%  | 1,243 | 11.5%  | 1,126    |       |        |

Source: Pemex

**Oil – Next OPEC+ meeting is tomorrow, Monday Oct 4**

As of our 7am MT news cut off this morning, there isn't any overriding expectation for what OPEC+ will do at tomorrow's 21<sup>st</sup> OPEC and non-OPEC Ministerial Meeting. Like last month's meeting, OPEC+ will be seeing the uncertainty on the impact of the Delta spread. Most of the speculation seemed to be focused on the potential that OPEC+ might increase oil production for November by more than the currently planned +400,000 b/d increase. We wouldn't expect so if the chatter was just about oil prices being high as OPEC+ has been consistent that they don't manage the market for price. Or at least that is the company line. We believe the only reason they would go more than the planned +400,000 b/d is if they believe the demand boost by natural gas to oil switching has some sustainability for more than a month or two. As usual, its been pretty silent from views attributed to Saudi energy minister Abdulaziz, who likes to keep the market on its toes.

**OPEC/non-OPEC Sept 1 meeting**

**Oil – Saudi nest egg, its net foreign assets down immaterially MoM in August**

We are a little surprised to see Saudi Arabia's net foreign assets down in July and Aug vs June given the very strong oil prices. Saudi Arabia's net foreign assets, or what we call their nest egg to help them thru the Energy Transition. Saudi Arabia is far from going broke, but there has been a huge decline in the net foreign assets over the last 7 years but still to a very big nest egg. This depletion is why we have been highlighting that the primary financial

**Saudi net foreign assets**

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theme for Saudi Arabia in the 2020s is getting Other People's Money to fund as much of their Vision 2030 as possible. Saudi's net foreign assets in August were \$437.0b, down immaterially from \$437.5b in July but down from \$441.8b at June 30. August 2021 is down \$11.6b YoY. The peak in Saudi net foreign assets was \$737.0b on Aug 31, 2014, which means there has been a decline in the last seven years of \$299.5b, which is a massive decline. We believe this is why there has been such a big push in the last few years to get OPM so Saudi doesn't keep depleting its nest egg. And why we call this the #1 financial theme for Saudi Arabia in the 2020s – the increasing use of Other People's Money. And not just in Saudi Aramco, although we do expect to see more equity and bond sales from Aramco. Below is our graph of Saudi Arabia net foreign assets.

Figure 27: Saudi Arabia Net Foreign Assets



Source: Bloomberg

### Oil –Iran says US should release \$10b in frozen money to show its serious on JCPOA

It looks like Biden has some tough decisions to make in light of Iran saying it wants the US to release the \$10b in frozen money as a sign the US is serious about a return to the JCPOA. We have to wonder what the political calculation is for Biden with the mid term elections now 13 months away. Does Biden believe this is a firm ask? This has to have been brought up in all the JCPOA discussions as must have, but now it's a must have to get back to the negotiating table. The reality is that the US knows all the Iran's asks to date in the negotiations. Can Biden afford to blink on this knowing it means that Iran will think they can get him to give in on the vast majority of their asks? (i) Last week's (Sept 26, 2021) Energy Tidbits noted the key quotes from new Iran Foreign Minister Hossein Amirabdollahian on NBC [LINK](#). Our takeaway from reviewing the full video of the interview was that we didn't see how any significant JCPOA negotiations would resume in the coming weeks unless Iran sees some sort of clear US action, not just words. Amirabdollahian said on multiple times they are action oriented and that what matters to them is action not words. Or as he said in one spot, we hear beautiful words, but they need to see action. And he reminded that the Biden administration keeps putting new sanctions on Iran. And this week, we saw there really isn't any change in US position. (ii) Rather, on Thursday, Secretary Blinken said "the ball remains in their court, but not for long" and "there is a limited runway on that, and the runway is getting shorter". (iii) Earlier this morning, we tweeted [LINK](#) "Iran's response to @SecBlinken that #JCPOA "ball remains in their court but not for long". @Amirabdollahian tells the US here is the ask if want to get back now to JCPOA negotiating table - release the \$10b of frozen money. Thx @AbasAslani. #OOTT." There was a good thread from Abas Asiani (Center for Middle East Strategic Studies) that included "#Iran FM @Amirabdollahian : Americans tried to contact us in New York through various channels, and I told the intermediaries that if the US had serious intentions, it should issue a serious signal. The

**Iran wants the \$10b released**

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*serious sign is releasing at least \$ 10 billion of Iranian frozen money. #JCPOA*". Our Supplemental Documents package includes the Abas Asiani tweet thread.

### **Oil – What is Israel up to? back to mysterious fires/explosions at key Iran facilities**

We continue to worry about the Israel wildcard with respect to a potential escalation in the Middle East. Our view is unchanged, we suspect at their White House Aug meeting, Israel PM Bennett likely gave Biden some limited time frame for some specific results on Iran. Our August 29, 2021 Energy Tidbits wrote *"We listened live to the first Biden/Bennett press conference, before the detailed meeting, and thought Israel PM Bennett's comments were a clear warning that Israel is a wildcard on what happens to Iran. We tweeted [\[LINK\]](#) "Risk premium to #Oil? is #JCPOA enough to stop Israel independent action? #Bennett "permanently keep Iran away from ever being able to break out to nuclear weapon""never outsource our security, its our responsibility to take care of our fate". what will permanently involve? #OOTT". It caught our attention that Bennett said their goal is to "permanently" keep Iran from being able to break out to nuclear weapon. And then his comment that it is their responsibility to take care of their fate. The question will be if a return to the JCPOA or other separate Iran deal will satisfy Israel? And is not, what will Israel do if it wants to "permanently" stop Iran from being able to break out to nuclear?"* At least from the outside, there doesn't appear to be any US progress on Iran and they can't get even get them back to the negotiating table. So no one should be surprised to see reports of mysterious fires and/or explosions at key Iran facilities. Last Sunday, Iran state TV reported of a fire at a research centre belonging to the Islamic Revolutionary Guard Corps [\[LINK\]](#). Three people were injured, though the fire was reported to be contained. The IRGC controls major aspects of Iran's security facilities and operations. This follows a trend in recent years of several mysterious incidents at facilities linked to defense establishments or Iran's nuclear program.

**Mysterious fire at Iran research facility**

### **Oil – Libya's deputy oil minister abruptly resigns, notes Libya producing 1.2 mmb/d**

We continue to monitor the political conflict surrounding Libya's energy industry. The turmoil surrounding Libyan NOC's dispute with the ministry of energy continued this week with deputy oil minister Refaat al-Abbar's abrupt resignation on Sept 28. Abbar cited *"special circumstances"* in his resignation letter to Prime Minister Dbeilbah. Abbar's resignation continues to highlight the lack of stability present in Libyan politics, and we could see more turmoil at the planned Dec 24 election. Prior to his resignation, Abbar found the infighting between the ministry and the NOC to be untenable and agreed to answer questions about the ministry's work to rebuild Libya's oil industry [\[LINK\]](#). Abbar claimed *"Libya is currently pumping about 1.2 million b/d of crude, and the ministry is aiming to hit 1.4 million b/d by December and 1.6 million b/d in 2022, depending on how much government funding NOC receives from the still unpassed national budget."* Abbar stated in the interview that \$12 bn will be needed to achieve the production goals and carry out comprehensive rehabilitation operations. Even if production goals are met, production will still be below 2008 peak production of 1.75 mmb/d. Our Supplemental Documents package includes the S&P Global Platts interview.

