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Energy Tidbits

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Produced by: Dan Tsubouchi

Will Biden Push For His Moon Shot JCPOA Deal Before Wildcard Raisi Takes Over As Iran President in August?

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. Hard to see Biden risking his moon shot JCPOA deal until the wildcard Raisi administration takes over in Aug. (Click Here)

2. Trudeau's refusal to acknowledge the oil sands pathway to Net Zero must signal negative policy changes to come. (Click Here)

3. Petronet forecasts India LNG imports to increase by ~13 bcf/d to 2030. (Click Here)

4. Equinor shares had a bad week following its capital markets day that included a lowering of expected base returns from offshore wind. (Click Here)

5. Shell reminds that need "*effective regulations and financial incentives"* for "*economic impetus*" to accelerate energy transition ie. energy will cost more. (Click Here)

6. Happy Father's Day. We wouldn't be where we are without having great Dads and Moms.

7. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.

8. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

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Table of Contents

Natural Gas – Natural gas injection of 16 bcf, storage now -453 bcf YoY deficit 6
Figure 1: US Natural Gas Storage 6
Natural Gas – Still looking for warmer than normal July/Aug/Sept 6
Figure 2: NOAA JAS Temperature Probability Forecast vs JAS 2020 6
Natural Gas – EIA, US shale/tight natural gas shows marginal increase M/J/J 7
Figure 3: Major Shale/Tight Play's Natural Gas Production 7
Figure 4: MoM Change In Major Shale/Tight Natural Gas Production 7
Natural Gas – Part 3 of RBN's blog on potential US/Can LNG projects 7
Natural Gas – Galp reinforces Exxon Mozambique LNG is delayed 8
Natural Gas – Petronet sees India LNG imports +13 bcf/d to 2030 to meet gas targets 8
Figure 5: India's Projected Natural Gas Consumption @15% Of Energy Mix (bcf/d) 10
Natural Gas – Japan LNG Imports in May 7.67 bcf/d, +8.1% YoY 10
Natural Gas – Slightly cooler July for Japan.... 11
Figure 8: JMA Temperature Probability Forecast for June 19 – June 18.... 11
Natural Gas – LNG flows to NW Europe at ~5.6 bcf/d in May 12
Figure 9: Net LNG Flows to NW Europe 12
Natural Gas – Europe storage 43.4% full vs 5 year average of 57.70% 12
Figure 10: Europe Gas Storage Level 13
Oil – US oil +8 WoW at 373 oil rigs 13
Figure 11: Baker Hughes Total US Oil Rigs 13
Oil – Frac spreads +5 to 235 for week ending June 18.... 13
Figure 12 Active Frac Spreads for Week Ending June 18, 2021 14
Oil – Total Cdn rigs +24 to 117 total rigs and up 96 YoY 14
Figure 13: Baker Hughes Total Canadian Oil Rigs 14
US oil production +0.2 mmb/d WoW 14
Oil – US weekly oil production +0.2 mmb/d to 11.2 mmb/d 14
Figure 14: EIA's Estimated Weekly US Oil Production 15
Oil – EIA DPR continues to estimate relatively flat shale/tight oil production.... 16
Figure 17: EIA - Major Shale/Tight Plays Oil Production.... 16
Figure 18: MoM Change – Major Shale/Tight Oil Production.... 17
Oil – EIA DUC's worked down by 247 in April.... 17

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Figure 19: EIA - Estimated Drilled UnCompleted Wells ... 17
Oil – Looks like high prices continuing to bring back North Dakota shut in wells ... 17
Figure 20: North Dakota Oil Production By Month ... 18
Figure 21: North Dakota Gas-Oil Ratio ... 19
Oil – North Dakota crude by rail up MoM in April to ~209,000 b/d ... 19
Figure 22: Estimated North Dakota Rail Export Volumes ... 20
Oil – Biden’s ban on federal oil and gas leases blocked by federal judge ... 20
Oil – BloombergNEF tracks 42 producers, hedging losses since Jan reach >$11.0bn ... 20
Figure 23: Estimated monthly profit (loss) on oil hedges ... 21
Oil – Makes sense why US oil growth is only modest in 2021 but more in 2022 ... 21
Oil – Will US shale growth in mid term be driven by global oil trading firms ... 22
Oil – Trudeau’s G7 comments have to signal more hits to Cdn oil, especially oil sands ... 22
Oil – Slowly removing oil sands facilities from Covid outbreaks list ... 23
Figure 24: Oil Sands Facilities With Covid Outbreaks at June 1, 7, 9, and 14 ... 23
Oil – Refinery inputs +0.412 mmb/d YoY to 16.337 mmb/d, back to pre-pandemic levels ... 23
Figure 25: US Refinery Crude Oil Inputs (thousands b/d) ... 24
Figure 26: US Motor Gasoline Supplied (mmb/d) ... 24
Oil – Exxon’s lockout at Beaumont refinery likely not ending soon ... 24
Oil – US “net” oil imports down 0.845 mmb/d to 2.862 mmb/d ... 25
Figure 27: US Weekly Preliminary Oil Imports By Major Countries ... 25
Oil – Norway oil production of 1.654 mmb/d, 3.96% higher than forecast ... 25
Figure 28: Historical and expected production in Norway, 1970-2025 ... 25
Oil – Lundin plans to sell all its share of Johan Sverdrup as certified carbon neutral ... 26
Oil – Brazil plan to add 13 FPSOs to increase production starting in 2022 ... 26
Oil – Angola reduces oil production forecast below June/July quota ... 27
Oil – Saudi oil stocks up small in Apr, moving into peak oil for electricity season ... 27
Figure 29: MoM Saudi Inventories, Production, Direct Use, Refinery Intake & Exports ... 28
Figure 30: Saudi Arabia Direct Use of Crude Oil For Electric Generation ... 28
Figure 31: Saudi Arabia Crude Oil Inventories (million barrels) ... 28
Figure 32: Riyadh Temperature Recaps for May and June ... 28
Oil – Saudi Aramco closes $12.4b sale of 49% of its oil pipelines infrastructure ... 29
Figure 33: Saudi Arabia Net Foreign Assets ... 30
Oil – Saudi Arabia GDP down 3.0% in Q1 ... 30

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Oil – Will Biden's desire for a moon shot get a JCPOA deal done in July? 30
Oil – Kpler says no oil supercycle now, we think maybe post 2022 30
Oil – Star Fuels (Dubai) warns on short term caution to oil, look at 3-2-1 crack spread 31
Figure 34: 3-2-1 crack spread 31
Oil – Vortexa floating storage -2.2% WoW, down 49.8% YoY 31
Figure 35: Vortexa Global Floating Storage Level (1 yr) 32
Oil – Bloomberg Oil Demand Monitor, Air travel finally on recovery path 32
Figure 36: Worldwide commercial flights per day 32
Oil – Bloomberg NEF Global Aviation, Jet fuel demand recovery still a long way to go 33
Oil & Natural Gas – Colorado to strengthen "financial assurance" regs for O&G operators 33
Oil & Natural Gas – Putin reminds Northern Passage is Russia's 34
Figure 37: Suez Canal vs. Northern Sea Route 35
Energy Transition – Shell reminds energy will cost more under energy transition .... 35\
Energy Transition – Reminder Liberals don't back off messaging even if no one agrees 36
Energy Transition – Are Liberals setting up to strand thermal coal assets? 37
Energy Transition – Equinor lowers expected base returns on offshore wind 38
Energy Transition – Audi move to renewables for plants, will buy carbon credits 38
Energy Transition – Honda only selling EVs by 2040, discontinues hydrogen Clarity 39
Energy Transition – BP acquires 3 more solar portfolio acquisitions in the last 6 mths 39
Energy Transition – ADB calls for urgent action on climate change 40
Energy Transition – Michelin WISAMO can improve ship's fuel efficiency by up to 20% 41
Figure 39: Michelin's WISAMO 41
Energy Transition – Texans are surprised their thermostats were turned up remotely 41
Capital Markets – Cdns buy US shares, foreign purchases of Cdn shares plummet 42
Figure 40: Canada's international transactions in securities (April) 42
Capital Markets – IFIC: Mutual funds and ETF assets +3.0% in May 42
Capital Markets – Dennis Gartman's Rules of Trading are good to have on your desk 42
Demographics – Saudi Arabia still has lots of young men 43
Figure 41: Saudi Arabia Age Distribution (mid-year 2020) 43
Demographics – China tries to stem aging population 43
Figure 42: China's births (in millions) 44
Twitter – Look for our first comments on energy items on Twitter every day 44
LinkedIn – Look for quick energy items from me on LinkedIn 44

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Misc Facts and Figures........ 44

Canadian Mackenzie Hughes tied for 1st going into the final round at US Open 45

International Sushi Day was Friday 45

Cristiano's moving Coke's product placement leads to $4b stock value loss 45

Figure 43: Cristiano Ronaldo on Jun 15, Joe Greene in 1979 Super Bowl commercial 45

Oil featured in Greenpeace parachutist crash at Germany/France EURO match 46

Figure 44: Greenpeace protests Germany/France EURO 2020 June 15 46

Jimmy Kimmel's asking how people are enjoying watching the Tokyo Olympics 46

Peyton Manning says Eli's kids won't be going to an Ivy League school........ 46

Archer debuted its first eVTOL Aircraft........ 46

Big Alberta floods were 8 years ago........ 47

It's the time of year for the 2021 wildlife newborns 47

Figure 45: Calgary Mama Deer With Two Fawns........ 47

The Disclaimer: Energy Tidbits is intended to provide general information only and is written for an institutional or sophisticated investor audience. It is not a recommendation of, or solicitation for the purchase of securities, an offer of securities, or intended as investment research or advice. The information presented, while obtained from sources we believe reliable as of the publishing date, is not guaranteed against errors or omissions and no representation or warranty, express or implied, is made as to their accuracy, completeness or correctness. This publication is proprietary and intended for the sole use of direct recipients from Dan Tsubouchi and SAF Group. Energy Tidbits are not to be copied, transmitted, or forwarded without the prior written permission Dan Tsubouchi and SAF Group. **Please advise if you have received Energy Tidbits from a source other than Dan Tsubouchi and SAF Group.**

Natural Gas – Natural gas injection of 16 bcf, storage now -453 bcf YoY deficit

YoY storage at -453 bcf YoY deficit

The EIA reported a 16 bcf injection (vs 71 bcf injection expectations) for the June 11 week, which was well below the 5-yr average injection of 87 bcf, and well below last year's injection of 85 bcf. Storage is 2.427 tcf as of June 11, increasing the YoY deficit to 453 bcf from 383 bcf last week and storage is now 71 bcf below the 5 year average vs 55 bcf below last week. The significant YoY deficit along with the forecasted hot summer will help support natural gas prices during the injection season. Below is the EIA's storage table from its Weekly Natural Gas Storage Report. [LINK]

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons: Year ago (06/11/20)		Historical Comparisons: 5-year average (2016-20)	
Region	06/11/21	06/04/21	net change	implied flow	Bcf	% change	Bcf	% change
East	461	445	16	16	583	-20.9	503	-8.3
Midwest	570	547	23	23	684	-16.7	581	-1.9
Mountain	165	160	5	5	155	6.5	153	7.8
Pacific	236 C	276	-40	11 C	289	-18.3	270	-12.6
South Central	995	983	12	12	1,170	-15.0	1,046	-4.9
Salt	299	302	-3	-3	358	-16.5	317	-5.7
Nonsalt	696	681	15	15	812	-14.3	729	-4.5
Total	**2,427 C**	**2,411**	**16**	**67 C**	**2,880**	**-15.7**	**2,553**	**-4.9**

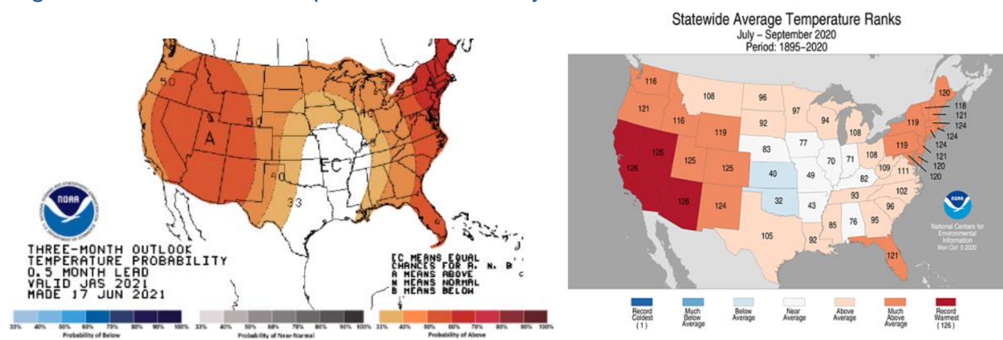
Source: EIA

Natural Gas – Still looking for warmer than normal July/Aug/Sept

NOAA forecasts a hot summer

We continue to see weather forecasts supportive for strong weather driven natural gas demand and support for continued strong HH prices. Note that we consider HH$3 as strong as they provide excellent returns to US gas plays. On Thurs, NOAA released its monthly update to its seasonal temperature forecasts [LINK]. NOAA is calling for above average temperatures in JJA continuing into warm temps in fall through SON. The summer temps are expected to hot but the YoY comp is to a very very hot summer. NOAA ranked JAS 2020 as the 7th hottest in the last 126 years, but when you look at the maps, you can actually envision a base that natural gas draw could be as strong this summer. Its early, but the long range winter forecasts for OND are for warmer than normal winter, which would be a negative to natural gas. Below are the new NOAA temperature probability maps for June/July/Aug and for Sep/Oct/Nov.

Figure 2: NOAA JAS Temperature Probability Forecast vs JAS 2020



Source: NOAA

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Natural Gas – EIA, US shale/tight natural gas shows marginal increase M/J/J

Shale/tight gas up thru July

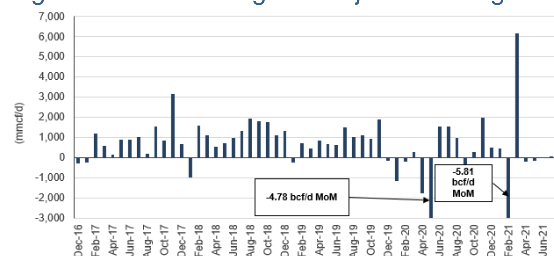
On Monday, the EIA issued its Drilling Productivity Report June 2021 [LINK], which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case June) and the next month (in this case July). (i) The EIA forecasts July at 84.301 bcf/d which is +0.050 bcf/d MoM (would have been +0.732 bcf/d MoM if not for the +0.682 bcf/d revision to June) and down 2.583 bcf/d from the Nov/19 peak of 86.884 bcf/d. Recall last month something seemed off between natural gas and oil production expectations with the EIA showing MoM growth in oil but a MoM decline in gas for May/June, this was remedied in this forecast. (ii) There was an even split between MoM increases and decreases this month, with Haynesville (+0.137 bcf/d MoM) and Permian (+0.066 bcf/d MoM) showing the largest increases and the largest declines coming from Anadarko (-0.062 bcf/d MoM) and Bakken (-0.051 bcf/d MoM). (iv) All basins are now up YoY, except for Anadarko, Eagle Ford and Niobrara, with the most notable YoY increases being Appalachia +0.713 bcf/d YoY, Haynesville +1.682 bcf/d YoY and Permian +0.743 bcf/d YoY. Total US shale/tight natural gas production is +2.189 bcf/d YoY for July. (v) Remember US shale/tight gas is ~90% of total US natural gas production. So whatever the trends are for shale/tight gas are the trends for US natural gas in total. Below is our running table showing the EIA DPR data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes the DPR.