**Libya deputy oil minister resigns**

### **Oil – China pays \$1.10 to \$1.80 to have a carbon neutral oil cargo**

We have started to see the start of LNG and oil cargoes being delivered on a carbon-neutral basis, or at least claim to be doing so. This week, BloombergNEF's *"BNEF Oil: The Month in Short"* included their estimate that Sinopec is paying \$1.10 to \$1.80/b to have carbon neutral oil cargoes. BNEF noted Sinopec, together with Cosco Shipping and China Eastern Airlines *"purchased a total of 103,526 metric tons of offset certificates to compensate for the emissions from crude oil exploration, shipping, refining and end-use product combustion, without declaring the price."* And *"detailed pricing data is not publicly available for most*

**China's carbon neutral oil cargoes**

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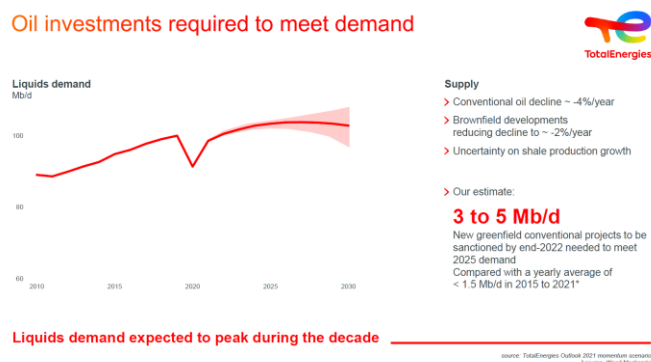
CCER transactions as trades are typically done over the counter. BNEF estimates a price tag of 15-25 Yuan/ton (\$2.3-3.8/ton) for a typical CCER certificate. This translates to \$1.1-\$1.8 per barrel additional cost to offset the carbon emissions.” Our Supplemental Documents package includes the BloombergNEF excerpt.

**Oil – TotalEnergies peak oil demand in mid-2020s but 2030 demand > pre-Covid level**

Another of TotalEnergies significant commodity insights was its forecast on oil demand. It was interesting to see the reporting on TotalEnergies view of peak oil demand, which were focused on their forecast that peak oil demand would be in the middle of this decades ie. middle of 2020s. No question that is exactly what was said by TotalEnergies, but they also didn’t provide the specific mmb/d in the forecast. And no one bothered to ask them for the mmb/d in their forecast. What struck us about their script and slide was that the numbers portrayed a much more positive outlook for oil. Its why we tweeted [\[LINK\]](#) “Yes @TotalEnergies said #Oil #PeakDemand in middle of decade. But webcast didn't give mmbd numbers and graph looks like oil demand >pre covid in 2025 & also still >pre covid in 2030. mgmt did say need 3-5 mmbd greenfield to meet 2025 demand. Positive for #Oil in 2020s #OOTT.” The reality is that companies don’t make up graphs that don’t fit their data. And their graph looks pretty clear. Could you imagine the reporting if TotalEnergies had they oil demand to recover to pre-Covid levels in 2022 and then keep increasing to a peak in 2025/2025, but then only small decrease in oil demand and that oil demand would still be above pre-Covid levels in 2030? They didn’t say that, but that is what the graph says. Its like they just didn’t want to portray that positive outlook for oil demand. Below is the TotalEnergies oil demand graph.

**TotalEnergies 2030 oil demand above pre-Covid**

Figure 28: TotalEnergies Forecast Liquids Demand



Source: TotalEnergies

**TotalEnergies also presented their climate scenario outlook for oil demand**

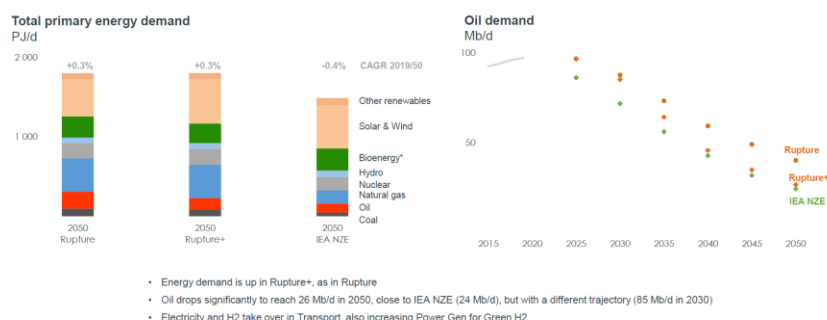
TotalEnergies split their investor day into two days. The first day on Monday was the “Energy Landscape and TotalEnergies Energy Outlook” presentation by Helle Kristoffersen, the President Strategy & Sustainability group. This presentation received a lot of headlines, in particular, for the below graph that showed their forecast for crashing oil demand under their Rupture and Rupture+ scenarios that crash oil demand in the long term close to the IEA. As we saw these headlines, we had to tweet [\[LINK\]](#) “Need to read carefully. enlightens, insights, etc. but @TotalEnergies doesn't say this is what they use for capital allocation decisions. so the question is what does @TotalEnergies use for #Oil #NatGas peak demand & price forecast for capital allocation. #OOTT”. That was the point, they may lay out a

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scenario for what oil demand happens under certain climate assumption, but it doesn't mean they use these scenarios for capital planning and allocation. As noted above, TotalEnergies forecast for oil demand sees oil demand in 2030 at higher than pre-Covid levels.

Figure 29: Land use of relative energy sources

From well-below 2°C to 1.5°C  
Selected impacts of Rupture+ sensitivity



Source: TotalEnergies

## Oil – TotalEnergies see the setup for oil price spikes

One of the direct talk comments from the Q&A of the TotalEnergies investor day was on their concern on oil price spikes. Later in the memo, we note some unique direct comments on the energy transition. But, in this case, mgmt's comments on price spikes are in line with other oil plays such as Trafigura who believe higher oil prices are likely given the squeeze on capital for oil supply without seeing the hit to demand. On Monday, we tweeted [LINK](#) "question in this transition is not to think that we can change the pattern of demand by constraining the supply. if we just do that, we'll have a huge spike in the price [#Oil] & a huge instability, a social instability on this planet" @PPouyanne." In the Q&A, CEO Pouyanne gave a lengthy answer talking about oil demand and prices and his reply included "So, again the question in this transition, is not to think that we can change the pattern of demand by constraining the supply. if we just do that, we'll have a huge spike in the price and a huge instability, a social instability on this planet. So we cannot do that." Our Supplemental Documents package includes the lengthy Pouyanne reply.

**TotalEnergies sees oil price spikes**

## \$100 oil is a structural underinvestment in oil for Dummies lesson

We had a number of investors reach out on last week's (Sept 26, 2021) Energy Tidbits memo after the title caught their attention "Why Trafigura Sees \$100 Oil is a Structural Underinvestment in Oil for Dummies Lesson". The discussions seemed to reinforce that more investors are at least starting to appreciate that supply of oil or natural gas takes time and that the impact of underinvestment in 2019 thru 2021 is going to impact prices. Trafigura's view of high oil prices is based on much the same concept as the TotalEnergies warning – there is a supply issue coming. This is a concept that is finally starting to gain some traction. On Sept 25, we tweeted [LINK](#) "Structural underinvestment for dummies, why @Trafigura @saadrahim sees \$100 oil. Spending 50% more capex on #Renewables vs #Oil #NatGas yet O&G account for 10x as much of #EnergyMix as renewables. Thx @ArgusMedia. See Sunday's

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SAF Energy Tidbits <https://safgroup.ca/news-insights> #OOTT". Trafigura's Rahim did not use the term structural underinvestment for dummies, but we thought it was appropriate when we saw his comments. At the 37:30 min mark of the video [\[LINK\]](#), Rahim gives a long answer on what he calls the "rush to the energy transition". He makes the common sense points on the need for oil, coal, gas, etc in the intervening period to the energy transition. and that underinvestment is setting up a reason to be bullish and is supportive of why Trafigura sees \$100 or \$100 plus oil. And does a good job of describing the logical reminder that oil and gas provide 10 times the energy mix as renewables, but the energy transition is pushing 50% more capex on renewables. Rahim says " *the rush to the energy transition as you're talking about a commodities transition. because everyone says, we're here today, this is where we want to get to, and they kind of do this with the two points, well we should be there already. No, the whole point of a transition is that there is this intervening period, right. If you haven't made the investments in these supply chains for energy to get you there, then when you hit these pinch points, you're going to get exactly what you are seeing now. its not just coal, its gas, LNG, it is carbon on the back of that to address that, but oil demand could also be impacted in a positive way if you need to run that. so in a sense, it highlights a little bit the kind of pitfalls of rushing ahead too quickly on some of these things without adequate cover*", and "... on the oil front, go back to the \$100 call, it could be \$100 Plus. Look at coal, if you said to people we think coal is going to be where it is today, they would have laughed at you, because that's not going to happen. well, yes, up until that point that you need that last ton, that marginal ton, and then when you need that, you're going to pay whatever price you need to get that to keep the lights on or to keep everything running. But the problem is you've structurally underinvested, right. and we've been talking about this for a few years. we're trying to flag that but it still seems the investment right now is askew, you're spending 50% more capex on renewables and clean energy than you are on oil and gas, and yet oil and gas accounts for 10 times as much of the energy mix as renewables. So it's a question how much are you willing to pay for all of this"

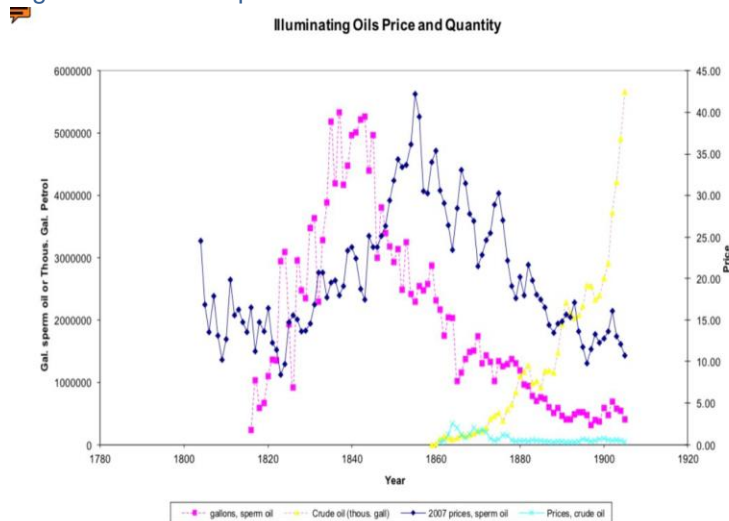
### Oil – Ark's Cathie Wood says oil prices will meet the same fate as whale oil

We wouldn't be mentioning Ark Invest CEO/CIO Cathie Wood's negative view on oil and oil prices if she hadn't end her negative view on oil with the comment "*the rise in oil prices this year is a function more of supply than demand. At the turn of the 20<sup>th</sup> century, whale oil faced the same fate and whale oil prices fluctuated dramatically. If @ARKInvest's research is correct, oil prices will suffer the same fate as whale oil prices.*" We wish she hadn't thrown in the whale oil in the follow up tweet, so we tweeted [\[LINK\]](#) "*Wasn't the decline in whale oil demand as energy because of the emergence of a more reliable, available cheaper energy source - fuel oils such as kerosene that came with the rapid emergence of US oil producing industry in 1860s? note full thread. #OOTT #EVs #PeakOilDemand.*" [Note we tweeted a typo as our original tweet had 1980s and not the corrected 1860s.] We think she was perfectly fine to say that whale oil prices did go down due to demand crashing, but what she didn't say is why did whale oil demand drop? She didn't mention that there was the emergence of an alternative supply of energy that was more reliable, available and cheaper – the emergence of fuel oil like kerosene driven by the start of the Pennsylvania oil rush in 1959. Thanks to one of our Twitter followers @roughlywrites who replied to our tweet with the below graph of Whale Sperm Oil vs crude. Our Supplemental Documents include the Cathie Wood tweets.

### Crude oil vs whale oil

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Figure 30: Whale Sperm Oil vs Crude Oil Prices



Note: gap in prices because only get about 5-10% kerosene from crude

Source: @roughlywrites

### Oil – Vortexa est 91.81 mmb at Oct 1, +18.16 mmb WoW vs original est Sept 24

Note that we are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 7:30am MT yesterday. Vortexa crude oil floating storage as of Oct 1 was estimated at 91.81 mmb, which is +4.36 mmb WoW from 87.45 mmb estimated at Sept 24. However, there was a big revision this week to the Sept 24 estimate. Yesterday morning, the Sept 24 was estimated at 87.45 mmb, but that is +13.8 mmb from the Sept 24 that was in the Bloomberg posted Vortexa data posted on Sept 25 3pm MT of 73.65 mmb. Last week's (Sept 26, 2021) Energy Tidbits included the mention of Typhoon Mindulle but, given its path was east of where tankers tend to hold, we wouldn't have expected this revision solely from Mindulle. There was also a revision to Sept 17, which was reported at 75.87 mmb that is +5.89 mmb from the Sept 17 estimate that was in the last Sept 25 3pm MT estimate of 69.98 mmb. Oct 1 of 91.81 mmb is also well above the recent June 25 trough of 80.04 mmb. Note this was revised up from prior June 25 estimate of 78.82 mmb. Oct 1 of 91.81 mmb is down 128.88 mmb from June 26, 2020 peak of 220.69 mmb. But last week's pre-revised estimate for Sept 24 were down 146.6 mmb vs the peak. Oct 1 of 91.81 mmb is almost double the comparable pre-Covid seasonal Sept 30, 2019 estimate of 48.16 mmb. Below is the Bloomberg graph of the Vortexa data back to Sept 30, 2019 as posted on the Bloomberg terminal at 7:30am MT yesterday.

### Vortexa floating storage

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Figure 31: Vortexa Floating Storage Oct 1, Posted on Bloomberg 7:30am MT Sat