Figure 3: Major Shale/Tight Play's Natural Gas Production

							2021								
mmcf/d	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	July YoY	July less June
Anadarko	6,253	6,022	6,293	6,272	6,627	6,598	6,411	5,257	6,163	6,082	5,992	5,919	5,857	-395	-62
Appalachia	33,891	34,383	33,430	33,762	34,829	35,653	35,587	34,894	34,823	34,685	34,619	34,586	34,604	713	18
Bakken	2,350	2,679	2,847	2,919	2,919	2,918	2,888	2,747	2,916	2,851	2,787	2,732	2,681	331	-51
Eagle Ford	5,890	6,004	5,901	5,761	5,725	5,634	5,729	5,036	5,723	5,660	5,610	5,589	5,570	-320	-19
Haynesville	11,397	11,373	11,539	11,595	12,099	12,376	12,488	11,302	12,564	12,699	12,826	12,942	13,079	1,682	137
Niobrara	5,408	5,478	5,471	5,360	5,385	5,277	5,211	5,104	5,014	4,967	4,922	4,882	4,843	-565	-39
Permian	16,924	17,159	17,181	17,248	17,285	16,902	17,510	14,164	17,461	17,499	17,543	17,602	17,668	743	66
Total	82,112	83,097	82,664	82,918	84,868	85,358	85,824	78,503	84,664	84,444	84,300	84,252	84,301	2,189	50

Source: EIA, SAF

Figure 4: MoM Change In Major Shale/Tight Natural Gas Production



Source: EIA, SAF

Natural Gas – Part 3 of RBN's blog on potential US/Can LNG projects

RBN's US CAN LNG series

We are big fans of RBN for their blogs, which drill down on a wide range of key oil and gas items. Our May 30, 2021 Energy Tidbits, we first highlighted RBN's May 27 blog [LINK] which provided a good overview of the remaining LNG projects that hadn't been abandoned and ranked them by likelihood of reaching FID. RBN had the overall view that *"the pandemic may have forced a culling of the proposed projects, but those near the top now have a clearer path ahead. In fact, several projects could realistically achieve FID in the next few years."* On June 3, RBN posted a Part 2 [LINK] to its May 27 blog. RBN reviewed the landscape of potential US and Canada LNG projects, greenfield and brownfield, and grouped them into tiers of probable, tier 1, and tier 2. And that means the rest are in others or not on their list of probable to go FID. We were not in total agreement with RBN's list as LNG

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Canada Phase 2 did not make their probable category, tier 1 or 2. We noted our rationale for the LNG Canada view in our April 28, 2021 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 are much more bullish on LNG Canada Phase 2. It all started to make sense when RBN posted its Part 3 of the blog on Monday [LINK], which basically was a recap of their view of the top 8 projects. It is important to note a key RBN sentence *"All eight projects, along with Sempra's recently green-lighted Energía Costa Azul (ECA) LNG, have something in common: just about all of them have had to adapt their strategy to better compete for commercial commitments or SPAs with ever-pickier offtaker".* We certainly agree with the ever-pickier off taker comment and explains that RBN didn't look at LNG projects as part of a LNG supply portfolio and this is also likely why LNG Canada Phase 2 is not mentioned at all as a possible FID. Our Supplemental Documents package includes the RBN blog post.

Natural Gas – Galp reinforces Exxon Mozambique LNG is delayed

Exxon Mozambique LNG delay

We are much more positive on LNG markets in the mid 2020s than most because of the developments in Mozambique LNG as outlined in our 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. And specifically that 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. This week, Galp (one of Exxon's partners in Rozuma) confirmed the delay issues at Rozuma that fit the picture in our April 27 blog. We tweeted [LINK] on the Reuters report "*Exclusive: Galp says it won't invest in Rovuma until Mozambique ensures security*". [LINK] Reuters reported that Galp said they won't invest in Exxon's Rozuma LNG project until the government ensures security, that this may take a while, they won't be considering the project until after Total has reliably resumed work on its Phase 1, taken the capex out of their new capex plans thru 2025 and will have to take out projects in their capex plan if Rozuma does come back to work. Note that Galp's new capex plan puts Rozuma in the bucket of projects it calls "Further high-potential optionality: exploring 2025+ opportunities". Reuters also reported Galp said first LNG was expected by 2025. Our April 27 blog noted that the original expectation was Exxon Rozuma Phase 1 of 2.0 bcf/d was expected to FID in 2019 with first gas before 2025. But FID is now not expected until 2022 at the earliest, which puts the gas back to at least 2027. The Galp comments are in line with our April 28 blog that Total's delay for its 1.7 bcf/d Phase 1 backs up Exxon's projectd. Its why we put in our Apr 28 blog that there Total's force majeure actually backs up 5.0 bcf/d that was expected to start in, most part by 2025. Total's Phase 1 and Exxon's Rozuma Phase 1 would have been 3.7 bcf/d by 2025. Our Supplemental Documents package includes the Reuters Galp report, the slide from Galp's June 2 capital markets day, and our Apr 27 7-pg blog.

Natural Gas – Petronet sees India LNG imports +13 bcf/d to 2030 to meet gas targets

India LNG imports +13 bcf/d to 2030

There was an even better reminder on Friday from India on how their plan to increase natural gas to 15% of its energy mix will be a major catalyst to LNG markets in the 2020s. Recently our June 6, 2021 Energy Tidbits noted the June 4 tweet from India's Energy Minister Dharmendra Pradhan [LINK] "*We are rapidly deploying natural gas in our energy mix with the*

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aim to increase the share of natural gas from the current 6% to 15% by 2030. One Nation, One Gas Grid is being implemented to remove regional imbalances in access to natural gas. #IndiasGreenFuture." Pradhan didn't give a forecast of what this meant for increased bcf/d of natural gas and LNG imports. But this week Petronet CEO AK Singh gave a specific forecast. Reuters report "*LNG's share of Indian gas demand to rise to 70% by 2030: Petronet CEO"* [LINK] included Petronet's forecast if India is to hit its target for natural gas to be 15% of energy mix by 2030. Singh forecasts India's natural gas consumption would increase from current 5.5 bcf/d to 22.6 bcf/d in 2030. And LNG shares would increase from 50% to 70% of natural gas consumption ie. ~3 bcf/d to 15.8 bcf/d in 2030. Singh did not specifically note his assumption for India's natural gas production, but we can back into the assumption that India natural gas production grows from ~3 bcf/d to 6.8 bcf/d. Our Supplemental Documents package includes the Reuters report.

Petronet's natural gas demand forecast is in line with our Oct 2019 forecast

It was good to finally see India come out with a specific forecast for 2030 natural gas consumption and LNG imports if India is to get natural gas to 15% of its energy mix in 2030. Petronet's Singh forecasts India natural gas consumption to increase from 5.5 bcf/d to 22.6 bcf/d in 2030. This forecast is pretty close to our forecast in our Oct 23, 2019 blog "*Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030*". Here is part of what we wrote in Oct 2019. "*It's taken a year longer than we expected, but we are finally getting visibility that India is taking significant steps towards India's goal to have natural gas be 15% of its energy mix by 2030. On Wednesday, we posted a SAF blog [LINK] "Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030". The blog noted comments from earlier on Oct, when India Oil Minister Dharmendra Pradhan said that there are $60 billion of natural gas infrastructure and LNG import terminals that are "under execution". He said "I am not talking about potential investment. This number relates to the project that are under execution". In the blog, we said "Natural gas consumption in India is only now back to 2011 levels at 5.6 bcf/d and represents only 6.2% of its energy mix. If India hits its 15% target of its energy mix by 2030, it would add natural gas demand, on average, of >1.5 bcf/d per year. At the same time India's domestic natural gas production peaked in 2010 at 4.6 bcf/d, but has been flat from 2014 thru 2018 at ~2.7 bcf/d, which means the big winner will be LNG. The most important factor driving this expectation for natural gas consumption growth is likely price. Asian LNG landed prices are down about 50% YoY and, more significantly, the expectation is for future Asian LNG prices to be at lower levels than prior cycles. India, by itself, may not be a LNG global game changer, but it is another positive support for why we believe LNG markets will rebalance sooner than expected ie. in 2022/2023". We projected how much India's natural gas consumption would increase if it can hit its target of 15% of total energy mix in 2030. BP data shows India's natural gas consumption in 2018 was 5.6 bcf/d and natural gas was only 6.2% of total energy mix. BP also estimates India's total energy consumption grew at a rate of 5.2% per year for the 2007 – 2017 period, but energy consumption growth increased to +7.9% in 2018 YoY vs 2017 But if we only assume a 5% growth in total energy mix to 2030, then if natural gas is 15% of India's energy mix, it would be 18.8 bcf/d in 2025 and 24.0 bcf/d in 2030 ie. growth of +13.2 bcf/d to 2025 and +18.4 bcf/d to 2030. India may not be a global LNG game changer by itself like China, but it does support the call that LNG markets rebalance sooner than expected. Our blog also includes our table of LNG projects for 2019 and 2020, which reinforce the potential for LNG growth post 2020. Below is our projection of India's natural gas consumption @15% of Energy mix, and our*

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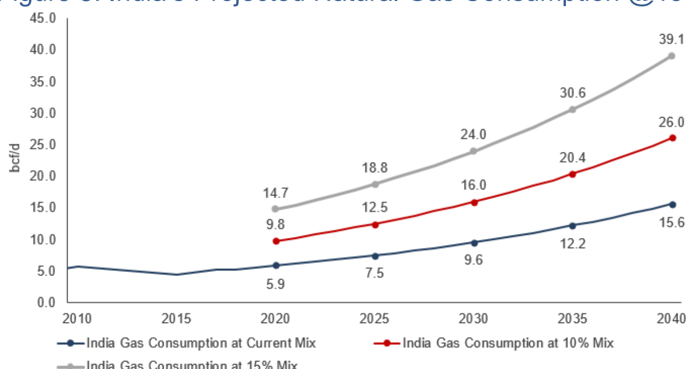
Supplemental Documents package has our India blog." Our Supplemental Documents package includes our Oct 23, 2019 blog.

Figure 5: India's Projected Natural Gas Consumption @15% Of Energy Mix (bcf/d)



Source: BP, SAF

Petronet and India assume India reverses its declining natural gas production

Singh's forecast for LNG imports to increase by ~13 bcf/d to 2030 is after assuming India's natural gas production increases by ~4 bcf/d. Singh assume India reverses its declining domestic natural gas production, but he is not alone in India in forecasting that reversal and return to growth. Last week's (June 6, 2021) Energy Tidbits noted the June 4 India's Ministry of Petroleum & Natural gas tweet [LINK] that Energy Minister Pradhan reviewed the long term for India targeting natural gas production of 4.8 bcf/d in 2023-24, which would be back to its prior peak in 2010. This would be up ~1.8 bcf/d from 3.0 bcf/d in the pre-covid 2019-20 and +2.0 bcf/d from 2.8 bcf/d in 2020-2021. This will be a big change in India natural gas production. As a reminder, India natural gas production has declined from its peak of 4.6 bcf/d in 2010.

Natural Gas – Japan LNG Imports in May 7.67 bcf/d, +8.1% YoY

Japan Apr LNG imports +8.1% YoY

On Wednesday, Japan Ministry of Finance released its May LNG import data [LINK]. Japan's May LNG imports were 7.67 bcf/d, up 8.1% YoY and down 3.7% MoM from 7.96 bcf/d in April. Given all the concern around summer power for Japan, we would have expected LNG imports for May to be higher. Likely, there are two factors why they were not higher this month. First, there was a restart of some nuclear power for this summer. Secondly, high LNG prices are likely pushing Japan to use more coal. coal imports were +12.1% YoY this month. Coal outperformed natural gas this month, which tells us the lower-than-expected import numbers were due to a bit of a price impact to natural gas imports. Below is our table that tracks Japan LNG import data.

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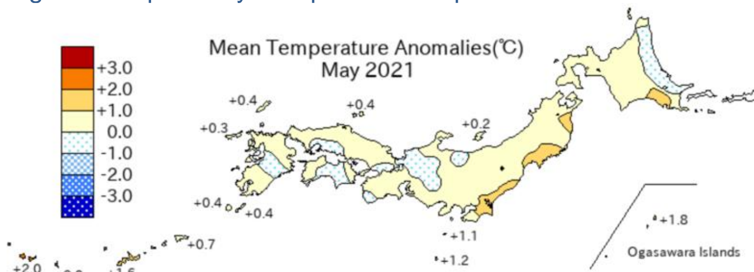
Figure 6: Japan Monthly LNG Imports

bcf/d	2015	2016	2017	2018	2019	19/18	2020	20/19	2021	21/20
Jan	13.06	11.22	12.85	12.79	11.69	-8.7%	11.63	-0.5%	12.48	7.3%
Feb	13.26	12.30	13.36	14.23	12.61	-11.4%	10.99	-12.8%	13.84	25.9%
Mar	12.60	12.62	12.61	12.28	11.30	-8.1%	11.16	-1.2%	11.04	-1.1%
Apr	10.56	10.21	10.52	8.97	9.00	0.3%	8.31	-7.7%	7.96	-4.3%
May	8.91	8.55	9.66	9.92	8.62	-13.1%	7.09	-17.7%	7.67	8.1%
June	10.61	10.02	9.90	8.88	8.32	-6.3%	8.42	1.2%		
July	10.77	10.19	10.19	10.55	10.56	0.1%	9.35	-11.5%		
Aug	10.93	11.96	11.24	11.73	9.45	-19.5%	9.04	-4.3%		
Sept	11.06	10.67	9.31	10.04	10.30	2.6%	10.41	1.0%		
Oct	9.38	9.73	9.50	10.12	9.75	-3.6%	9.20	-5.7%		
Nov	10.71	12.07	10.26	10.15	10.03	-1.2%	9.63	-4.0%		
Dec	12.51	11.69	12.31	11.23	10.54	-6.2%	11.96	13.4%		

Source: Japan Ministry of Finance

Figure 7: Japan May Temperature Map



Source: Japan Meteorological Agency

Natural Gas – Slightly cooler July for Japan

Slightly cooler July expected in Japan

The Japan Meteorological Agency issued its updated month ahead weather forecast for June 19 – July 18 on Thursday [LINK]. So far, June has been a warm month, lending some support for natural gas. However, expectations for the balance of June and the bulk of July are for slightly cooler than normal temps for the next 30 days. Slightly above normal temperatures are expected for the less populated north, normal in a bit of the centre and slightly below normal in the south. Consequently, we do not expect much support for natural gas for the next 30 days. Below is the current JMA forecast for the remainder of May and into June.

Figure 8: JMA Temperature Probability Forecast for June 19 – June 18

Source: Japan Meteorological Agency

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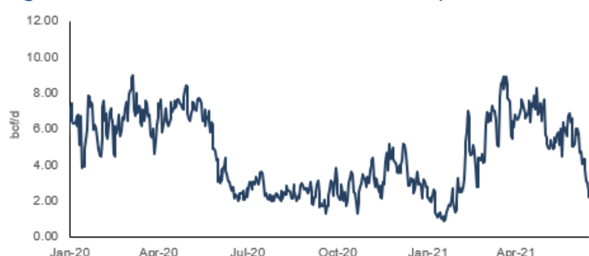
Natural Gas – LNG flows to NW Europe at ~5.6 bcf/d in May

LNG flows to NW Europe -1.4 bcf MoM in May

Europe is the key market for US LNG due to its close proximity. Though with the more likely than not completion of Nord Stream 2 and first gas delivery in 2021, this could take share away from US LNG exports. But with the record long Europe gas storage withdrawal season there should be strong demand through the injection season. LNG flows into northwest Europe reached recent peaks at ~5 bcf/d in late November to early December before declining rather quickly through December to mid January where imports reached a low of 0.90 bcf/d on January 17. Since, LNG flows to Europe have been increased to peak to 8.92 bcf/d on March 22. Daily imports in April averaged 7.05 bcf/d, roughly flat to the March average of 7.08 bcf/d. However, May imports were 5.6 bcf/d down 1.4 bcf/d from 7.08 bcf/d in March. So far in June, the average has fallen even lower to 4.34 bcf/d which is the lowest it's been in more than four months as more LNG cargoes stayed in Asia.

Figure 9: Net LNG Flows to NW Europe



Source: Bloomberg

Natural Gas – Europe storage 43.4% full vs 5 year average of 57.70%

Europe gas storage 43.4% full

We continue to see the set up for strong summer LNG price, which should support strong US LNG exports to Europe. It was a colder spring, which delayed the refill push in Europe and this is setting up support for summer prices. Additionally, the continued significant YoY deficit in Europe gas storage indicates that there will be strong demand for European LNG imports during the refill push especially since Russia, at least so far in Q2, looks like it only plans to ship contract volumes via Ukraine to Europe ie. not sending above contract levels. This is a big positive indicator for US LNG exports this summer. 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. So massive draw vs last year and the last 5 years. Storage at Apr 1 of 28.90% had looked to be the bottom for withdrawal season as the storge level subsequently increased 2.06% to 30.96% on April 6. However, cold weather continuing into the second half of April had further delayed the refill push as flows switch from injections between April 1-6, to draws once again. This had resulted in the longest withdrawal season in history, supporting Europe LNG cargo prices. We are now seeing storage starting to build, with storage as of June 3 being up 9.64% since April 19, which looks to be the bottom. Storage as of June 16 is 43.4%, 33.38% less than last year of 76.78% and 14.3% below the 5 yr average of 57.7%. Europe storage levels this summer will be the key item to watch for indications on LNG markets going into the winter. Below is our graph of YoY change in net LNG flows to NW Europe.