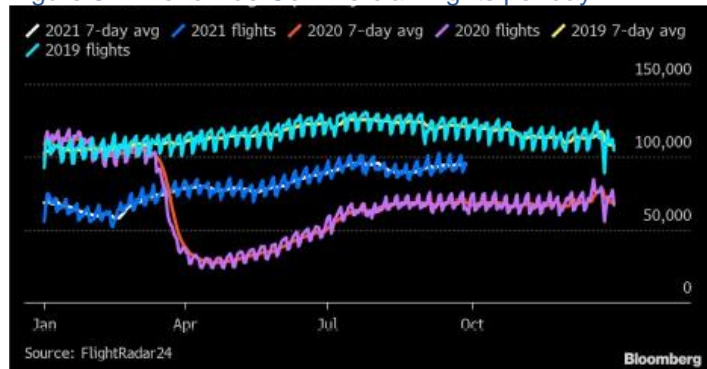
Source: Bloomberg, Vortexa

**Oil – Bloomberg Oil Demand Monitor, Road fuel nears pre-Covid levels**

We recommend reading the weekly Bloomberg terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. Congestion increased around the globe with London and Madrid posting the largest increases of +4300% and +490% respectively. What would normally be an hour-long commute in London would now take an additional 53 minutes. Tokyo, Los Angeles and Paris were all just shy of seeing their busiest days of the year. Toll data from Atlantia group for 6 nations across Europe and Latin America show that for the second time this year, all countries observed higher roadway volumes than the equivalent 2019 week; Chile saw the biggest increase of 84%. Gasoline and diesel demand continued its oscillation above and below 2019 levels around the world. The 7-day average for Sept 27 was +25,000 YoY from 202 and -26,000 from 2019 at 94,672 flights. Seat capacity remains down around the world with Mexico and China continuing to offer seats 2019 levels. The UK had the military on standby to assist in the current fuel crisis. The increase in demand is set to underpin demand increases in oil the article states, "If sustained, the gas rally will deliver a 0.45m b/d boost to oil demand this winter (October 2021 -March 2022), and residual fuel will be the main beneficiary." Gasoline demand in the US is -7.5% MoM and -4.8% YoY; demand in Spain was +4.7% relative to 2019. Jet fuel demand remains significantly down across the globe; India saw -41% in deliveries of jet fuel vs 2019. US refinery utilization continues to be down MoM as refineries undergo repairs from Hurricane Ida. Below is a graph depicting worldwide commercial flights. Our Supplemental Documents package include the Bloomberg Oil Demand Monitor.

**Bloomberg’s Oil Demand Monitor**

Figure 32: Worldwide Commercial Flights per day



Source: Bloomberg

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**Oil – Caixin PMI for Sept is neutral at 50.0 after last month 49.2.**

The China growth story was a key component for oil markets recovery in manufacturing in 2021. The recent uptick in COVID-19 cases, coupled with supply chain difficulties that caused the Caixin China General Manufacturing PMI data to edge down to 49.2 in August, has since increased to 50.0 in September with business conditions beginning to stabilise. This rating is still the second lowest in the last 17 months. We recommend reading the short release as opposed to just seeing the headlines as there is more color on China. The press release said, *“conditions in the manufacturing sector picked up in September from the previous month, though the improvement was limited. The Caixin China manufacturing PMI came in at 50, indicating the downward pressure on the economy was still high. On the one hand, the epidemic continued to impact demand, supply, and circulation in the manufacturing sector. The state of the epidemic overseas and the shortage of shipping capacity also dragged down total demand. Epidemic control measures have clearly impacted the logistics industry.”* Inflationary pressures impacting the price of inputs was noted as the measure for output pricing reaching its highest level in 3 months; high energy prices as well as other raw materials are noted as the main cause. Our Supplemental Documents package includes the Caixin release.

**Caixin PMI  
neutral in Sept**

**Oil – UK maybe short 100,000 truck/lorry drivers**

The shortage of gasoline/petrol at UK retail stations is continuing. Its an interesting crisis as it has been driven by the shortage of fuel delivery drivers in the UK as the key factor. The shortage of UK fuel truck drivers is part of the bigger picture shortage of truck/lorry drivers in total. A good backgrounder is from the UK Road Haul Association. Their June 23 letter to the government summarized the shortage of overall drivers [\[LINK\]](#). The RHA identified that there was a shortage of 60,000 drivers pre-pandemic, and that there is now a shortage of 100,000 drivers in the UK. The factors contributing to the shortage were identified in the letter, *“Covid - many drivers returned to their country of origin during extended periods of lockdown and restricted travel. The vast majority have not yet returned. EU exit - The uncertainty of Brexit and future rights to live and work in the UK forced many drivers to do the same. Again, the vast majority have not returned nor are they expected to. Retiring drivers - The average age of an HGV driver is 55, with less than 1% under the age of 25. Prolonged periods of inactivity have resulted in much of this aging workforce retiring early or finding employment in other, less demanding, sectors. However, Government must now recognise the repercussions of this and the other issues mentioned and urgently intervene to help us to resolve the resulting crisis.* Our Supplemental Documents package includes the RHA letter.

**UK truck driver  
shortage**

**Oil – Global transport heads warn supply chain delays are set to worsen.**

We were a little surprised that no one really highlighted the joint letter from the heads of the maritime, road and aviation industries that warns on the risk to the already stressed global supply chain. On Wednesday, the IRU, the world road transport organisation, IATA, the International Air Transport Association, ICS, the International Chamber of Shipping, and ITF, the International Transport Workers' Federation warned that the global supply chain *“delays look set to worsen ahead of Christmas and continue into 2022”* [\[LINK\]](#). These groups *“have come together make an urgent plea to the world's heads of government and the United Nations Agencies to remove restrictions hampering the free movement of transport workers, and guarantee and facilitate their free and safe movement. Our collective industries account for more than \$20 trillion of world trade annually, and represent 65 million global transport workers, and over 3.5 million road freight and airline companies, as well as more than 80% of the world merchant shipping fleet. Seafarers, air crew and drivers must be able to continue*

**Supply chains  
are set to  
worsen**

to do their jobs, and cross borders, to keep supply chains moving.” Our Supplemental Documents package includes the letter.

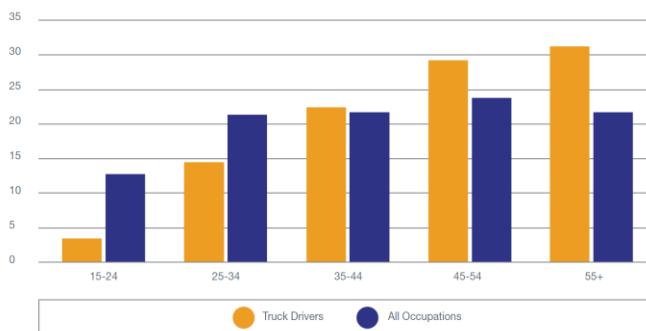
**Oil – The aging workforce in the old economy (ie. trucking) will be an increasing issue**

The joint letter from the transport heads is focused on trying to avoid worsening the global supply chain crisis. The group warned “It is of great concern that we are also seeing shortages of workers and expect more to leave our industries as a result of the poor treatment they have faced during the pandemic, putting the supply chain under greater threat.” And this group is not just land but also sea and air supply chain. But we were still a little surprised that there was no mention of what may be the major looming issue for trucking – an aging truck driver workforce. a major issue. This is not a new issue in North America. Our April 12, 2020 Energy Tidbits noted that it was easy to see that the truck driver shortage was only going to get worse during Covid.. There was already a retirement issue affecting the trucking industry before Covid. But this attrition of drivers issue should get a bigger boost than normal/expected because of the high percentage of older drivers. Older drivers are not going to be different than older people and see higher risk to getting Covid. And older drivers are the biggest percentage of truck drivers. It means that the retirement issue will get worse. Trucking HR Canada issued a March 2020 report “The Road Ahead: Addressing Canada’s Trucking and Logistics Industry Labour Shortages” [\[LINK\]](#) . It’s a good report to get an overview of the truck driver shortage problem And included the below graph that shows the ageing truck driver pool.

**Aging truck driver workforce**

Figure 33: Canada Truck Drivers By Age Group

Older-than-average truck drivers leading to an increase in retirements  
(share of employed workers by age group, per cent)



Source: Statistics Canada, CENSUS 2016 (Special request from Statistics Canada).

Source: Trucking HR Canada

**Oil & Natural Gas – Cyclone Shaheen causing some LNG/Oil/Products tanker delays**

Early yesterday morning, we tweeted [\[LINK\]](#) “Looks like #Shaheen is impacting tankers/ships. @accuweather est 69 mph. forecast to strengthen (assume to reach equivalent US hurricane cat 1 of 74 mph) before weakening at landfall in Oman, looking north of Oman oilfields. #OOTT Thx @VesselFinder.” Our tweet included the below EIA maps of Oman and UAE oilfields. As of our 7am MT news cut off this morning, it looks like Shaheen’s path hasn’t changed to much. It is impacting tankers loading and transit temporarily, but not expected to impact the Oman oilfields. Earlier this morning, Platts reported [\[LINK\]](#) “Oman’s oil and LNG production is unlikely to be disrupted by a cyclone heading for the Gulf country though it may temporarily affect loadings of both commodities and operations of some power distribution, Oil Minister Mohammed al-Rumhi told S&P Global Platts on Oct. 3. Register Now Loadings may have to be canceled for a few hours because of heavy winds, Rumhi said. “Cyclone

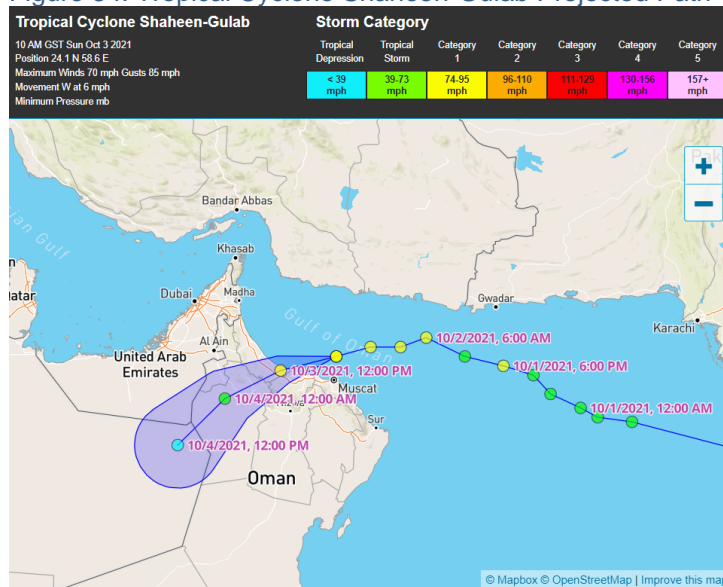
**Tanker delays from Shaheen**

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Shaheen is moving along the coastal area of the Sea of Oman towards the UAE and possibly Iran. Our oil fields are far from this line." He said he doesn't expect any impact on production of either crude or LNG." We note that this is the current projected path, hopefully the path doesn't shift much to the north because it would then include one of the most significant world oil terminals – Fujairah. The below EIA UAE maps shows Fujairah. Below is Wunderground's current posted Shaheen path projection.

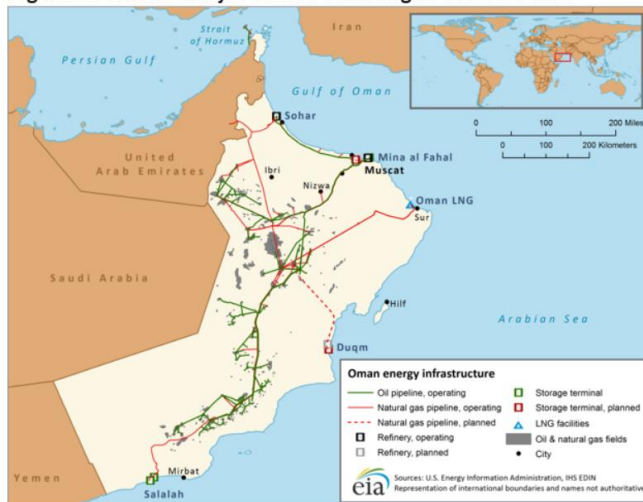
Figure 34: Tropical Cyclone Shaheen-Gulab Projected Path



Source: Wunderground

Figure 35: Oman oilfields

Figure 2. Oman's major oil and natural gas infrastructure

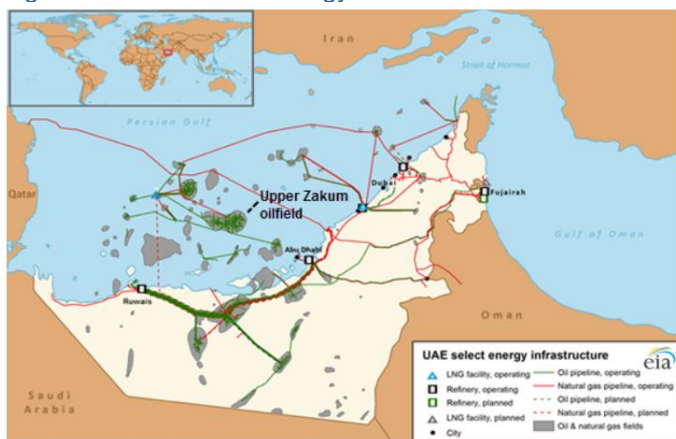


Source: U.S. Energy Information Administration, IHS Markit Midstream Database (via IHS EDIN)

Source: EIA

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Figure 36: UAE select energy infrastructure



Source: U.S. Energy Information Administration, IHS EDIN

Source: EIA

**Oil & Natural Gas – Q3 reporting will have huge cash flows, Q4 looking better**

**Huge Q3 oil and gas cash flows**

Q3 reporting for the producers starts near the end of October and the conference calls will have the analysts starting off with the “great quarter guys”. Q3 oil and natural gas prices are up huge YoY and very strong QoQ especially for natural gas. And it is also significant that Q4 prices are looking up QoQ for oil and then other very big increase for natural gas. Closing Sept 30 were Brent \$78.42, WTI \$75.03, WCS \$63.01, HH \$5.87, and AECO \$4.62. Below is our running table of quarterly oil and natural gas prices.

Figure 37: Oil and Natural Gas Prices

| Quarter | Brent   | WTI     | EdPar   | WCS     | HH     | AECO   |
|---------|---------|---------|---------|---------|--------|--------|
| Q1/18   | \$67.00 | \$62.86 | \$57.19 | \$37.11 | \$3.09 | \$2.06 |
| Q2/18   | \$74.41 | \$67.83 | \$60.78 | \$49.88 | \$2.84 | \$1.23 |
| Q3/18   | \$75.27 | \$69.69 | \$59.81 | \$42.32 | \$2.92 | \$1.25 |
| Q4/18   | \$68.18 | \$59.41 | \$36.53 | \$25.63 | \$3.78 | \$1.62 |
| Q1/19   | \$62.91 | \$54.49 | \$50.28 | \$43.79 | \$2.92 | \$2.55 |
| Q2/19   | \$68.58 | \$59.96 | \$54.41 | \$47.46 | \$2.55 | \$1.13 |
| Q3/19   | \$61.95 | \$56.48 | \$52.43 | \$43.91 | \$2.37 | \$1.00 |
| Q4/19   | \$62.51 | \$56.83 | \$50.61 | \$37.98 | \$2.36 | \$2.46 |
| Q1/20   | \$51.28 | \$46.73 | \$39.75 | \$28.55 | \$1.91 | \$2.04 |
| Q2/20   | \$31.14 | \$27.67 | \$21.84 | \$18.02 | \$1.70 | \$2.00 |
| Q3/20   | \$42.70 | \$40.87 | \$36.83 | \$31.13 | \$1.98 | \$2.26 |
| Q4/20   | \$44.47 | \$42.67 | \$37.92 | \$31.34 | \$2.47 | \$2.65 |
| Q1/21   | \$60.51 | \$57.75 | \$54.17 | \$45.83 | \$3.39 | \$3.13 |
| Q2/21   | \$68.44 | \$65.90 | \$61.94 | \$53.11 | \$2.89 | \$2.95 |
| Q3/21   | \$72.95 | \$70.57 | \$66.90 | \$57.65 | \$4.28 | \$3.41 |