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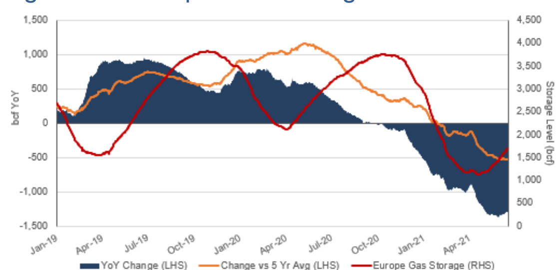
Figure 10: Europe Gas Storage Level



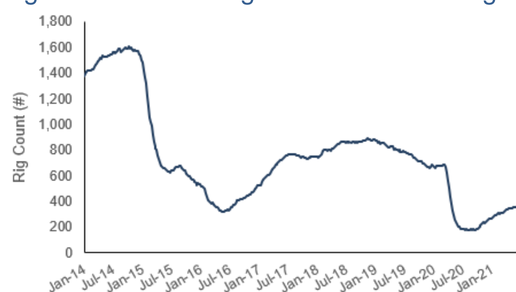
Source: Bloomberg

Oil – US oil +8 WoW at 373 oil rigs

US oil rigs +8 WoW

Baker Hughes reported its weekly rig data on Friday. WTI has broken $70 and we are seeing some strong ramp up, particularly in the lesser basins. US oil rigs were up 8 this week at 373 oil rigs as of June 18. Permian was +1 at 237 rigs. Increases came from Permian (+1), DJ Niobrara (+3), Granite Wash (+1), Bakken (+1) and Others (+3). There was one decrease from Eagle Ford (-1). Oil rigs have been on a strong recovery path and are are +201 off the bottom of 172 in the Aug 14 week. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 310 to 373 oil rigs (-45.38%). Below is our graph of Baker Hughes US oil rigs.

Figure 11: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

Oil – Frac spreads +5 to 235 for week ending June 18

Frac spreads +5 to 235

Every week, Mark Rossano (C6 Capital Holdings) posts a YouTube recap of frac spreads for the week on the Primary Vision Network. [LINK] US frac spreads were +5 to 235 for the week ended June 18, basically where he was targeting for the end of June and thinks could see one or two additions to the end of the June. Williston is starting to catch up, seeing some activations in the DJ Basin, which fits to what he has been saying that the other basins are staring to increase. The Permian took a little breather, but is expected to increase in July and Aug. Also now seeing the drilling rigs start to accelerate, which is needed to replenish the DUCs. Looking forward, he still expects growth to 270 – 275 spreads, but not exponential growth and will take time. Labor and equipment is still an issue. But can see moving up to the 250 spreads with minimal adjustment. Rossano also highlighted that starting to see a pickup in Oklahoma for natural gas and NGLs. Below are his two key frac spread graphs.

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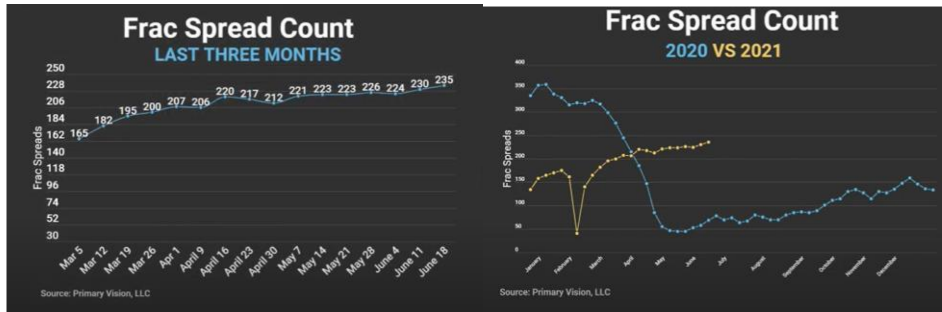
Figure 12 Active Frac Spreads for Week Ending June 18, 2021



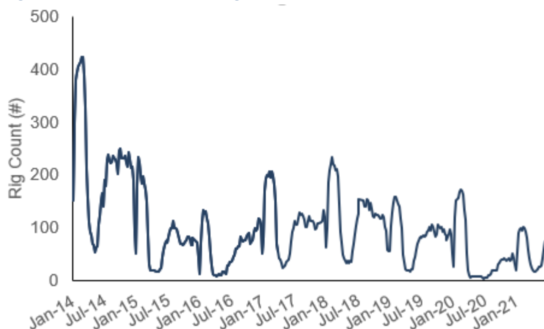
Source: Primary Vision

Oil – Total Cdn rigs +24 to 117 total rigs and up 96 YoY

Cdn rigs +24 this week

We are continuing to see Cdn rigs ramp up as spring breakup is over. Baker Hughes reported total Cdn rigs were up +24 this week to 117 total rigs. We expect Cdn rigs to continue to ramp up faster this month. Cdn oil rigs were up 15 to 74 rigs. Cdn gas rigs were up 9 this week to 43 gas rigs. Total rigs are now +104 since the June 26 all-time low. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 5 and Cdn gas rigs were 12 for a total Cdn rigs of 21, meaning total Cdn rigs are +96 YoY and total rigs are down 2 vs 2019. A year ago was in the big hit time from the oil price crash post Covid. Below is our graph of Baker Hughes Cdn oil rigs.

Figure 13: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

Oil – US weekly oil production +0.2 mmb/d to 11.2 mmb/d

US oil production +0.2 mmb/d WoW

US oil production was up 0.20 to 11.2 mmb/d for the June 11 week. Lower 48 was +0.20 to 10.8 mmb/d. This puts US oil production up 0.7 mmb/d YoY, and is down 1.9 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. Production is the highest it has been in more than a year, since May 2020. This could mark the beginning of the steady climb in oil output that the EIA sees happening over the 3rd and 4th quarter. The key will be to keep seeing a steady, even if only modest, increase in rigs and frack spreads. The June STEO slightly raised its US crude expectations thru 2021, however it is still not returning anywhere near the Q4/19 peak of 12.78 mmb/d, with Q4/21 US crude of 11.38 mmb/d (down 1.40 mmb/d from peak). In the US oil production commentary, the EIA wrote "*U.S. crude oil production averaged 11.2 million b/d in March 2021, an increase of 1.4 million b/d from February. The March rise indicates that the production outages caused by the February winter freeze were temporary and that production came back online quickly. Because prices of West Texas Intermediate crude oil remain above $60/b during 2021 in the current forecast, we expect that*

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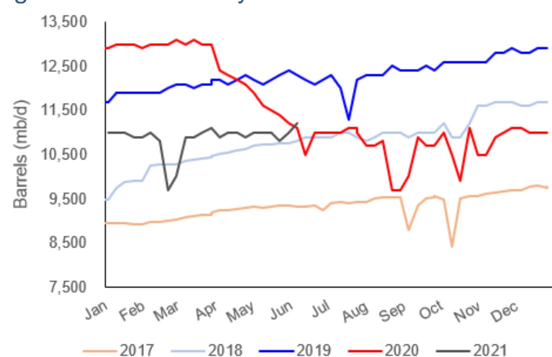
producers will drill and complete enough wells to raise 2022 production from 2021 levels. We estimate that 2022 production will average 11.8 million b/d, up from a forecast average of 11.1 million b/d in 2021." Additionally, on US rig counts, the EIA wrote *"However, our crude oil production forecast is lower than in recent STEOs because of relatively fewer rig deployments at existing price levels, particularly in the Permian".* The EIA DPR has the expectation of slight MoM increases in June and July. The EIA forecasts July at 84.301 bcf/d which is +0.050 bcf/d MoM. The EIA Form 914 actuals for March came in 209,000 b/d higher than the EIA weekly estimates for March, which was likely due to the estimates being too low and not capturing the rapid return to production.

Figure 14: EIA's Estimated Weekly US Oil Production

	Week 1		Week 2		Week 3		Week 4		Week 5	
Year-Month	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						

Source: EIA

Figure 15: US Weekly Oil Production



Source: EIA, SAF

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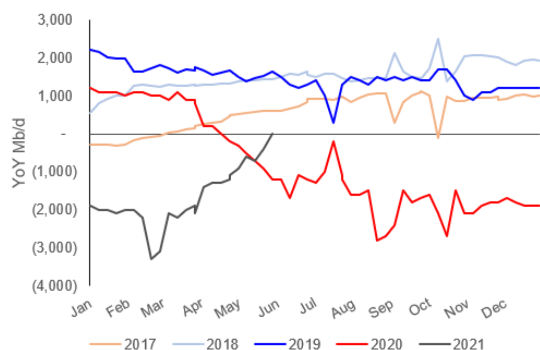
Figure 16: YoY Change in US Weekly Oil Production



Source: EIA, SAF

Oil – EIA DPR continues to estimate relatively flat shale/tight oil production

US shale/tight oil production

The EIA issued its Drilling Productivity Report June 2021 on Monday [LINK], which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case June) and the next month (in this case July). (i) The takeaway for shale/tight oil is much the same as for natural gas – shale/tight oil production is expected to increase marginally over the summer. (ii) As noted earlier in the natural gas, last month's counterintuitive production expectations showing MoM growth in oil but a MoM decline in gas for May/June have been remedied in this forecast. (ii) Post the recovery in March from the Feb freeze, the EIA is expecting relatively flat production MoM. (iii) The EIA forecasts July at 7.802 mmb/d which is +37,000 b/d MoM (would have been +191,000 b/d MoM if not for revisions to June) and down 1.356 mmb/d from the Nov/19 peak of 9.158 mmb/d. (iv) This month, most basins are down modestly, and the largest increases MoM came from Permian at +56,000 b/d. YoY most basins are down, but the Permian is still ramping up, +0.305 mmb/d YoY. Total US shale/tight oil production is now +0.002 mmb/d YoY. (v) Even before the massive capex cuts and shut-ins, the oil shale/tight production had built a narrative for 2020 that US oil production had peaked in Nov/19 at 9.158 mmb/d, expected to plateau H1/20 and then starting to decline later in 2020. (vi) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production.

Figure 17: EIA - Major Shale/Tight Plays Oil Production

							2021								
Thousand b/d	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	July YoY	July less June
Anadarko	464	426	421	404	444	432	423	309	386	373	361	353	349	-116	-4
Appalachia	133	133	137	130	122	126	128	123	126	126	127	128	129	-4	1
Bakken	1,066	1,184	1,236	1,242	1,237	1,204	1,166	1,106	1,129	1,118	1,108	1,102	1,098	32	-4
Eagle Ford	1,097	1,126	1,107	1,116	1,111	1,075	1,054	882	1,062	1,045	1,032	1,027	1,023	-75	-4
Haynesville	34	33	34	34	34	35	34	28	33	33	32	32	32	-1	0
Niobrara	648	649	626	594	588	574	571	556	544	534	524	516	509	-139	-7
Permian	4,358	4,291	4,277	4,330	4,359	4,308	4,354	3,546	4,471	4,510	4,555	4,607	4,663	305	56
Total	7,800	7,842	7,836	7,850	7,896	7,752	7,729	6,549	7,751	7,739	7,738	7,765	7,802	2	37

Source: EIA, SAF

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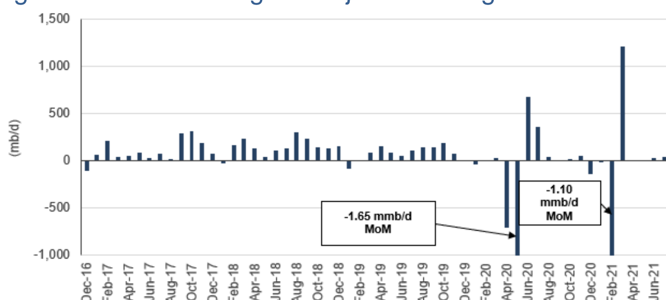
Figure 18: MoM Change – Major Shale/Tight Oil Production



Source: EIA, SAF

Oil – EIA DUC's worked down by 247 in April

DUCs continue to work down

Our biggest concern in the past on EIA's Drilling Productivity Report [LINK] estimate of Drilled UnCompleted wells was that the data had been constantly revised and sometimes significantly. However, the EIA DUC data shows a clear trend since August of a continued work down of DUCs and we expect that trend is correct. It also reinforces the need for drilling rigs to pick up to replenish the DUC inventory if the US to have strong oil growth in 2022. (i) The EIA estimates DUCs are down another 247 MoM in April, meaning a total 2,353 DUCs were worked down since the Jun/20 peak of 8,874. DUCs are down big YoY (-2,301), with the largest work downs coming from the Permian (-983) and Eagle Ford (-355). With DUCs being worked down so significantly we will need to see rig counts go up to replenish DUCs in the near future. (ii) Bakken DUCs. As per the NDPA presentation on April 22, 2021, they estimate there are only 395 economic DUCs as at April 30. This is 268 DUCs or ~40% lower than the EIA estimate of 663 as of April. Bakken DUCs were worked down 27 MoM and in 2021 DUCs have dropped ~23 per month. This means that at this rate, the Bakken has ~17 months of economic DUC inventory. Below is our running table of the EIA Drilling Productivity Report DUCs.

Figure 19: EIA - Estimated Drilled UnCompleted Wells

									2021					
Drilled UnCompleted	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	May YoY
Anadarko	1,053	1,061	1,054	1,048	1,022	1,002	982	965	952	932	921	901	880	861	-200
Appalachia	716	706	694	688	678	661	648	645	641	623	616	603	590	577	-129
Bakken	863	882	884	876	865	832	805	786	760	731	710	688	663	636	-246
Eagle Ford	1,373	1,395	1,388	1,374	1,340	1,288	1,252	1,220	1,181	1,152	1,135	1,102	1,071	1,040	-355
Haynesville	376	393	395	397	393	395	383	374	380	375	389	387	385	384	-9
Niobrara	790	786	790	779	783	767	713	663	621	575	530	489	448	407	-379
Permian	3,477	3,599	3,669	3,690	3,622	3,507	3,363	3,227	3,116	2,988	2,955	2,852	2,731	2,616	-983
Total	8,648	8,822	8,874	8,852	8,703	8,452	8,146	7,880	7,651	7,376	7,256	7,022	6,768	6,521	-2,301

Source: EIA, SAF

Oil – Looks like high prices continuing to bring back North Dakota shut in wells

North Dakota production +1.1% MoM

We recognize that this is not being highlighted, but we believe a key factor being overlooked in the stronger North Dakota oil production is the return of marginal shut in oil wells in March and April due to high oil prices. On Monday, the North Dakota Industrial Commission posted its Director's Cut, which includes April oil and natural gas production data [LINK]. North Dakota April oil production was up 1.1% MoM to 1.121 mmb/d from 1.108 mmb/d in Mar and is down 8.1% YoY. The MoM production increase was expected given Feb production had been hit with extreme weather and March had still not fully recovered, however, April production was still ~26,000 b/d below production in Jan meaning there still was not a full recovery. But, as we previously highlighted with March's data last month, there is another significant reason - high oil prices brought back any shut in wells. There was a further uptick

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in the # of producing oil wells in April vs March and only 19% of the new producing wells can be attributed to wells being completed. Rather it must be high oil prices bringing back the marginal shut in wells. The Director's Cut preliminary estimate for producing wells in April is 16,374 producing wells, which is +163 producing wells vs 16,212 in March, which was +432 producing wells vs 15,778 in producing wells in Feb. There were only 31 well completed in April, which leaves 132 other additional wells on production. Rigs in North Dakota currently sit at 20, up 5 from April at 15. April completions decreased 12 MoM to 31, but the preliminary estimate for May shows an increase back up to 41. Our Supplemental Documents package includes excerpts from the NDIC Director's Cut.