Source: Bloomberg

**Oil & Natural Gas– Dallas Fed Survey, 97% have seen Q/Q increases to input costs**

**Dallas Fed quarterly energy Survey**

The Dallas Fed released their quarterly energy survey this week [\[LINK\]](#). The data for this survey was collected September 15-23 from a total of 143 firms, 95 E&P and 47 oilfield services. (i) The headlines were on the expansion in oil and gas activity and cost pressures building. (ii) Activity contracted slightly in Q3, the Dallas Fed wrote “*The business activity index – the survey’s broadest measure of conditions facing Eleventh District energy firms remained elevated but moved down from 53.0 in the second quarter to 44.3 in the third quarter.*” (iii) Six-month outlooks improved, with the index remaining positive but declining from 71.9 last quarter to 58.9. After two quarters of declining uncertainty, the uncertainty index moved up from -19.6 to 4.3, suggesting a slight rise in uncertainty this quarter. (iv) On

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average, respondents expect a WTI oil price of \$70 per barrel by year-end 2021; responses ranged from \$42 to \$90 per barrel. Survey respondents expect HH natural gas prices of \$4.74 MMBtu at year-end. For reference, WTI spot prices averaged \$72 per barrel during the survey collection period, and Henry Hub spot prices averaged \$5.22 per MMBtu. (v) One big red flag in the survey was the rising costs. The Dallas Fed wrote “*second quarter in a row, costs rose sharply. Among oilfield services firms, the index for input costs increased to 60.8, a record high and indicative of significant cost pressures. Only one of the 47 responding oilfield services firms reported lower input costs this quarter. Among E&P firms, the index for finding and development costs advanced from 28.3 in the second quarter to 33.0 in the third. Additionally, the index for lease operating expenses increased, from 23.4 to 29.4.*” (vi)

Another interesting survey result, which is consistent with what we have wrote about in past memos, is 51% of executives at oil and gas service firms have found it difficult to hire new workers, due to lack of qualified applicants (70%). Our Supplemental Documents package includes excerpts from the Dallas Fed survey.

### Energy Transition – TotalEnergies, challenge for wind/solar is getting timely approvals

We believe one of the many overlooked assumptions on the energy transition is that the pace of acceleration of wind and solar generation isn’t really held back by approval process. This was another of the direct insights from the Q&A portion of the TotalEnergies investor day was that getting approvals is a real problem for wind and solar. On Tuesday, we tweeted [LINK](#) “*NIMBY is why #EnergyTransition will take way longer. @PPouyanne stresses challenge to get approvals for assumed massive immediate ramp up in #Wind #Solar power. Its why #NatGas will be needed for power & be stronger thru 2020s & beyond. Lots in @TotalEnergies investor day. #OOTT.*” We weren’t kidding, there were many sector and commodity insights from the investor day. In the Q&A, mgmt was asked about overcoming local opposition to wind and solar projects in France. Pouyanne gave a lengthy answer and linked the answer to the solar and wind needing large amounts of land to produce energy. Later in the memo, we include the TotalEnergies graph on this point. Pouyanne’s answer noted the problem isn’t only in France, they see it in Germany, Italy and Spain. And he said “*The problem is not only in France. I think by the way you have issues with communities because it’s a question again of land use. In fact, you have competition for use, and you have people.*” And “*So I’m not surprised, and it’s why I was insisting that it’s a question of scarcity above surface for renewables. So that has to be taken into account. I read there was a study. It’s an interested study, which has been published in Italy by the Ambrosetti Foundation. We try to translate this. The target that the European Commission has assigned by 2030, 40% of renewable in our mix in terms of. they made a study how long could it take to get through all the administrative process to build such capacities? And is the answer in this study by Ambrosetti, it’s not 2030, but 2043 [ph] There is a message there to policymakers, I think to everybody. If, and that I think that’s very good this exercise. I mean this willingness of Europe to go for 55% by 2050 -- to 2030, sorry because it raised many issues. It puts the people in front of the reality. How do we do that? And if yes. If we want to reach 40% of renewable in our mix, we need to build massive renewable for the next 10 years. And we need to have the land, and we will need to have the administrative process going through. And that’s true that in our democracies, which is good, that makes raise questions. I think there is only way to think to that, which will oblige governments to plan properly like I think the French government begins to think to that.*” Our Supplemental Documents includes the full Pouyanne answer.

Wind/solar approval holdups

### Energy Transition – Rystad sees higher solar costs impacting demand

One of the other key reasons why the energy transition will cost more and take longer is that many of the long term forecasts, such as the US Dept of Energy, really haven’t reflected the

Rystad on increasing solar costs

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changing cost structure for wind and solar over the past year. Rather these forecasts look to be based on a continuing of declining solar and wind costs as seen thru 2019 and not really taking into account the increasing costs of 2021 and 2022. Our Sept 19, 2021 Energy Tidbits highlighted the DOE’s major 300+ pg report “Solar Futures Study” and how the DOE didn’t seem to address the fact 2021 and 2022 solar costs have broken the trend of declining solar costs. IN the DOE report, they say “This scenario assumes more aggressive cost-reduction projections than the Reference scenario for solar as well as other renewable and energy storage technologies”. And then the DOE use the below table for cost assumptions on solar and battery capital costs. These costs are going higher in 2021 and 2022 and not lower. They start with 2020 as a base and then just decrease from there. Our Sept 19 memo also noted the Bloomberg report noting the higher YoY solar costs in 2021 and that there would be even higher solar costs in 2022. Our Sept 19 comment the Rystad Energy Sept 10 report “Solar power’s supply chain crisis makes 1.5°C climate target a major challenge” [\[LINK\]](#). Rystad estimates overall solar costs are up in 12% so far in 2021 vs 2020. They don’t comment specifically on 2022 solar costs still going higher. But then they say “potentially limiting demand growth for the next few years”. Neither the Bloomberg report or Rystad blog note TotalEnergies concern on approval delays. We don’t think it take a genius to figure out the implications of costs going higher not lower, limiting demand growth, slower approvals. And then make it worse, the forecasts, like the DOE, don’t build these cost and timing realities into their forecast. Below is one of the key cost assumption tables from the DOE’s Solar Futures Study report. Our Supplemental Documents package includes the Rystad blog.

Figure 38: DOE’s Overnight Capital Cost Assumptions for Solar and Battery Technology

2-E: Solar and Battery Technology Cost Assumptions

Technology cost and performance assumptions are primarily based on the NREL ATB 2020 (NREL 2020). These tables summarize those assumptions for solar and battery technologies, and include projections used for the Breakthrough PV and battery case.