Figure 20: North Dakota Oil Production By Month

(b/d)	2016	2017	2018	2019	2020	2020/2019	2021	2021/2020
Jan	1,122,462	981,380	1,179,564	1,403,808	1,430,511	1.9%	1,147,377	-19.8%
Feb	1,119,092	1,034,248	1,175,316	1,335,591	1,451,681	8.7%	1,083,554	-25.4%
Mar	1,111,421	1,025,690	1,162,134	1,391,760	1,430,107	2.8%	1,108,906	-22.5%
Apr	1,041,981	1,050,476	1,225,391	1,392,485	1,221,019	-12.3%	1,121,551	-8.1%
May	1,047,003	1,040,995	1,246,355	1,394,648	859,362	-38.4%		
June	1,027,131	1,032,873	1,227,320	1,425,230	893,591	-37.3%		
July	1,029,734	1,048,099	1,269,290	1,445,934	1,042,081	-27.9%		
Aug	982,011	1,089,318	1,292,505	1,480,475	1,165,371	-21.3%		
Sept	971,760	1,107,345	1,359,282	1,443,980	1,223,107	-15.3%		
Oct	1,043,693	1,183,810	1,392,369	1,517,936	1,231,048	-18.9%		
Nov	1,034,484	1,194,920	1,375,803	1,519,037	1,227,138	-19.2%		
Dec	942,322	1,182,836	1,402,741	1,476,777	1,191,429	-19.3%		

Source: NDIC, NDPA

North Dakota gas-oil ratio increases as Bakken matures

One of the long term trends that we have been highlighting for all of the US tight/shale oil plays that produce associated natural gas and NGLs is that, over time, the percentage of natural gas increases in the production. We see this clearly in North Dakota where the gas-oil ratio continues to increase have having slowing down in 2017-2019 when natural gas flaring increased. But now with North Dakota reducing gas flaring, we are seeing the ramp up in gas-oil ratio. North Dakota natural gas production has held in much better YoY than oil production and increased at a faster pace MoM in March with production being +6.2% MoM to 2.879 bcf/d, down 8.0% YoY. Now in April, production is +3.1% MoM and is +9.3% YoY. It makes sense that North Dakota natural gas production was down less YoY as less gas was flared and Bakken oil wells produce associated natural gas and the natural gas % of boe production increase as Bakken oil wells mature. The Gas to oil ratio hit 2.64 in Apr, up from 2.6 in Mar 2021. We will continue to see the gas to oil ratio increase as the Bakken matures. A year ago it was 2.22 and two years ago 2.03. Below is our running graph of North Dakota gas-oil ratio updated for the new NDIC April production data.

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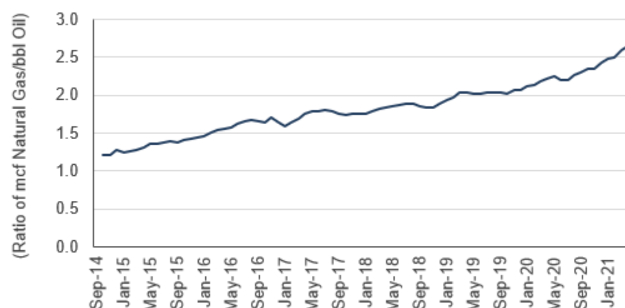
Figure 21: North Dakota Gas-Oil Ratio



Source: NDIC, NDPA

North Dakota may lose it's #2 producer position to New Mexico

Every month, we look to the Bismarck Tribune's monthly story on the press conference releasing the Director's Cut as there is always extra color or insight from quotes from NDIC Director Lynn Helms. This month's story was titled was titled "*North Dakota's status as nation's 2nd-biggest oil producer in jeopardy*" [LINK]. (i) The Bismark Tribune commented on the Bakken's possible descent down the rankings of the top producers of the nation, as it is on the verge of losing its 2nd place status to New Mexico. Helms said "*At the rate that they're growing production, they're going to pass us unless our pace picks up".* (ii) DUCs in April rose to 731, and Helms said, according to Natural Gas Intelligence [LINK] "*Our drilling rigs are outpacing our completion crews, so we saw wells waiting on completion go up by more than a hundred in April... We expected in April to begin drawing that inventory down*", however as we mentioned in the above item, the rig count increased by 5 in April to 20 currently. (iii) Fracking crews declined slightly, -1 to 8 currently. Helms said *"It is a little concerning that field inspectors are reporting only eight frack crews out there, so that is going to limit our ability to grow production."* This does not bode well for the Bakken's ability to maintain its standing as #2 producer in the nation. However, Helms said that as spring road restrictions are lifted more fracking could occur. Our Supplemental Documents package includes the Bismarck Tribune Story

Oil – North Dakota crude by rail up MoM in April to ~209,000 b/d

North Dakota CBR up in April

The North Dakota Pipeline Authority also posted its monthly update "April 2021 Production & Transportation" [LINK]. Please note that we always go to the backup excel sheets from the North Dakota Pipeline Authority for more detailed numbers of crude by rail out of North Dakota. The NDPA Monthly Update (graph below) report only provides rounded numbers, and these rounded numbers are not accurate enough to match the graphs. In the backup excel, the NDPA estimates crude by rail in April was a low of 193,952 b/d to a high of 223,952 b/d for an average of ~208,952 b/d. This is up slightly from Mar low of 186,333 b/d to high of 216,333 b/d for an average of ~201,333 b/d. The MoM increase in CBR volumes is likely due to the CBR share of total transportation increasing 1% MoM to 17% of total volumes in April from 16% in March along with the slight increased MoM production. Below is a chart from the NDPA monthly update showing the crude by rail volumes since 2013. Our Supplemental Documents package includes the NDPA monthly update.

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Figure 22: Estimated North Dakota Rail Export Volumes

Source: North Dakota Pipeline Authority

Oil – Biden's ban on federal oil and gas leases blocked by federal judge

Federal judge grants injunction against Biden's ban

Its too early to celebrate but at least the oil and gas sector has a reprieve from the Biden administration suspension of oil and gas leases on federal lands. We have to believe the story is still not over. But, at least for now, there is a reprieve with U.S. District Judge Terry Doughty ordered for lease sales on the Gulf of Mexico and Alaska to be resumed, against Biden's suspension of new oil and gas leases of federal land and water. NPR reported on Tuesday [LINK] that Judge Doughty's ruling on the lawsuit filed in March by the Louisiana Attorney General granted a preliminary injunction to the states where the Biden administration's executive order applies. The premise of the suit against the Biden's ban centered around the administration bypassing the requisite comment periods and bureaucratic steps before delays may be enforced. The lawsuit also argues that stopping leases would diminish revenue that goes towards Louisiana's programs to restore coastal wetlands, raise energy costs and lead to major job losses. The Interior Department has agreed to comply with the decision and leases sales to drill in Alaska and the Gulf of Mexico will resume, at least for the time being. Notwithstanding this agreement, we will still want to see if the Biden administration somehow slow plays how it issues and administers leases much like BC slow played all its administrative tools in its toolbox on TMX. Our Supplemental Documents package includes the NPR report.

Oil – BloombergNEF tracks 42 producers, hedging losses since Jan reach >$11.0bn

2021 hedges expected to settle $16 below WTI

There was a good BloombergNEF reminder this week of one of the reasons why US oil producers haven't cranked up drilling as much as might be expected given the strength of oil prices – hedges well below spot prices that were put in place last year mean US oil producers are not sharing in all the benefit. BloombergNEF reported that, since Jan 2021, hedging losses (realized and unrealized) have reached $11bn across 42 producers tracked by Bloomberg NEF. Our March 28, 2021 Energy Tidbits noted the BloombergNEF hedge loss estimate when WTI was >$60 and Bloomberg NEF then estimated hedging losses at around $8bn and expected on 14 firms out of 50 would realize prices above $60 on their production. Now with even higher priced crude, 2021 hedges are expected to settle almost $16 below WTI on average. The total losses tracked also does not include privates, who have also hedged to some degree, so the total figure is likely even larger. On Friday, we tweeted [LINK] to remind that US oil producers will be even stronger once the hedges roll off "B*ig US producer stocks generally +50% in 2021 and in strong financial position. Imagine when*

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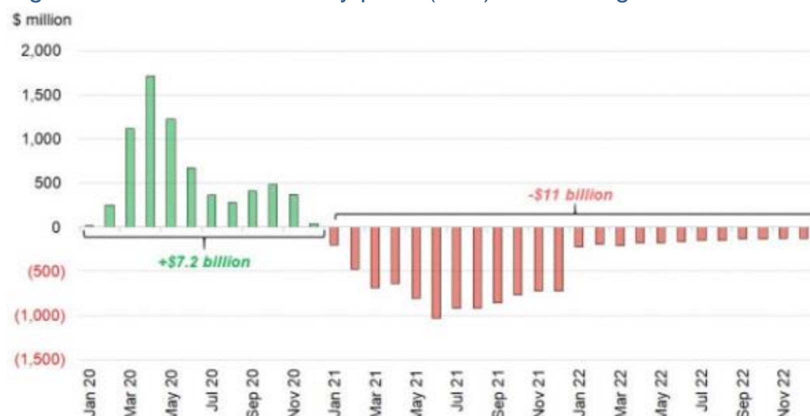
hedges roll off and oil is $70 or even $60. @BloombergNEF est. 42 US public #Oil producers hedge fund losses now $11b. Thx dadkins10@bloomberg.net #OOTT".

Figure 23: Estimated monthly profit (loss) on oil hedges



Source: BloombergNEF Oil Hedging LiveSheet (as of June 17, 2021)

Oil – Makes sense why US oil growth is only modest in 2021 but more in 2022

Why strong US oil growth in 2022

On Friday, we tweeted [LINK] on why it makes sense that there is only modest growth in US oil production in 2021 despite strong oil prices but much higher growth in 2022. The Reuters report "*EXCLUSIVE OPEC told to expect limited U.S. oil output growth, for now – sources*" [LINK] wrote "*OPEC officials heard from industry experts that U.S. oil output growth will likely remain limited in 2021 despite rising prices, OPEC sources said, giving it more power to manage the market in the short term before a potentially strong rise in shale output in 2022. Officials from OPEC's Economic Commission Board (ECB) and external presenters attended a meeting on Tuesday focused on U.S. output, the sources said. OPEC heard from more forecasters on the outlook for 2021 and 2022 at a separate meeting on Thursday. While there was general agreement on limited U.S. supply growth this year, an industry source said for 2022 forecasts ranged from growth of 500,000 bpd to 1.3 million bpd."* The report didn't mention why, which is why we tweeted why the growth is limited in 2021 but more in 2022. First, as noted earlier, hedge losses means that the producers aren't getting all the benefit of high oil price. But we remind think of the increased cash flow as these hedges roll off. Second, there is the well recognized need for labor/equipment to get to higher capacity levels after losing a lot of capacity in the oil/capital crash of 2020. Third, our prior view that public E&P can't do any significant step up in capex even though their financial positions are very strong. When Covid hit and oil prices crashed, the oil companies (supermajors down) all went into survival mode. They all had to convince investors a year ago that they could survive and that they could survive in a world of low oil prices. So they all had to abandon the growth model. It was done for survival. And not one of them said the oil price crash is temporary and we will be going back to our old plans once price quickly recovers. They can't return to growth at all costs, but our tweet said "*Another 3-6 mths of strong oil & stock prices & protected dividends, E&P will be still be cashed up & investors won't object to moving off Covid survival plans & more capital allocation to drilling*." As they say, time heals all wounds. Oil stock prices have been great performers. The oil companies are in strong financial position, another 3-6 months of strong prices will make their financial position even stronger. And with protected dividends and a year from the survival plans, we expect investors will be supportive of some stronger return to growth. Our Supplemental Documents package includes the Reuters report.

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Oil – Will US shale growth in mid term be driven by global oil trading firms

Will oil traders drive shale growth?

There was a good food for thought comment from Star Fuels Director Dubai, Matt Stanley, on US shale in Thursday's Gulf Intelligence Daily Silk Road "Live" podcast. [LINK] We haven't heard this view before and think it could be a reason to see stronger mid term US shale oil growth than most expect now with the supermajors moving more aggressively to shift capital from oil to renewables. Its certainly worth watching. Stanley seems to be more bullish on US shale because the global oil trading firms are going to get into shale. We created a transcript of Stanley's comments "*But in the meantime, we all still need to drive our cars because we all haven't got Teslas. And we all need to fill them up somehow. And I think that you will see most of those traders get into the shale patch because the likes of Parsley or Cilantro or Oregano, whatever they're called, they are not getting into those fields. I think that its going to be left to the big traders because they have come out with some pretty punchy comments in the last few days. That's what I am keeping my eye on. I think its overall trader sentiment because the fossil fuel argument is now no longer something the Shells, BPs, Totals are really discussing."* Our Supplemental Documents package includes the transcript we made of the Stanley shale comments.

Oil – Trudeau's G7 comments have to signal more hits to Cdn oil, especially oil sands

Trudeau's seems to signal more bad news coming

We are surprised that Alberta or the Cdn oil patch didn't at least criticize Trudeau, let alone raise up their arms, after hearing Trudeau's post G7 press conference. Our immediate reaction after hearing Trudeau was that this is not good and it is foretelling bad news to come from the Liberals. Last Sunday, we tweeted [LINK] "*#OilSands. Note #Trudeau wouldn't even acknowledge the oil sands pathways to net zero, or say positive move but need to do more or move faster. not a good sign. have to worry it links to prior tweet #G7 May 21 warning re stranded assets risk. #OOTT*" Trudeau is asked point blank on the new oil sands Net Zero by 2050 pathway and its good enough as a lot it is based on technology not yet available in scale and on sequestration. He gives a lengthy answer that doesn't even acknowledge the oil sands pathway, let alone whether it is good enough or realistic. No question he is ducking even any acknowledgement that it exists, which would seem to signal that he is not interesting in trying to work with that plan in any way. This seems to signal something tougher is coming. Politicians of all stripes never miss an opportunity to take credit for driving change. In reality, this was a lay up question for Trudeau to do so. He could have easily said I am glad the oil sands listened to what I am trying to build for Canada, they have jumped on board committing to a pathway to Net Zero by 2050, it's a good start but they need to move even faster and my government will be working with them to get them to be even more ambitious. But he didn't, rather he refused to even acknowledge any pathway to Net Zero existed. Clearly not a good sign. Our Supplemental Documents package includes the transcript we made of Trudeau's Q&A on this point and the Cdn oil sands pathway to Net Zero release..

Feels like Trudeau is setting up risk for stranded oil sands assets

Our June 13 tweet referenced our prior warning tweet on the G7. On May 23, 2021, we tweeted [LINK] "*More important to #Oil #NatGas co's in 2021 than @IEA #NetZero pathway? #G7 policymakers make new commitments on #EnergyTransition ie. regs/laws that are coming. Also warning needed acceleration to NetZero will lead to stranded #FossilFuels assets. #OOTT".* We are still surprised that oil markets are still not focused on the G7 policymakers May 21, 2021 30-pg communique on its new climate commitments. This was huge and why we titled our May 23, 2021 "*G7 Policymakers Make New Commitments On Energy Transition ie. Future Emissions Laws/Regulations That Are Coming*". Remember, this is not scenario planning, these are commitments that were made by the G7 policymakers.

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One of our biggest concerns from the 30-pg communique and relevant to the oil sands is that the communique is all about accelerating progress towards Paris emissions targets. And the G7 is saying they recognize there will be casualties (stranded assets) by this accelerated push towards Paris. The big clear warning to oil and gas (and we have to wonder if linked to Trudeau's refusal to acknowledge the oil sands pathway to Net Zero) is that the G7 is openly "*recognising the risk of stranded assets associated with high carbon investments*" with their work to accelerate progress towards Paris. That's a clear warning that they realize their actions will strand high carbon assets. Here is the critical full sentence "*To accelerate progress towards achieving our Paris Agreement goals, we need to harness the significant opportunities for sustainable development – including green jobs and sustainable, resilient growth – by making investments in the recovery from COVID-19 that are aligned with pathways towards our respective enhanced Nationally Determined Contributions (NDCs) and 2050 net zero commitments, recognising the risk of stranded assets associated with high carbon investments*."

Oil – Slowly removing oil sands facilities from Covid outbreaks list

Another facility off outbreak list

The Fort McMurray area may still be one of the hotspots for Covid in Alberta, but similar to all of Alberta case numbers are going down at a very fast rate. The last Wood Buffalo Covid update is as of June 14 [LINK]. There was only one update this week. No surprise, we are seeing the start of the removal of oil sands facilities from the outbreak list. In the June 9 update, we finally saw the removal of one oil sands facility, the CNRL Jackfish property, from the list of outbreaks and, in the June 14 update, there was the removal of the Oilsands Industrial Lodge – Fort McKay. Below, we pasted the oil sands facilities listed in June 14, 9, 7 and 1 updates.

Figure 24: Oil Sands Facilities With Covid Outbreaks at June 1, 7, 9, and 14

June 14	June 9	June 7	June 1
Outbreaks in RMWB	**Outbreaks in RMWB**	**Outbreaks in RMWB**	**Outbreaks in RMWB**
Industrial:	**Industrial:**	**Industrial:**	**Industrial:**
MEG Energy	MEG Energy	MEG Energy	MEG Energy
CNRL Horizon	CNRL Horizon	CNRL Horizon	CNRL Horizon
CNRL Albian	CNRL Albian	CNRL Albian	CNRL Albian
Kearl Lake	Kearl Lake	Kearl Lake	CNRL Jackfish
Civeo Lynx Lodge	Civeo Lynx Lodge	Civeo Lynx Lodge	Kearl Lake
Civeo McClelland Lake	Civeo McClelland Lake	Civeo McClelland Lake	Civeo Lynx Lodge
Wapasu Creek Lodge	Wapasu Creek Lodge	Wapasu Creek Lodge	Civeo McClelland Lake
Civeo Athabasca	Civeo Athabasca	Civeo Athabasca	Wapasu Creek Lodge
Cenovus Sunrise Lodge	Cenovus Sunrise Lodge	Cenovus Sunrise Lodge	Civeo Athabasca
Suncor Base Plant	Suncor Base Plant	Suncor Base Plant	Cenovus Sunrise Lodge
Suncor Firebag	Suncor Firebag	Suncor Firebag	Suncor Base Plant
Suncor Fort Hills	Suncor Fort Hills	Suncor Mackay River	Suncor Firebag
Suncor Mackay River	Suncor Mackay River	Syncrude Mildred Lake	Suncor Mackay River
Syncrude Mildred Lake	Syncrude Mildred Lake	Syncrude Aurora	Syncrude Mildred Lake
Syncrude Aurora	Syncrude Aurora	CNOOC Long Lake	Syncrude Aurora
CNOOC Long Lake	CNOOC Long Lake	Oilsands Industrial Lodge - Fort McKay	Suncor Fort Hills
	Oilsands Industrial Lodge - Fort McKay		CNOOC Long Lake
			Oilsands Industrial Lodge - Fort McKay

Source: Wood Buffalo

Oil – Refinery inputs +0.412 mmb/d YoY to 16.337 mmb/d, back to pre-pandemic levels

Refinery crude oil input reaches the 5 yr avg

Crude inputs to refineries were up this week and were +0.412 mmb/d to 16.337 mmb/d, and are +2.737 mmb/d YoY. Refinery utilization was up 1.3% this week at 92.6%, which is +18.8% YoY. This is the 2nd week in a row where refinery utilization is back to pre-pandemic levels. Refineries are ramping up to meet the expected fuel demand for the summer driving season. Total products supplied (ie. demand) increased this week, with a 2.858 mmb/d increase to 20.571 mmb/d, and motor gasoline supplied was up big being +0.880 mmb/d to 9.360 mmb/d. The big jump in gasoline demand this week is proof that last week's decline in demand was only a brief event as Americans head back on the road due to easing pandemic

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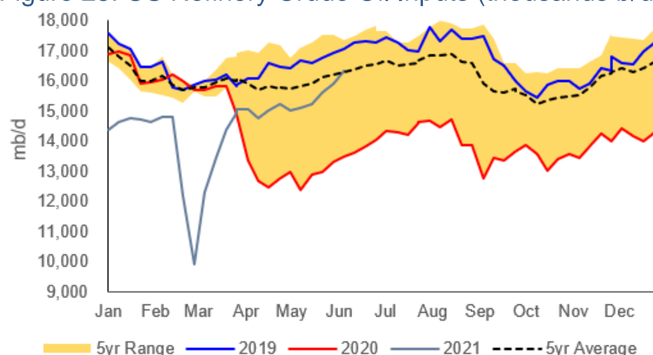
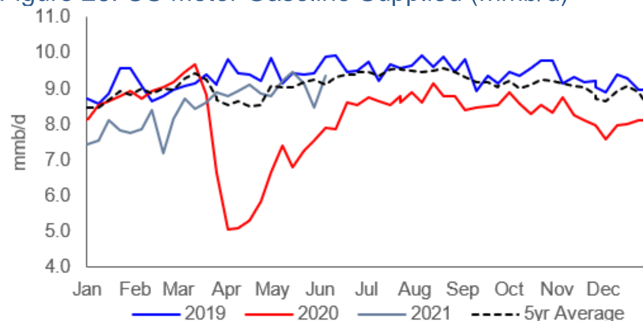
restrictions. Gasoline consumption in the US is expected to rise, with the EIA writing in their 2021 Summer Fuels Outlook [LINK] "*We forecast that gasoline consumption in 2021 will peak in August at 9.1 million b/d, which is up from 8.5 million b/d in August 2020 but down from the 9.8 million b/d in August 2019. We forecast that 2021 summertime gasoline consumption will average almost 8.8 million b/d, a 1.0 million b/d (13%) increase from 2020 but a 0.7 million b/d (7%) decrease from summer 2019*". Below is our graph of crude inputs to US refineries and our graph of US motor gasoline supplied.

Figure 25: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA, SAF

Figure 26: US Motor Gasoline Supplied (mmb/d)



Source: EIA, SAF

Oil – Exxon's lockout at Beaumont refinery likely not ending soon

No end in sight for Exxon Beaumont lockout

It looks like Exxon's employee 7 week long lockout at its 359,000 Beaumont (Texas) refinery isn't ending soon. We first noted this item in our May 2, 2021 Energy Tidbits following the start of the lockout of its ~550 employees at its 359,000 b/d Beaumont refinery. This lockout was following April 30 reports that Exxon had rejected the latest United Steelworks offer and had begun hiring replacement workers. On Thursday, Reuters reported [LINK] "*Exxon Mobil Corp (XOM.N)said on Thursday it rejected proposals by the United Steelworkers union to end a seven-week lockout at the company's Beaumont, Texas, refinery. Exxon locked out about 650 union workers on May 1 after a prior labor contract expired. It cited a risk of a strike by the USW-represented employees. The plant, which makes gasoline and Mobil 1 motor oil, has continued to operate using managers and replacement staff. A union official confirmed the two sides met for about two hours on Thursday, but declined to discuss any proposals. No date for another negotiation session has been set.*" Note the comment that no dates have been set for another negotiation session. The refinery has been running with management and replacement workers since May. There hasn't been any indication yet how much crude is being processed at the Beaumont refinery with the replacement workers. For example, the

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reports were that, during the 4 month lockout at Coop's 130,000 b/d Regina refinery, the refinery was being able to run at ~100,000 b/d with the replacement workers. Our Supplement Documents package includes the Reuters report.

Oil – US "net" oil imports down 0.845 mmb/d to 2.862 mmb/d

US "net" oil imports -0.845 mmb/d WoW

US "NET" imports were down 0.845 mmb/d to 2.862 mmb/d for the June 11 week. US imports were up 0.108 mmb/d to 6.746 mmb/d. US exports were up, being +0.953 mmb/d to 3.884 mmb/d. The WoW increase in US oil imports was driven by a increases in Saudi Arabia, Mexico and Iraq. Some items to note on the by country data. (i) Canada was down this week, and was -0.327 mmb/d to 3.644 mmb/d for the June 11 week, which is now ~0.06 mmb/d below the average levels in Jan/Feb of 2020. Note that PADD 2 imports are -0.416 this week and this is the largest importer from Canada in the US. (ii) Saudi Arabia was up 237,000 b/d to 0.381 mmb/d this week. (iii) Colombia was up slightly by 6,000 b/d to 0.143 mmb/d this week. (iv) Ecuador was down 26,000 b/d to 96,000 b/d. (v) Iraq was up 132,000 b/d to 305,000 b/d. (v) Venezuela remained at 0 due to US sanctions. (vi) Mexico increased 341,000 b/d to 0.764 mmb/d.

Figure 27: US Weekly Preliminary Oil Imports By Major Countries

	Apr 16/21	Apr 23/21	Apr 30/21	May 07/21	May 14/21	May 21/21	May 28/21	June 04/21	June 11/21	WoW
Canada	2,901	3,492	3,232	2,924	3,806	3,549	3,147	3,971	3,644	-327
Saudi Arabia	358	480	178	224	424	277	188	144	381	237
Venezuela	0	0	0	0	0	0	0	0	0	0
Mexico	451	608	467	434	692	661	702	423	764	341
Colombia	111	294	307	278	325	71	185	137	143	6
Iraq	34	270	41	235	199	184	163	173	305	132
Ecuador	172	225	318	257	80	229	226	122	96	-26
Nigeria	71	119	95	157	73	29	169	264	169	-95
Kuwait	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0
Top 10	4,098	5,488	4,638	4,509	5,599	5,000	4,780	5,234	5,502	268
Others	1,307	1,128	813	979	812	1,273	851	1,404	1,244	-160
Total US	5,405	6,616	5,451	5,488	6,411	6,273	5,631	6,638	6,746	108

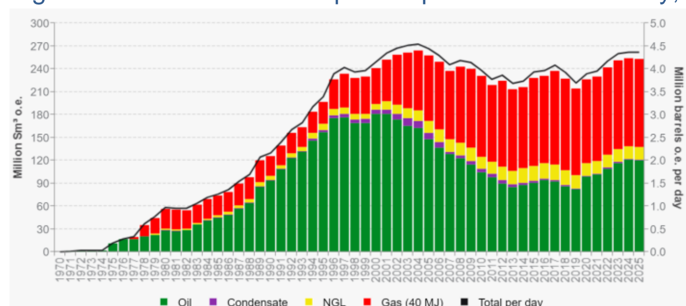
Source: EIA, SAF

Oil – Norway oil production of 1.654 mmb/d, 3.96% higher than forecast

Norway oil production

The Norwegian Petroleum Directorate released its May production figures [LINK] of 1.654 mmb/d of oil, which is -5.7% YoY and -3.6% MoM from March at 1.716 mmb/d. This was a deviation from the forecasted amount of 1.591 mmb/d, and 4.0% higher than the forecast so far this year. The story for Norway was that its oil production returned to growth in the last 3 years because of the Johan Sverdrup oil field and that Johan Sverdrup oil is expected to produce at higher than expected levels. Below is the NPD's historical and forecast production graph as of Feb 17 [LINK].

Figure 28: Historical and expected production in Norway, 1970-2025



Source: Norwegian Petroleum Directorate

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Oil – Lundin plans to sell all its share of Johan Sverdrup as certified carbon neutral

Lundin's barrels certified carbon neutral

Lundin Energy announced on Wednesday that all future barrels of oil it sells from the Johan Sverdrup field are certified as carbon neutrally produced [LINK]. We reported on Lundin's carbon-neutral oil on May 2, 2021 Tidbits, when Lundin had announced it had sold the world's first ever certified carbon neutrally produced oil. And – it's important to note that these barrels are carbon neutral, and not just barrels that are carbon neutral due to carbon offsets, like we have been seeing pick up in LNG cargos in to Asia. The headline from that April 26 announcement was *"Lundin is pledging that from 2025 onward, every barrel produced by them would be produced as carbon neutral".* The Johan Sverdrup has already one of the lowest full life of field emissions in the world, at 0.45 kg CO_2e per boe, and now all residual emissions from net production at the field will be neutralized with carbon capture projects. CEO of Lundin Energy, Nick Walker said "*Since we sold our first cargo of certified, carbon neutrally produced oil from Edvard Grieg earlier this year, we have seen significant interest in the market for this clearly differentiated product. With the certification of our Johan Sverdrup barrels as CarbonZeroTM, we now have a significant volume of crude being traded as carbon neutrally produced, which I believe will drive significant value for Lundin Energy. As the energy transition continues to accelerate, providing certified, zero emission produced barrels to our customers ensures that they can continue the decarbonisation pathway, delivering a differentiated product to their end users."* Note that only the oil produced by Lundin's share of the field is certified carbon-neutral. Our Supplemental Documents package includes the Lundin release.

Oil – Brazil plan to add 13 FPSOs to increase production starting in 2022

EIA's country brief on Brazil

We continue to recommend adding the EIA's country analysis briefs to reference libraries as good quick references, in this case its new EIA country brief [LINK] & executive summary [LINK] on Brazil. There are few items of note from the EIA's reports. The brief specifically highlighted Petrobas' 2021 strategic plan to bring on 13 additional FPSOs through 2025 across six fields, which if completed would add an additional capacity of 2.0 mmb/d. However, the EIA does not forecast Brazil production growth. In the most recent (June) STEO, the EIA forecasted production in Brazil to remain relatively flat over 2021 and grow only 7.7% to 2022. However the EIA does note in the Brazil summary *"Increased growth in pre-salt oil field production drives Brazil's crude oil production over the next decade, and exports of crude oil will likely increase as well. Petrobras plans to increase exports of light (Lula) and medium (Búzios), sweet, low-sulfur crude oil grades that come from pre-salt fields because they are more valuable in the global oil market. As a result, Brazil's crude oil exports will remain more desirable and competitive over the long term than its heavier crude oils".* Our Supplemental Documents package includes the EIA brief.

Brazil government slashes deep water signing bonuses by 70%

The one item that we thought would have been included in the new EIA brief on Brazil was the late May reports that Brazil was cutting signing bonuses on some key blocks to accelerate drilling. Our May 30, 2021 Energy Tidbits highlighted the Bloomberg report that week that Brazil was cutting signing bonuses by 70% for some key deep-water oil blocks. Bloomberg wrote *"Big Oil is taking a second look at two Brazilian deep-water oil prospects they passed on in 2019 now that the government has slashed signing bonuses by 70%. Major oil companies are seeking information about additional acreage that Brazil is offering in December for the Atapu and Sepia fields in the so-called pre-salt region, which holds the biggest group of offshore discoveries this century, Energy Minister Bento Albuquerque said in an interview. Policy makers are hustling to get these massive deep-water projects up and running*

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before the energy transition leaves the assets stranded in the middle of the South Atlantic, where it takes years just to start extracting discovered oil".

Oil – Angola reduces oil production forecast below June/July quota

Angola oil production forecast -27,000 b/d

Angola has reduced its 2021 oil production forecast by 27,000 b/d, which is below their quotas for June (1.298 mmb/d) and July (1.319 mmb/d). Lusa reported on Monday [LINK] that Angola had revised its oil production forecast for 2021 downwards, anticipating it should reach 1.193 mmb/d this year. The minister of Mineral Resources and Oil & Gas, Diamantino Azevedo said *"For 2021, the initial forecast was 1,220,400 barrels of oil/day, however there was an interim adjustment and we have a forecast of 1,193,420 barrels and what we are doing is to comply with this new forecast"*. He also highlighted that the majority of Angolan production comes from mature fields and are in a phase of decline. This is not the first time Angola has underproduced. In 2020, Angola was unable to reach its target of 1.283 mmb/d, and produces on 1.271 mmb/d. Azevedo explained *"Due to covid-19, the price of oil fell significantly, which also led to a delay in drilling for new wells, which is very important for the sustainability of the forecast"*. Our Supplemental Documents Package includes the translated Lusa news release

Oil – Saudi oil stocks up small in Apr, moving into peak oil for electricity season

JODI data for Apr

The JODI data for April was updated on Thursday. There was no surprise or takeaway from the data, but it confirms Saudi continued to deliver on its voluntary cuts, with April being the third month of Saudi voluntary 1 mmb/d cuts. There were -38,000 b/d of unaccounted supply, which is far less than Mar, at +91,000 b/d. There was a small increase, up 0.747 mmb for the month, in Saudi oil inventory. (i) Production was -4,000 b/d MoM to 8.134 mmb/d due to April's continued voluntary cuts. Exports fell at a slightly quicker rate than production, being -19,000 MoM to 5.408 mmb/d. Direct use for electricity was up, being +88,000 b/d to 407,000 b/d. (ii) Inventories increased for the first time in 5 months, up +25,000 b/d from 133.338 mmb in Mar to 134.085 in Apr. Crude inventories have been declining to historically low levels, as the last time crude inventories were below 150 mmb was in April 2004 at 149.8 mmb. (iii) The one key reminder looking at the next few months is that Saudi Arabia is moving into its peak months for using oil for electricity. April is still not a peak temperature month in Saudi Arabia, but normally marks the start of the ramp up in Saudi domestic consumption in oil to generate electricity. Saudi used more oil for electricity in Apr vs Mar due to higher average temperatures during the month, and April was higher YoY. Mar was 319,000 b/d (vs Mar 2020 of 279,000 b/d) and Apr was 407,000 b/d (vs Apr 2020 of 355,000 b/d). April was slightly above the latest 5 yr average of 320,000 b/d. Below are the AccuWeather Temp maps for Riyadh for April, May and June MTD. Careful they are different scales, but look for oil for electricity to continue to ramp up in May and June. April was also above temps and note how hitting 40 in some days. But note May, 40+ daytime highs and 30 night time lows. This is moving into the peak period for oil for electricity. Below are our updated graphs for the Saudi JODI data for April.