Table 2-E-1. Overnight Capital Costs (\$/kW)

|              |                  | 2020 | 2030 | 2040 | 2050 |
|--------------|------------------|------|------|------|------|
| ATB Moderate | Utility PV       | 1325 | 819  | 746  | 673  |
|              | Commercial PV    | 1701 | 1013 | 895  | 777  |
|              | Residential PV   | 2644 | 1125 | 991  | 858  |
|              | Battery – 4 hrs  | 1455 | 817  | 715  | 613  |
|              | CSP – TES 10 hrs | 7027 | 4878 | 4125 | 3903 |
|              | CSP – TES 14 hrs | 7887 | 5514 | 4636 | 4363 |
| ATB Advanced | Utility PV       | 1312 | 673  | 590  | 507  |
|              | Commercial PV    | 1679 | 777  | 675  | 572  |
|              | Residential PV   | 2620 | 858  | 730  | 602  |
|              | Battery – 4 hrs  | 1203 | 567  | 456  | 345  |
|              | CSP – TES 10 hrs | 7027 | 3551 | 2965 | 2640 |
|              | CSP – TES 14 hrs | 7887 | 3950 | 3295 | 2944 |
| Breakthrough | Utility PV       | 1296 | 507  | 447  | 387  |
|              | Commercial PV    | 1672 | 654  | 577  | 499  |
|              | Residential PV   | 2597 | 602  | 541  | 479  |
|              | Battery – 4 hrs  | 1224 | 400  | 300  | 200  |

Source: DOE Solar Futures Study

**Energy Transition – Is this the 2020s scramble for oil supply, US asks OPEC for help?**  
 On Wednesday, we couldn’t help tweeting [\[LINK\]](#) after seeing White House Press Secretary Psaki’s reply after being asked about \$80 oil and she replied “Well we are in - we continue to

**US keeps asking OPEC for help**

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*speaking to international partner including OPEC on the importance of competitive markets and setting prices and doing more to support the recovery. We're obviously monitoring, as you've already alluded to. And I would note that last month our NEC Director, Brian Deese, also sent a letter to FTC Chair Lina Kahn, asking the FTC to use all of its available tools to monitor the U.S. gasoline market and address any illegal conduct that might be contributing to price increases." And then on Thursday, she was asked if Jake Sullivan raised \$80 oil in his meeting with Saudi Arabia, and Psaki replied "Yes, so - I know someone asked about this the other day, and obviously the focus of his trip was on Yemen and working with the Saudis on Yemen and our Tim Lenderking was - joined him in those meetings, whose our Envoy to Yemen, to kind of figure out the path forward. He was - obviously the price of oil is of concern, we have been in touch with OPEC, and I believe it was going to be raised, but I haven't had a chance to get a readout beyond that. I can try to do that for you after the briefing." Her replies screamed out at us for what she didn't say would help solve \$80 oil – encourage US oil companies to get back to drilling and fracking. We tweeted "Is this the 2020s scramble for #Oil supply? @JoeBiden asks OPEC for help, not TX, ND, AB. so busy on got to go faster to #NetZero scenario, didn't run scenario for impact of squeezing capital to #Oil #NatGas supply & no longer a big Covid demand hit? #OOTT". The US shale/tight oil plays are what is called short cycle and very quick to bring on stream. Its strikes us as telling that the Biden administration won't even acknowledge there are things that can be done domestically to help what they see as a problem. And it has to be because increasing US oil supply would go against their priority to reduce emissions. Its why we tweeted that the Biden administration is so focused on going faster to Net Zero, they didn't look at what happens with the squeezing down on capital to the oil and gas sector? Maybe they never figured they would be here because oil demand would never get back to pre-Covid levels. Regardless, this is very likely a sign of the 2020s, when there is a problem, call on OPEC to help.*

### **Energy Transition – COP 26 is one month away starting on Nov 1**

Look for the Net Zero push to accelerate in October as it is now less than 1 month to the start of COP-26 in Glasgow on Nov 1. As expected, the reports and forecasts on the energy transition have really accelerated hitting the press over the past two weeks. We expect to see more views/reports in the next week or two. But now we can start to see some message shifting from the Net Zero drivers, who are now pushing countries to commit as much as possible at Glasgow. And we expect to see greater emphasis on reducing methane emissions as a theme that can get global support. Methane emissions are a major issue, but we expect to see this theme amplified to make it as one of the signature accomplishments of COP-26. It will be big month for climate change views.

**COP-26 starts  
Nov 1**

### **Energy Transition – TotalEnergies: energy will cost more under the energy transition**

We always say that the Q&A of conference calls is normally where there are the best energy insights as companies go off script. And even moreso this week in the TotalEnergies investor day as CEO Patrick Pouyanne seemed to give more direct answers than is normally seen in supermajor calls. A good example was his simple reminder to the world that energy is going to cost more under the energy transition and move to Net Zero. Pouyanne was asked "Are you concerned about the affordability of this transition for the consumer, even in the rich countries, especially as we need to rely on gas as a transition fuel?" Pouyanne replied "The question more fundamentally that you have asked for me is, I mean and you know that I'm trying to repeat it regularly in different conferences to, as a wake-up call to all the policymakers, but there is no, no miracle you know. We speak about a huge amount of investment. We speak about trillions and trillions of dollars. I don't see how people could think that we'll be able to invest all this trillion dollars to change fundamentally our energy system without an impact at the end of the customers. you know, even if we amortize these

**TotalEnergies,  
cost of energy is  
going higher**

*investments on 20 years, that's a lot of new investments, more, but what we do normally in the previous year. So if you invest more somewhere, it will have to be reflected in the cost. It's for the customers. So there is no reason not to -- I don't know why people don't want to accept it. That's, of course for governments, for policymakers, that's a major question.”* We understand the logic of the Net Zero drivers is that energy will cost less after accounting for less climate events and costs. But the Net Zero drivers should also understand the Pouyanne point that there are going to be trillions of dollars spent to fundamentally change the world's energy system and somehow, somewhere these costs have to flow thru to the cost of energy.

### **Energy Transition – JetBlue accelerating transition to sustainable aviation fuel**

On Wednesday, JetBlue announced [\[LINK\]](#) plans to transition to sustainable aviation fuel (SAF) with an offtake agreement with SG Preston. Jet Blues initial pace target was to convert 10% of total fuel usage to SAF by 2030. With the new plane they will reach 8% SAF usage by 2023. This will double Jet Blues previous SAF commitment that was first announced in 2016. The agreement will begin in 2023, delivering 670 gallons of blended SAF to JetBlue over a 10-year period. This will avert nearly 1.5 mm tons of CO2 emissions and is expected to see JetBlue purchase \$1 bn in SAF over the agreements term. JetBlue CEO commented *“at JetBlue, we're heavily investing in SAF because we see it as our most promising means of rapidly and directly reducing aircraft emissions in the near-term. With this expanded agreement with SG Preston, nearly eight percent of JetBlue's total fuel use will be SAF, putting us well ahead of pace in reaching our goal of 10 percent SAF usage by 2030.”* This revised deal marks JetBlue's third agreement for SAF with its flights being fueled with SAF at Los Angeles International Airport and San Fransisco International Airport. Our Supplemental Documents package includes the press release.