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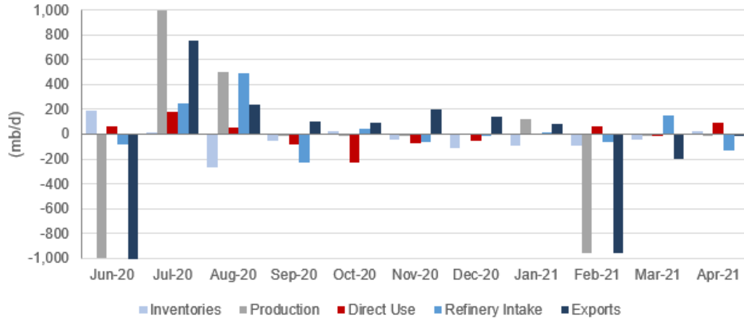
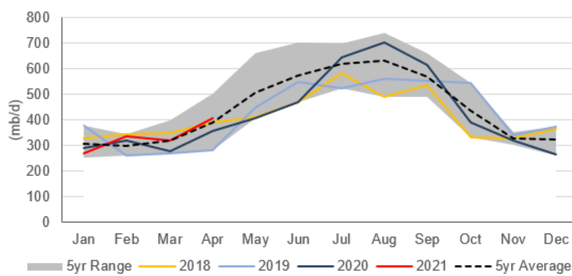
Figure 29: MoM Saudi Inventories, Production, Direct Use, Refinery Intake & Exports



Source: JODI, Bloomberg

Figure 30: Saudi Arabia Direct Use of Crude Oil For Electric Generation

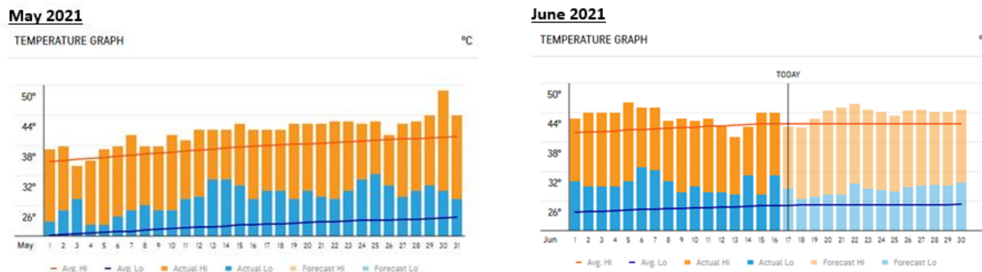


Source: JODI

Figure 31: Saudi Arabia Crude Oil Inventories (million barrels)

Source: JODI

Figure 32: Riyadh Temperature Recaps for May and June



Source: AccuWeather

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Oil – Saudi Aramco closes $12.4b sale of 49% of its oil pipelines infrastructure

Saudi Aramco raises $12.4b in infra deal

Saudi Arabia is far from going broke, but we continue to believe the primary financial theme for Saudi Arabia in the 2020s is getting Other People's Money to fund as much as possible in the country from helping Saudi Aramco cover its dividends to paying for the hoped for transformation of the country in its Vision 2030. This is the theme for the 2020s. On Friday, we saw another example of using OPM, when EIG announced the closing of its previously announced $12.4b deal of the EIG-led " leading infrastructure investors, today announced the closing of its previously announced transaction with Saudi Arabian Oil Co. ("Aramco"), under which a consortium of investors acquired a 49% equity stake in Aramco Oil Pipelines Company ("Aramco Oil Pipelines"), a newly formed entity with rights to 25 years of tariff payments for oil transported through Aramco's stabilized crude oil pipeline network. [LINK] EIG noted the investor group saying "*The EIG-led co-investment process in Aramco Oil Pipelines attracted a global group of leading institutional investors from China, the Kingdom of Saudi Arabia, Korea, the United Arab Emirates and the United States including, amongst others, Mubadala Investment Company, an Abu Dhabi Sovereign Investor, Silk Road Fund, Hassana and Samsung Asset Management*." When we see this transaction, it reminds of how North American E&P's went thru similar concepts decades ago to spin out midstream assets as a way to raise capital. Our Supplemental Documents package includes the EIG release.

Saudi nest egg, its net foreign assets -8.1b MoM in March, back to 11 yr bottom

The key reason we try to monitor data on a regular basis instead of looking every now and then is to check if the fundamentals are changing to a view. In the case of Saudi Arabia, we have monitored for years their Net Foreign Assets as we look at that for someone like Saudi Arabia as their nest egg to help them thru the Energy Transition. Saudi is far from going broke, but the data supports that their nest egg has been depleted at a faster rate than most expect, which is why we continue to believe the primary financial theme for Saudi Arabia in the 2020s is getting Other People's Money to fund as much as possible. Our June 6, 2021 Energy Tidbits reported on the latest data. Saudi Arabia saw a significant decline in their net foreign assets in 2020, but also since the peak in 2014. The decline in 2020 was fueled by low oil prices a long with higher spending. This a driving factor for the Saudi's want/need for higher oil prices and, perhaps just as significantly, the increasing of OPM in funding the future of Saudi Arabia. March and April saw Brent average over $65 and but this failed to stabilize Saudi Net Foreign Assets. Saudi net foreign assets declined in April despite the better oil prices. April 30/21 net foreign assets were $436.3b, down YoY vs $442.2b at April 30/20. The peak was $737.0b on Aug 31/14, which means the decline is $300.7b, a massive decline. Saudi net foreign assets had increased off the 11 year bottom seen in Feb, but with the MoM decline in April, it has set a new 11 year low. Our thesis is unchanged, there is a bottom level and that they likely don't want to go below $400b, which is why there has been this huge and increasing push to use OPM across the Saudi industry and government. The decline in Saudi net foreign assets is a positive to oil markets. On Wed, we tweeted [LINK] on the reminder that the decline is not just an increasing use of Other People's Money, its also a reason why Saudi will keep being disciplined to maintain high oil price. Below is our graph of Saudi Arabia net foreign assets.

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Figure 33: Saudi Arabia Net Foreign Assets

Source: Bloomberg

Oil – Saudi Arabia GDP down 3.0% in Q1

Saudi Arabia GDP contracts 3.0% in Q1

The General Authority for Statistics for The Kingdom of Saudi Arabia released GDP data for Q1 for the Kingdom [LINK]. Saudi Arabia's overall GDP decline 3.0% over the quarter, while non-oil sector GDP grew 2.9%. The report notes that the overall negative growth is due to a contraction in the oil sector by 11.7%, which is the largest contraction the oil sector has experienced in the past year. Some surprising data from the report is the oil share of GDP only 24.7%. On the surface, it probably gives the view they wanted that economy is diversifying. However, when we look the split, Government Sector (23.6%), Private Sector (51.7%) and Oil Sector (24.7%), we can't help but wonder how much of this would there be if oil wasn't the strength of Saudi Arabia. Surely finance activities, government services, real estate etc. would be way less. Government expenditures certainly wouldn't be as big without oil being the core.

Oil – Will Biden's desire for a moon shot get a JCPOA deal done in July?

July to be key month for JCPOA

The reports out of Vienna this morning are that this round of JCPOA negotiations has ended with the next round of talks potentially around July 1. We have a simple take on Iran's elections and the chance for a return to the JCPOA. There was no surprise that Supreme Leader Ali Khamenei's preferred candidate, Ebrahim Raisi, was elected President from the June 18 election by a huge margin. The US has had the last few months to prepare for this event as it was all known, which is why we are surprised that they didn't get to a deal before June 18. Surely Biden didn't expect anyone else to win. We expect that one of the Biden administration talking points today from the Sunday political talk shows is that Raisi's election won't change the US approach to the JCPOA. For someone to believe this, it means that they believe Biden is prepared to take the risk that he may not get a return to the JCPOA. And we believe it throws the ball back into Biden's court as to how bad he wants to accomplish one of his 2021 moon shots, the return to the JCPOA because Raisi's election brings a huge wildcard to the JCPOA. Raisi is a hardliner and the no one in the west really knows him or has a real read on him as Raisi has had essentially zero international dealings. Its hard to see Biden taking the risk of this wildcard if the return to the JCPOA is in fact one of the moon shots he wanted to accomplish in 2021. This is how we have described his 2021 action plan, a number of moon shots as his priority including the JCPOA. We just believe it means that Biden will be pushing on his moon shot in July, which should still see it being at least September before any additional burst of Iran oil hits markets.

Oil – Kpler says no oil supercycle now, we think maybe post 2022

Kpler says no supercycle for oil

One of our must listen to early morning podcasts is the daily Gulf Intelligence New Silk Road "Live" out of Dubai. We like the fact that there guests are global and regularly have global trading and shipping guests. We tweeted [LINK] on the Tuesday podcast that featured Kpler'

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Lead Analyst APAC, Kevin Wright. [LINK]. Wright made a point of highlighting "*But oil is very far from in a supercycle. Its a very different scenario at the moment.*" And "*whereas the oil cycle is really based on constraint of supply. these levels that we are talking at the moment really have been achieved off the back of OPEC+ cuts. so if you know that there is additional supply that can come onto the market at any time, that's rally sort of saying the market knows this strength is artificial and therefore its not really a supercycle in the same way. so that's really the sort of point that we are making. But as I say, my guys in London and Houston are doing that on Thursday".* In our tweet, we said we agree with Wright that oil is not in a supercycle right now, but we think there is an increasing set up for a supercycle for oil post Covid post 2022 "*if demand keeps growing & #Biden #Trudeau others permanently impact supply due to climate restrictions*?" Our Supplemental Documents package includes the transcript we made of the Kpler comments.

Oil – Star Fuels (Dubai) warns on short term caution to oil, look at 3-2-1 crack spread

Star Fuels cautions on H2 oil prices

There was another good oil trader reminder from Thursday's Gulf Intelligence New Silk Road "Live" podcast [LINK], this time from Matt Stanley, Star Fuels Director out of Dubai. We tweeted [LINK] on Stanley's comments warning on the short term caution to oil prices. He recognizes crude oil inventories have declined but warned gasoline inventories are highest since Feb. And then he said "*And if you want a bellweather for demand, lots of people will look at what's called the 3-2-1 crack in the US. That's 3 barrels of WTI in, 2 barrels of gasoline out and 1 diesel out. that's the lowest its been since February as well. That was trading $25 a barrel in May, its now trading just above $17. So yes, crude might be going places, but the same argument. Crude has to be burned and refined and consumed. In order for oil demand to look anything like the tangible, these forecasters, you know the second half rhetoric is all about demand is going to come roaring back. You look at real tangible data regarding demand and I can't see, I can't form that same argument for the second half rhetoric.*" Old time oil watchers will remember the old days in the late 1990's where there wasn't anywhere near the level of current information to gauge near term oil market views. However the 3-2-1 crack spread was there and was used as one of the key near term oil indicators. Our Supplemental Documents package includes the transcript we made of Stanley's comments.

Figure 34: 3-2-1 crack spread

Source: Bloomberg

Oil – Vortexa floating storage -2.2% WoW, down 49.8% YoY

Vortexa floating storage

The peak of crude oil in floating storage was almost one year ago. Bloomberg reported on Vortexa floating oil data that showed a WoW decrease of 2.19 mmb or -2.2% WoW to 95.71 mmb on June 11 from 97.9 mmb on May 28. Note there was a significant revision to the June 4 numbers as they were adjusted upwards from 93.04 mmb. Floating storage is down

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55.8% since the June 19, 2020 peak of 216.38 mmb. Asia Pacific declined by 6% to 61.13 mmb/d, which coincides with the gradual improvement in the COVID-19 outbreak in India. US Gulf Coast also declined 29% to 659,000 b/d. Our Supplemental Documents package includes the Bloomberg Vortexa report.

Figure 35: Vortexa Global Floating Storage Level (1 yr)

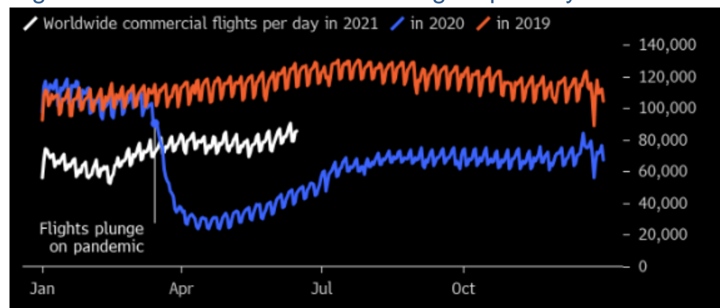
Source: Bloomberg, Vortexa

Bloomberg's Oil Demand Monitor

Oil – Bloomberg Oil Demand Monitor, Air travel finally on recovery path

We recommend reading the weekly Bloomberg terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. Their update provides more support that oil demand is moving into the demand surge period. Air travel is the big demand story this week, with the number of passengers passing through TSA checkpoints at US airports surpassing 2 million a day for the first time since March 2020. Even in Europe, where air travel has been lack-luster, air traffic has improved by a third this past month. While seat capacity is improving in Europe- both France and Germany have surpassed 1 million this past week- the region still has less than half the number of planes in the sky compared to the equivalent 2019 week. The UK is still at 76% below 2019 by seat capacity, while road traffic was only 1% below the level seen in the first week of February 2020, before lockdowns hit. In fact, London had congestions levels above typical 2019 levels. Paris' congestion levels were only -5% vs 2019, which is a good sign of improvement. Even India is rebounding since May's coronavirus outbreak. The first half of June saw sales of diesel and gasoline recovering, rising by 12% and 13% respectively MoM. Below is a graph of worldwide commercial flights for 2019-2021, demonstrating that about 30% of demand is still missing to return to pre-pandemic levels. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Figure 36: Worldwide commercial flights per day



Source: Bloomberg, Flight Radar

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Oil – Bloomberg NEF Global Aviation, Jet fuel demand recovery still a long way to go

Bloomberg NEF Global Aviation

On Wednesday, we tweeted [LINK] *"Great weekly air travel/jet fuel data from @BloombergNEFddoherty26@bloomberg.net. can see impact of increasing reopenings in May/June. Just think below #OilDemandSurge doesn't build in full recovery in jet fuel. #OOTT #Oil"*, which was reference our tweet from earlier that day *"#OilDemandSurge. Thx @MoEnergy_Saudi Abdulaziz great job on #OPEC+ supply, the #Oil theme for rest of 2021 is the oil demand surge. @IEA OMR fcst Q3 demand +3.1 mmb/d QoQ & +6.0 mmb/d over Q2/Q3/Q4. @OPECSecretariat fcst Q3 demand +3.1 mmb/d QoQ & +6.45 mmb/d over Q2/Q3/Q4. #OOTT".* Based on the number of passenger flights scheduled, Bloomberg NEF estimates that jet fuel demand over the four coming weeks will be ~4.45 mmb/d, which is still far below the average global consumption of 7.9 mmb/d in 2019 [LINK]. While jet fuel demand recovery is still lagging, flight departures are growing in the US and India. This week was also the lowest number of cancellations in months at only 1.4% of scheduled flights. China led the flight declines this week amid surges of COVID cases in its Guangzhou city, which is significant as China was previously leading the world for flights being practically back to pre-pandemic levels or exceeding the equivalent 2019 week. Our Supplemental Documents includes the BloombergNEF graphs.

Oil & Natural Gas – Colorado to strengthen "financial assurance" regs for O&G operators

Colorado to increase financial guarantees from O&G operators

We expect to see increased financial guarantees put on all oil and gas wells in New Mexico, Colorado and likely other Democrat states, so were not surprised to learn that Colorado is likely following in New Mexico's footsteps (detailed in the item below) to require significantly increased financial guarantees for oil and gas operators to prevent the risk of unfunded orphan well abandonment liabilities. It this proceeds in the fall, it will add significant financial guarantees for Colorado oil and gas wells. On Thursday, the Colorado Sun [LINK] reported that regulators are proposing to increase financial guarantees by operators for each of their wells. The draft regulations from the Colorado Oil and Gas Conservation Commission (COGCC) are set to require a plugging financial guarantee of $78,000 for each of a company's wells. Deputy director of the League of Oil and Gas Impacted Coloradans said *"The goal should be for the oil and gas industry to be cleaning up its mess and that the taxpayer isn't on the hook. The aim is to avoid some orphan well crisis down the road."* Regulators will require companies to return shut-in or temporarily abandoned wells to production, increase the bonds or plug them within 6 months. The proposed rules would also take aim at low producing wells. Any operator with more than 60% of its wells producing less that five barrels a day would fall into "Tier 3", and would be required to start paying into a fund over 10- years to cover full-cost bonding of 78,000 a well. The COGCC said *"Tier 3 operators may have the highest risk of orphaning their wells, because they have a higher percentage of low producing wells that generate relatively little revenue, and they are plugging a relatively low percentage of their wells".* Ironically, these new regulations could put small operators out of business, creating orphan wells. For example, Impetro Resources, a small operator, operates 100 "stripper" wells that produce less than 15 barrels of oil a day – 76 of which produce under 5 bbls a day. AS a result, the company would have to pay full bonding of $7.8mm for the operation. If it had 2 fewer low producing wells, it'd only have a financial obligation of $1.8mm, falling in to Tier 2. For a small operator, that type of bonding requirement is financially prohibitive. Sam Bradley, VP of Petroleum Engineering at Impetro said *"This is unfair. Individual wells don't go bankrupt, operators go bankrupt…Repeatedly over the last two years we cautioned the commission that this approach would create orphan wells if they weren't careful, and they completely ignored us".* Our Supplemental Documents package includes the Colorado Sun report.

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New Mexico estimated O&G industry lacking $8.1b in bonding

Our May 30, 2021 Energy Tidbits highlighted New Mexico's estimate that there was an estimated $8.1b potential shortfall in costs for abandonment/reclamation for oil and gas assets (not just wells) in New Mexico. In an Op-Ed in the Albuquerque Journal, Stephanie Garcia Richard, Commissioner of Public Lands in New Mexico [LINK] wrote on a study by the Center for Applied Research that indicated the NM oil and gas industry is inadequately bonded to the tune of $8.1bn. New Mexico concluded "*Overall, the Center finds that existing financial assurance requirements applicable to all infrastructure types are not sufficient to fully offset estimated closure and clean-up costs. …This study finds the total cost of closure and clean-up of the oil and gas infrastructure currently located on state trust and private lands to be approximately $8.38 billion. Whereas the total financial assurance coverage for this infrastructure accessible to state regulatory entities for the purpose of closure and clean-up efforts is estimated to be approximately $201.42 million, resulting in a total financial assurance gap of approximately $8.18 billion.*" The analysis did not have a recommendation on bonding or other funding. However, in the op-ed, Stephanie Garcia Richard clearly laid out bonding as the plan. She said "*In addition to financial ramifications, we all have a responsibility to the land. When operators are done with their leases, we require that they plug wells so that gas and methane don't leak into our air. We require removal and cleanup of old infrastructure and remediating spills and contamination. And finally, we ask that they reseed the land to restore it to its original state. No one can afford these obligations if they have gone bankrupt, so we need companies to be adequately bonded on the front end.*"

Oil & Natural Gas – Putin reminds Northern Passage is Russia's

Northern Passage is Russian waters

It was interesting to see one of the points Putin spent the most time on in his Geneva press conference post his Biden meeting. He was asked asked about the US' accusations of Russia militarizing the Arctic. Putin made sure he specifically named the Northern Passage that these are Russian waters. Consequently, he noted that is Russia's sovereign right to do with them what they please, including modernizing for military and infrastructure. Putin remined that ships need to get Russian permission to sail through the Northern Passage. Putin said "*"Namely, we, Russian, we intend to fully adhere to these international legal standards. We're not violating anything. We're prepared to assist all stakeholders and all companies in exploring the Northern Passage"*, and "*There are 1,000 nautical miles. This is our sovereign right to either let ships go through there or not, but we're not abusing this rule. We're providing to anyone who -- we're providing it to anybody who wants. There were around 1,000 applications last year, I think. And most -- some of the ships are under Russian flags. And our – our regulatory authorities monitor compliance with the Polar Code of Conduct, which has requirements for ships*." He also addressed the concerns of militarization, saying that Americans' concerns are "completely unfounded". He said *"We're not doing anything that wasn't happening during the Soviet Union. We are establishing an infrastructure that was destroyed. Yes, we're doing that at the modern level. It includes military and border infrastructure, and also conservation infrastructure. We are creating bases for our disaster relief services, in order to save people in the sea, if it comes for that, God forbid, and also to protect the environment."* Our Supplemental Documents package includes excerpts from the Bloomberg Transcript of the press conference.

Russia's Northern Sea Route shortens shipping time by 14 days

We last highlighted the Northern Passage at the time of the Suez Canal shutdown in our April 4 Tidbits, and it helps to demonstrate the value added from Russia's northern passage. Time is money and this is a huge savings in time and cost even if

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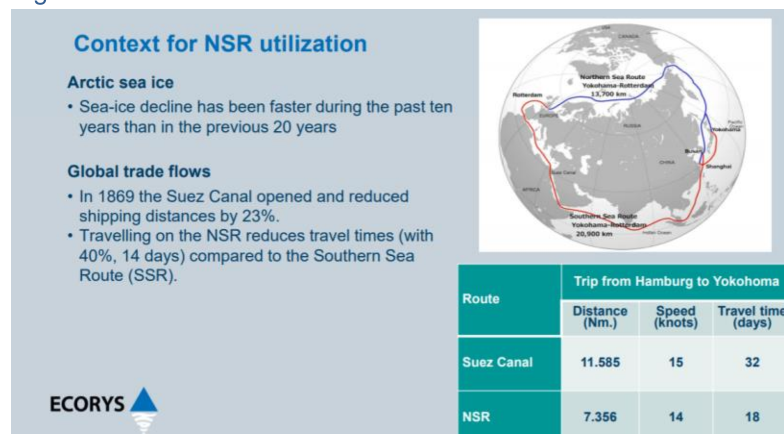
there could be added insurance costs in the northern route. This was very topical as at the time of writing the Evergiven was stuck, blocking the Suez Canal. We noted that we had to believe that the Suez Canal stoppage got shippers thinking more about the utilization of Russia's Northern Sea Route. We also noted in our Jan 24, 2021 Energy Tidbits that Russia would be attempting the earliest ever LNG shipment to Asia through the Northern Sea Route in May, as the transit season is getting longer for the NSR. The NSR is a much shorter route from Europe to Asia than through the Suez, with a trip from Hamburg to Yokohoma taking 14 days less using the NSR and is ~4,000 Nm shorter. Below is a good graphic from the ECORYS discussion paper at the International Transport Forum. [LINK]

Figure 37: Suez Canal vs. Northern Sea Route



Route	Trip from Hamburg to Yokohoma		
	Distance (Nm.)	Speed (knots)	Travel time (days)
Suez Canal	11.585	15	32
NSR	7.356	14	18

Source: International Transport Forum, ECORYS

Energy Transition – Shell reminds energy will cost more under energy transition

Another Shell Linkedin post

Another week, another Shell Linkedin post, this time it was Shell Netherlands President Marjan van Loon [LINK] Thursday morning post "*Accelerating climate action in the Netherlands*". We tweeted [LINK] *"#Shell to accelerate #NetZero strategy "regardless of whether we appeal" Dutch ruling. Hmmm! need "effective regulations and financial incentives" for economic impetus to accelerate ie. #EnergyTransition isn't cost competitive so power will cost more. #NatGas #OOTT".* Its worth thinking about her post because it reinforces a number of key Shell Energy Transition themes post the Dutch ruling. (i) We have to start to wonder if Shell is going to appeal the Dutch ruling. In the Shell CEO Linkedin post, he said "*and we expect to appeal*". Today's Linkedin post by the Shell Netherland President says "*regardless of whether we appeal the ruling*". We don't get it. Its not clear what they are waiting for? (ii) Regardless, they are reinforcing they are accelerating their climate change actions. (iii) It is difficult to see how Shell could do anything that increases their oil and gas exposure beyond their planned energy transition strategy, which is now inadequate relative to the Dutch ruling. Rather as noted in our comments last week on Tourmaline and LNG Canada, we believe Shell has to look for more ways to reduce their emissions relative to their plan. (iv) Reminder that reaching these higher emissions reductions will require drastic changes in how the world uses and produces energy. No one can disagree that Greenpeace and other committed climate change people understand that there will need to be drastic changes. However, we do not believe that most climate change supporters understand the scope of the drastic required changes. Does anyone for a moment believe that celebrities will fly commercial? Netherlands is a climate change leader but Shell reinforces that hitting the Netherlands overall emissions reductions is almost

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impossible. Doesn't mean they won't try, it just means wont' happen on time. Shell writes "*By 2030, the Netherlands must have reduced CO2 emissions by almost 50% compared to 1990. That plan sounds clear, but achieving it is hard and complicated. Over the last 30 years, between 1990 and 2020, the Netherlands has reduced its emissions by 20%, so the country has only 10 years left to achieve the remaining 30%. This leads to a clear conclusion: just like the rest of the world, the Netherlands needs to drastically increase its efforts to tackle climate change*". (v) Energy will cost more. This is not the messaging from the policymakers but note van Loon's comments. The energy transition items only works on a cost competitive basis if you penalize fossil fuels, give breaks to energy transition items or the likely combination of both. Shell writes "*Our customers and society must be encouraged to make the right choices, and discouraged from consuming fossil fuels. This would give Shell and others the economic impetus to accelerate*." (vi) Governments need to increase policy actions. Shell writes "*This requires unprecedented collaboration. With other businesses, with our customers, and with governments that can accelerate change with effective regulations and financial incentives."* Our Supplemental Documents package includes the van Loon Linkedin post.

Reuters: Shell considering selling Permian

After we went to print last Sunday, Reuters reported [LINK] that Shell was reviewing its Perman holdings for a potential sale. We tweeted [LINK] *"#Reuters "#Shell weighs blockbuster sale of Texas shale assets". Permian is "core upstream asset" & 1 of 9 core assets. Have to sell #Oil assets if they want to comply with Dutch ruling. Would be big hit to cash flow*." As we remind, the only way an oil company can make a significant near term reduction to emissions is to sell oil and gas assets and pass on the emissions to someone down the food chain. And our big concern on the Dutch ruling was that it used 2019 as the baseline for Shell and not 2016 as used by Shell. Shell sold its Cdn oil sands assets in 2017 so had a big reduction to emissions and that won't be given credit in the Dutch ruling. This is the reality of the Dutch ruling and if Shell is to accelerate its plan, it needs to sell oil assets even if the recent Shell upstream strategy in May identified the Permian as its core shale assets in 1 of its 9 core upstream asset areas. Our tweet also included the excerpts from the Upstream Strategy that reinforce the challenge for any company in the energy transition – if they sell oil assets, they are selling high cash flow/IRR assets and replacing them with lower cash flow/IRR renewable assets. Our Supplemental Documents package includes the Reuters report and the Shell Permian slides.

Energy Transition – Reminder Liberals don't back off messaging even if no one agrees

Trudeau as Dean of G7

Last week's (June 13, 2021) Energy Tidbits highlighted our view that its too late to stop policymakers on aggressive climate goals. We noted the recent BlackRock Larry Fink clear warning "*we do not have the technology to do all this"* in reference to the aspirations of the energy transition and his clear warning to policymakers "*we're going to have much higher inflation, because we do not have the technology to do all this yet to have it equivalent to the cheapness of hydrocarbons. And so that's going to be a big policy issue going forward too. Are we going to be willing to accept more inflation if the inflation is to accelerate our green footprint? And that's going to be a big policy question".* Our concern was that this technology shortfall was well known and unfortunately, we expect policymakers remember more Fink being one of the leaders pushing for the Energy Transition for the last 18 months and not his recent overdue warning. To be fair to Fink, once the politicians (of all stripes) get their message, they try to keep messaging the same message even if others aren't buying. They aren't going to back off this messaging thru COP-26 Glasgow in Nov and for months thereafter. We were reminded of how politicians don't back off messaging even if no buyers

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concept with the Bloomberg reporting of the Cdn delegation to the G7 trying to convince other delegations and foreign media that Trudeau is now the new Dean of the G7. Bloomberg wrote "*With Angela Merkel preparing to exit the international stage, the longest-serving leader of the Group of Seven is Canada's Justin Trudeau. While he is positioning himself as the new elder statesman, no one sees him owning the role in the way the German chancellor did. Joe Biden has decades of experience on the international stage, even if he's new to the U.S. presidency. France's Emmanuel Macron has aggressively positioned himself as Merkel's heir in Europe (she will step down after an election in September) and Italy's Mario Draghi, with his years of experience running the European Central Bank, is used to being heard wherever he goes. In the company of such heavyweights, the leader of the smallest G-7 economy cuts a marginal figure in spite of efforts to be the new "dean," as he became known among the Canadian delegation at this weekend's summit in Carbis Bay on the southern English coast".* Our concern is not whether Trudeau is viewed as the new G7 Dean, but that it reinforces the thesis that the Liberals messaging will not change on the reality of the Energy Transition even if others, albeit a little late, warn that the Energy Transition aspirations can't be met. The Energy Transition is going to happen, but the longer there is a denial on the reality of the aspirations, it increases the risk for a big bust coming. Our Supplemental Documents includes the Bloomberg report.

Liberals go after thermal coal

Energy Transition – Are Liberals setting up to strand thermal coal assets?

Earlier in the memo, we noted Trudeau's refusal to acknowledge the Cdn oil sands pathway to Net Zero and our concern that it feels like he is setting up the potential to strand some oil sands potential. As much as it feels that way for oil sands, it is looking worse for thermal coal assets. On Wednesday, we tweeted [LINK] *"#Liberals hit @jkenney & Alberta #Coal. 06/11, impossible for new thermal #Coal plant. Today, hit coal exploration. Also preparing new regs on existing coal mine discharges, this feels like fits May 21 communique #G7 accepting accelerated moves will strand high carbon assets."* There were two items that are hitting thermal coal. (i) On June 11, the Liberals released "*Government of Canada releases Policy Statement on future thermal coal mining projects and project expansions*" [LINK]. The policy and the intention is quite clear – the Liberals will not support future thermal coal mining projects expansions. The Liberals say these projects "*are likely to cause unacceptable environmental effects within federal jurisdiction and are not aligned with Canada's domestic and international climate change commitments. Accordingly, this position will inform federal decision making on thermal coal mining projects."* But note the Environment Minister Wilkinson's comment on the release, he makes it clear there is a broader agenda, its electricity generation from thermal coal. Wilkinson said "*Eliminating coal-fired power and replacing it with cleaner sources is an essential part of the transition to a low carbon economy, and as a result, building new thermal coal mines for energy production is not sustainable."* (ii) Concern that the Liberals are setting the stage for closing down some existing thermal coal mines. On Wednesday, Radio Canada reported on the June 11 policy on new or expansion of thermal coal mines but added some additional new regulations coming that could hurt existing thermal coal mines. This will be a key item to watch. Radio Canada wrote "*Last week, the minister announced that he would make it more difficult to operate new thermal coal mines. The government is also preparing new regulations on discharges from mines such as selenium*." Our Supplemental Documents package includes the Liberals June 11 policy announcement and the Radio Canada report.

Liberals link this to G7 May 21 30-pg communique on tougher climate actions

It is important to note the Liberals June 11 new thermal coal policy as the Liberals clearly state they are moving enact the commitments made by the G7 policymakers on May 21. Without a doubt, they are saying they are moving on those

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commitments. We can't stress enough the significance of the G7 May 21 30-pg communique wherein the G7 policymakers committed to numerous more aggressive actions on climate change. Its why we titled our May 23, 2021 "*G7 Policymakers Make New Commitments On Energy Transition ie. Future Emissions Laws/Regulations That Are Coming*". The Liberals have clearly linked these thermal coal actions to the May 21 G7 30-pg communique. The Liberals June 11 new policy stated "*Last month Canada, alongside other G7 countries, stressed the need to immediately end international investments in thermal coal power generation projects that emit carbon pollution. As G7 world leaders gather in the U.K. to combat global challenges, including climate change, and as the next step in Canada's commitment to addressing harmful GHG emissions from coal, the Honorable Jonathan Wilkinson, Minister of Environment and Climate Change, today announced the Government of Canada's public policy statement on new thermal coal mining or expansion projects. The statement indicates that the Government considers that these projects are likely to cause unacceptable environmental effects within federal jurisdiction and are not aligned with Canada's domestic and international climate change commitments. Accordingly, this position will inform federal decision making on thermal coal mining projects. Today's policy announcement provides clarity and regulatory certainty for industry, investors and Canadians. It represents another critical step in our shared path to a cleaner and more prosperous future, and places Canada among the first G7 countries to adopt such a policy".*

Energy Transition – Equinor lowers expected base returns on offshore wind

Equinor lowers wind IRRs

It wasn't a good week for Equinor shares following their capital markets day with the shared down 8.7% and a number of analyst downgrades. That's not our focus for Energy Tidbits, rather our focus is to look for items that impact the broader energy outlook. Equinor has been one of the early movers for the energy transition with early entry into offshore wind in size. Its that early entry that allows them to get significant uplift from expected base returns from renewable energy via farming down their interest and promoting others into a project. And of course, Equinor also has some high quality oil and gas in the North Sea ie. Johan Sverdrup. On Tuesday, we tweeted [LINK] "*Good thing #Equinor has #Oil #NatGas w/ ave payback time <2.5 yrs & >20% base IRRs as they lowered expected base returns (prior to farmdowns & project financing) from #Wind to 4-8% vs 6-10% in Dec. But didn't include average payback time for wind, Hmmm! #EnergyTransition #OOTT*." This was the key new disclosure for Equinor's offshore wind projects. In its December 2020 Equinor Business Update presentation, Equinor reported that its expected base returns for renewable (basically offshore wind) were 6-10%, with is before any farmdowns or project financing. This week, its Capital Markets Day lowered the real base project returns to 4-8% before any farmdowns or project financing. Equinor is a reminder that the shift to renewables means lower returns. The Capital Markets Day also showed Equinor's much higher returns from oil and gas with >20% internal rate of return and an average payback time of <2.5 years. Our Supplemental Documents package includes Equinor's slides from its Dec 2020 update and this week's Capital Markets day.