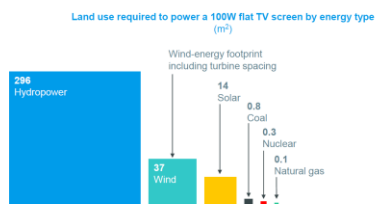
**JetBlue to increase SAF**

### **TotalEnergies reminds of the land competition/shortage for food vs SAF**

We believe one of the many overlooked assumptions on the energy transition is that no one seems to be worried that the competition for land for food production will impact feedstock for biofuels. This was another of the direct insights from the Q&A portion of the TotalEnergies investor day was on the big challenge for biofuels like sustainable aviation fuel (SAF) – there is limited amount of land for growth in biofuels. After seeing the JetBlue release, we tweeted [\[LINK\]](#) *“#SAF (Sustainable Aviation Fuel, not our SAF Group) news from @JetBlue. Yes, SAF reduces aviation emissions, but note @PPouyanne warning on 1st Generation #Biofuels supply “which is quite limited, in fact on the planet”. #EnergyTransition will take longer than expected #OOTT.”* Mgmt was asked *“And I was wondering, how confident you feel that the raw material will be there to fuel such a substantial growth there without really competing on the other side with the role of nature-based solutions and also without the key role of agriculture to supply food for a growing global population.”* CEO Pouyanne gave a long answer, which included *“So in my view, there will be, of course I would say the biofuels are immediately available. So we can begin to make, for example, sustainable aviation fuels with biofuels. I have a first generation or even what I call some wasted animal fats or used cook oil, but there will be a limit to that. Obviously in this type of feedstock, which is quite limited, in fact, on the planet. So and I agree with you that the competition with agriculture and -- will be also limited to the first generation biofuels.”* Separately, they referred to their below chart on one of the challenges for solar and wind is that they need a huge amount of land to produce the same energy as other sources. Our Supplemental Documents package includes the full longer answer.

Figure 39: Land use of relative energy sources

The footprint is also to be considered



Acceptability issues of solar & wind due to their impact on territories and landscape must be overcome

Source: TotalEnergies

**Energy Transition – Potential EV game changer, ABB’s world’s fastest EV charger**

Looks like some potential game changing EV news on rapid charging for EVs at public charging stations. On Thursday, ABB announced [\[LINK\]](#), the release of their Terra 360 all-in-one EV charger. The new charger is expected to provide the fastest charging experience available on the market. We tweeted [\[LINK\]](#), “potential game changer for #EVs? [@LRI](#)/[@ABB\\_EVCharging](#)’s new Terra 360 can deliver 100 km range in <3 min, “designed explicitly” to charge up to 4 vehicles at once. no cost disclosed, but would be as fast as filling up an ICE. #OOTT.” Customers can expect a full charge after just 15 mins, meeting the needs of a variety of EV users. It is ideal for refueling stations, urban charging stations and larger fleet applications. ABB also discussed its intention to switch its fleet of almost 10,000 vehicles to non emitting, in accordance with the Paris conference goals. ABB commented, “with governments around the world writing public policy that favors electric vehicles and charging networks to combat climate change, the demand for EV charging infrastructure, especially charging stations that are fast, convenient and easy to operate is higher than ever. The Terra 360, with charging options that fit a variety of needs, is the key to fulfilling that demand and accelerating e-mobility adoption globally.” Our Supplemental Documents package includes the ABB release.

Potential EV charging game changer

**Twitter – Look for our first comments on energy items on Twitter every day**

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 20 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 on Twitter

**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

**Misc Facts and Figures.**

During our weekly review of items for Energy Tidbits, we come across a number of miscellaneous facts and figures that are more general in nature and often comment on sports.

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### **Famous Cdn oilman, Earl Joudrie, was ahead of his time in company naming**

I couldn't help think of the famous Canadian oilman of the 70s & 80s, Earl Joudrie when a tweet popped up on Tuesday from Edmonton based EPCOR utilities group Encor by EPCOR. The tweet [\[LINK\]](#) was on the Encore Fall Energy Checklist. I was very fortunate to work directly for Earl from March 21, 1985 thru early 1988 and, no doubt without him giving me a career break, I would never had got my subsequent opportunities in the oil patch working for my next boss and great mentor, Daryl Birnie. But when Earl took over as CEO of then Dome Canada, he instituted a rebranding. I remember working with him and some outside consultants and how we wanted a forward looking energy name and ultimately came up with ENCOR Energy Corp. Although I recall getting one of his looks (the look when he was basically reminding me to keep quiet) when we were in the final consultant meetings and the consultant was saying ENCOR represents energy corporation. My immediate smartass response was to say why effectively name the company Energy corporation Energy corporation and if that is what they were doing, why not call it ENCOR<sup>2</sup>. Earl was ahead of his time, but when I saw the Encor, I had to remember getting "The Look" from him.

### **Big final day in MLB American League wildcard race**

Its going to be a day of scoreboard watching in today's closing regular season day in the MLB American League wildcard race. There are 4 teams (Blue Jays, Red Sox, Yankees, and Mariners) all still with a chance. And the beauty of closing day is that all the games start at approximately the same time, just after 3pm eastern. The Red Sox and Yankees are tied, both 1 game ahead of the Blue Jays and Mariners in the fight for the two wildcard spots. Both Red Sox and Yankees win and they are in. But losses by one or both open up opportunity for the Blue Jays and Mariners to a range of outcomes including the potential for two tiebreaker games.

### **Is air cargo competition the reason for US postal service increased mail times?**

When was the last time you wrote a letter or mailed something long distance? Postcards went the way of the dodo bird with people texting/emailing pictures from trips. But long distance mail in the US will get even less support with the new US Postal Service service standard changes announced Thursday [\[LINK\]](#). The USPS said "*The Postal Service will increase time-in-transit standards by 1 or 2 days for certain mail that is traveling longer distances.*" This puts the longer distance delivery standard up to 5 days. The USPS said "*By doing so, the Postal Service can entrust its ground network to deliver more First-Class Mail, which will lead to greater consistency, reliability, and efficiency that benefits its customers. The service standard changes are part of our balanced and comprehensive Delivering for America Strategic Plan and will improve service reliability and predictability for customers and enhance the efficiency of the Postal Service network. The service standard changes that we have determined to implement are a necessary step towards achieving our goal of consistently meeting 95 percent service performance.*" The USPS didn't say it, but we have to believe this was due to the increasing air cargo space competition as the USPS does not own planes and has no control on the air capacity availability.

### **Golden Tate seems to say his former OC, Jason Garrett, is "All hat, no cattle"**

I normally try to catch 30 min or so of NFL Network's Good Morning Football before flipping back to BNN Bloomberg for the start of Commodities (shout out to BNN's Andrew Bell). And can't help but note former NY Giants wide receiver Golden Tate's



comments on the NY Giants, in particular his prior offensive coordinator Jason Garrett. Given Garrett is the former head coach of the Cowboys, Tate's comments made me think of the Texas expression "all hat, no cattle". Regarding Garrett, Tate said "*Look, Jason has amazing stories. Great storyteller, but that's not winning games, or scoring points.*" When I hear that, it makes me realize how fortunate I was to have been part of some great success stories where the leaders are great storyteller but deliver the goods. I firmly believe the best companies are led by great leaders.

### **ESPN's Stephen A. Smith is like other #1 CEOs in industry**

It would be hard for anyone who follows sports to not know ESPN's Stephen A. Smith and how he has had the #1 rated sports talk show for a long long time. There was a great SI Jimmy Traina report on and link to his 70 min YouTube interview. [\[LINK\]](#). Sports fans will know of the recent changes to Smith's First Take show and how he got his former co-host Max Kellerman to be removed. Smith makes no bones about it, he asked for the change even though they were still #1 because he saw they were slipping. The data (ratings) showed it. So he could have decided to do nothing, retain #1 but slipping. But instead of letting that become a trend so that the damage is significant and others are catching up, he made a big change to make sure they didn't lose #1 status. It reminds people don't stay #1, they know they have to make tough choices, make changes, advance their value add to their audience/customers and, most of all, not let negative trends emerge that allow others to close the gap. Its worth a listen from the 17:50 min to 24:30 min mark.