Energy Transition – Audi move to renewables for plants, will buy carbon credits

Audi plants to run on renewables by 2025

On Thursday, Audi announced [LINK] it plans to decarbonize every phase of its vehicles' lifecycle – from manufacturing, utilization and recycling. Starting with utilization, Audi announced that it would fund the expansion of wind and solar farms in Europe, which are expected contribute an additional 5-terawatt hours of green power to the grid by 2025. Its first project, a solar park in Germany, is expected to come online in 2022, with a capacity of 170 million kilowatt hours. In conjunction, Audi launched the goal to reduce the carbon

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footprint of its fleet by 30% by 2025. Turning to their manufacturing side, they also announced their goal to achieve net zero carbon emissions at all sites by 2025. We continue to see companies seemingly downplay the role of buying carbon offsets or credits to get to their carbon targets. Audi also noted, in closing, that in order to close any gap to achieve net-zero, they will offset emissions through buying carbon offsets or credits around the world to reach their targets. Our Supplemental Documents package includes the Audi release.

Won't be surprising to see Audi look for carbon offsets in Mexico

We won't be surprised to see companies like Audi who are embarking on "worldwide voluntary projects" to reach net-zero to look to buy carbon offsets/credits in countries like Mexico where they have factories ie. investing in planting trees in Mexico. Plus Mexico has mangrove potential, and mangroves are superior carbon captors. We tweeted on April 25 [LINK] *"Did you know carbon absorption of mangrove forests is multiples higher than tropical forests? Indonesia Pres @jokowi says 4 times higher. Makes sense not all plants absorb the same amount of carbon. Good for ID, MEX, others. #OOTT #NetZero".*

Audi moving to 100% EV by 2026

On Thursday, Bloomberg reported that Audi CEO announced it would no longer be launching even hybrid models starting in 2026. Subsequently, the company plans to only sell electric cars, with the one exception being the Q off-road model which will stop being sold in 2033. They plan to re-brand and re-design the A3 and A4 models to electric vehicles, changing their names to the A3/A4 e-tron. This si much earlier than other vehicle manufacturers and you have to wonder what this will do to their sales post 2026. Our Supplemental Documents includes the Bloomberg release.

Energy Transition – Honda only selling EVs by 2040, discontinues hydrogen Clarity

Honda focusing on EVs to reach its 2040 zero-emissions goal

While Honda is setting a goal of selling only zero-emissions vehicles by 2040, it is also phasing out production of its Clarity hydrogen fuel cell car. Nikkei Asia reported on Wednesday [LINK] that due to weak demand for its hydrogen fuel car, it will be stopping all production of the vehicle and focussing its efforts on electrics to attain its zero emissions goal. The Clarity was first rolled out in 2016, but due to a relatively high price ($71,200) and a lack of hydrogen fuel stations, demand was weak; Honda only sold 1,900 units worldwide. Along with the Clarity, the Legend and the Odyssey, both gasoline fueled models, are also being discontinued.

Energy Transition – BP acquires 3 more solar portfolio acquisitions in the last 6 mths

BP Lightsource's solar project pipeline reaches over 3GW

BP announced on Friday that its Lightsource JV's Spanish solar development pipeline has reached 3GW in less than 2 years [LINK]. This total has been achieved after a new project pipeline acquisition was made from Group Jorge, which totals 703MW. The newest pipeline addition includes 703MW across 3 Aragon-based projects, 422MW from 2 projects in Zaragoza and one 281MW project in the Huesca province. BP also announced that Lightsource will also be completing its flagship first project in Zaragoza soon. Fernando Roger, Lightsource BP's head of Spain said *"Building quality and trusted local partnerships is key for our progression across Spain and we look forward to increasing our investments and activities across the region. Solar developments offer many additional opportunities for economic growth, skills development and boosting biodiversity and we will work together with local stakeholders and communities to further shape our plans and bring these projects online".*

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How BP gets to 8-10% IRR for renewables projects

We last highlighted the math of how BP gets its targeted 8-10% return on renewables in our June 6, 2021 Energy Tidbits. It is worth reminding. BP doesn't spell it out, but the way they get to 8-10% returns is by throwing in trading, marketing and other integration items. BP's CEO spelled this out in his Sept 2020 strategy presentation. To date, trading/marketing was kind of a bonus or surprise upside to BP in a deal. Now it becomes part of the way they get returns to renewable deals. We tweeted [LINK] *"1/2 $BP CEO says investors not yet rewarding strategy shift to #renewableenergy. Yes, EU investors want Energy Transition shift but won't sacrifice returns. CEO's math on how BP gets 8-10% return on renewable is likely why investors are in "show me" mode on returns #OOTT #NatGas".* With renewables projects, expected returns that are much lower than what investors expect with oil and gas projects, so the IRR calc has to be different. Our Supplemental Documents package includes the BP CEO Sept 2020 comments.

Energy Transition – ADB calls for urgent action on climate change

ADB president speaks on the urgent need for climate action

On Tuesday, President of the Asian Development Bank, Masatsugu Asakawa spoke at the Asia Clean Energy Forum 2021 [LINK]. The headline of the speech was "*the urgent need for climate action*". Asakawa drew attention to the fact that Asia and the Pacific account for 36% of global GDP but are also responsible for around 80% of the world's coal consumption and 60% of CO_2 emissions. He brought up examples of consequences the region has faced as a direct result of climate change, such as floods, droughts and storms. The key changes he highlighted for the energy sector to take bold action were *"•Avoiding the use of fossil fuels and switching to low-carbon fuels;•Deploying more renewable energy;•Improving energy efficiency;•Reducing final energy demand; •Incentivizing investment in low-carbon technologies"*. The ADB is making several commitments to support the energy transition, targeting a focus of 75% of ADB's operations on climate adaptation and mitigation, providing at least $80bn in climate financing from 2019-2030, which averages to $6.6bn annually. The ADB also plans to have an updated energy in place by the end of 2021, in time for COP26. As we have noted prior, we expect to see others upping or increasing emphasis on their climate targets ahead of COP26. Our Supplemental Documents package includes the ADB speech.

However, ADB realizes natural gas needed as the transition fuel

Asakawa's speech is linked to the ADB draft energy transition policy, which is to be approved prior to COP-26 Glasgow in Nov. Our May 9, 2021 Energy Tidbits highlighted ADB's draft energy transition policy. Its only a draft energy policy, but it looks like the Asian Development Bank recognize the reality that natural gas is needed as the transition fuel in Asia. We had tweeted [LINK] "*Note below excerpt @ADB_HQ draft energy policy, won't finance #Oil #NatGas E&P, but will finance NatGas to replace coal generation, diesel power, modern means such as stove etc. #NatGas can continue to be a transition fuel in Asia #EnergyTransition".* We weren't going to tweet on it but we were concerned that the reporting on the draft energy policy focused on the E&P aspect (ie. ADB wouldn't finance natural gas drilling) and didn't focus on the ADB's continuing support for natural gas as the transition fuel. It means natural gas consumption is still positioned grow in Asia. This is only a draft policy that will be under review that the ADB plans to finalize in Oct in time for COP-26 Glasgow in Nov. The reporting highlighted no more financing for coal, but also for oil and gas exploration and development. But didn't really highlight that the ADB understands the reality on how natural gas is needed to be the transition fuel. The ADB looks to be taking a realistic case to the use of natural gas as well as

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recognizing the need to be practical on the cost of energy on its countries. Don't forget this is the ADB that there are a lot of member countries in the ADB in Asia ranging from the island countries like Marshall Island thru SE Asia and into the stan's from the former USSR. Point #86 noted ADB will only finance a coal plant for investments to modernize ie. " *to re-engineer such plant for use of cleaner fuels, such as natural gas or renewable energy sources.*" Point #87 then covers the broad range of natural gas of financing natural gas trans, mission, pipelines, LNG terminals, storage, gas-fired power plants, natural gas for heating/cooking, etc. The caveats wouldn't stop any such projet unless it was to do something like replace renewable power. To be fair to the reporting, this is not an easy to read 37-pg draft. There is no summary, its just a listing of points in a single spaced document [LINK].

Energy Transition – Michelin WISAMO can improve ship's fuel efficiency by up to 20%

Michelin's sails improve ship fuel efficiency

We wish we could have found some idea of the cost or economics for Michelin's WISAMO (Wind Sail Mobility) so we could try to figure out the size of the opportunity. At a minimum, it should be looked at when they say they can improve ship efficiency by up to 20%. Its basically a modern day fully automated sail that is added to a ship. Kind of a back to the future idea reminding of the early steam ships in the 1800's having steam engines and sails. Michelin writes "*The Wing Sail Mobility (WISAMO) project, an automated, inflatable wing sail system, was introduced this week by Michelin, the French company known for its tires and restaurant guides. Two Swiss inventors co-developed the system with Michelin R&D. The telescopic mast is retractable, making it easy for a ship to enter harbors and pass under bridges. The puffy, 1,000-square-foot sails, each shaped like an airplane wing, automatically fold up like an accordion on the ship's deck when not in use. Why it matters: Michelin says the system — which operates in addition to conventional propulsion — can improve a ship's fuel efficiency by up to 20%. (Watch a video of how it might work here.)*" This is not a sail like on a sail boat, rather its an automated sail that changes shape and contours to maximize wind efficiency. The video clip [LINK] illustrates how it automatically changes shapes, positions, and lowers/raises. Its an interesting video.

Figure 39: Michelin's WISAMO

Source: MIchelin

Energy Transition – Texans are surprised their thermostats were turned up remotely

Texans surprised by electric utilities

There were a number of reports on Friday on how, during this week's heat wave, Texans were waking up hot and sweaty in the middle of the night only to be surprised to find out their thermostats were remotely turned higher. The reports noted that one of the common denominators were people who had enrolled in the "Smart Savers Texas" electricity program

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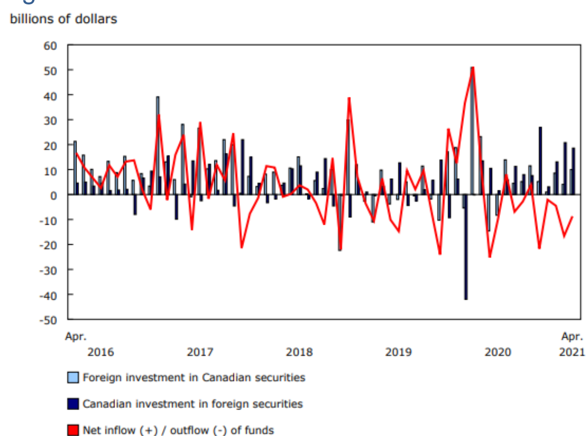
operated by EnergyHub. Apparently these Texans did not realize their thermostats could be operated remotely ie. in a period like this week when power was trying to be conserved to avoid power outages. We are surprised that people were surprised. It's the way of the future.

Capital Markets – Cdns buy US shares, foreign purchases of Cdn shares plummet

Foreign investment in Cdn securities plummets

We last highlighted in our April 18 Tidbits that Canadians were buying up US shares, and foreign purchases of Canadian shares were reaching four-year highs. The same trend continues for Canadian purchases, but the trend has reversed for foreign investment in Canadian shares. Stats Canada reported that over the month of April, Canadian investors acquired $18.6bn of foreign securities, while foreign investment in Canadian securities reached $10.0bn [LINK]. Of Canadian investors' $8.5bn in foreign shares, $5.4bn (63.5%) were in US shares and focused on large cap technology firms. Canadian investors also had increased their holdings of foreign debt securities by $9.7bn in April. On the other hand, foreign investment in Canadian securities fell to $2.8bn in April, the lowest amount since October 2020. Below is a graph that shows Canada's international transactions in securities for the month of April.

Figure 40: Canada's international transactions in securities (April)



Source: Statistics Canada

Capital Markets – IFIC: Mutual funds and ETF assets +3.0% in May

Mutual Fund & ETF assets increase MoM

On Thursday, the IFIC (Investment Funds Institute of Canada) reported [LINK] mutual funds and ETF sales for May. IFIC does not provide any commentary on the numbers but, given the strong market performance since the end of Jan dip, it is not surprising to see an increase. For May, the IFIC reported *"Mutual fund assets totalled $1.896 trillion at the end of May 2021. Assets increased by $13.2 billion or 0.7% compared to April 2021. Mutual funds recorded net sales of $8.4 billion in May 2021. ETF assets totalled $297.4 billion at the end of May 2021. Assets increased by $9.5 billion or 3.3% compared to April 2021. ETFs recorded net sales of $7.6 billion in May 2021."* Our Supplemental Documents package includes the IFIC release.

Capital Markets – Dennis Gartman's Rules of Trading are good to have on your desk

Dennis Gartman's Rules of Trading

I recognize that most people don't print things out, but I recommend printing out Dennis Gartman's Rules of Trading and tape them on the wall by your desk or have handy on your desk to flip thru on a regular basis. Its what I do as a reminder. Earlier in the memo, I noted how Saudi Net Foreign Assets is one of the key data points I try to always monitor key data

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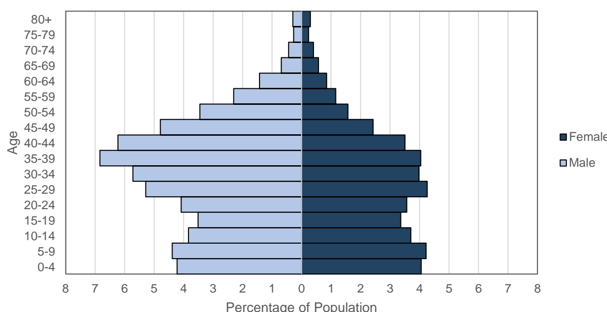
and not just look at every now and then. I think its easier to pick out potential indicators of a change when monitoring on a regular basis. But to give credit where credit is due, its in great part due having been a loyal Dennis Gartman The Gartman Letter reader since when I first became an oil and gas analyst in the late 1990s. And I always looked at his Rules of Trading and one really stuck with me was "*WHEN THE FACTS CHANGE, CHANGE! Lord Keynes... again... once said that " When the facts change, I change; what do you do, Sir?" When the technicals or the fundamentals of a position change, change your position, or at least reduced your exposure and perhaps exit entirely*." Regular monitoring won't change the facts, but it may give an earlier indication that the facts or fundamentals may be about to or starting to change. Going back to the 2000's and early 2010's, I used to include his Rules of Trading when he issued them once a year. Our Supplemental Documents package includes his Rules of Trading from the early 2010s, I think it was 2012 but not 100% certain as I didn't label the file.

Demographics – Saudi Arabia still has lots of young men

Saudi Arabia population mostly young men

Its hard to believe Arab Spring was 11 years ago, but we always think about Arab Spring when we see population age distribution data in the MENA countries. Long term Energy Tidbits readers know we are big watchers of demographics because they provide predictable data. And at the time of Arab Spring, one of our concerns for the unrest was the relatively heavy percentage of young adult males especially then where there was high unemployment following the financial crisis. This week, Saudi Arabia released its mid-year 2020 statistical population data [LINK] for age and gender distribution across the population. We made the below distribution graph from the data, but three things jumped out at us. (i) First, the population is still relatively young. The proportion of Saudi Arabians under 50 years of age is over 86%, and the proportion of people less than 30 years of age is close to half of the total population at 48.5%. (ii) There is not by any means an even gender split in the country. Men make up 58% of the population. For every woman in the country, there are approximately 1.4 men.   (iii) There are still a lot of young men in the country. Men under the age of 30 alone make up ~25% of the total population. And think on how this data looked 10 years ago, when all the bars would have shifted down 10 years.

Figure 41: Saudi Arabia Age Distribution (mid-year 2020)



Source: Saudi Arabia General Authority for Statistics

Demographics – China tries to stem aging population

China announces 3-child policy amid declining birthrates

One of the big global demographic trends is China's ageing population versus India's growing still relatively youthful population. As we say, demographic trends are predictable and China has been well aware that its population is aging. China made the biggest change to stem that in January 2016, which it changed its one-child policy (began in 1980 to avoid over population) to move to a two-child policy. That hasn't stemmed the direction with the Chinese

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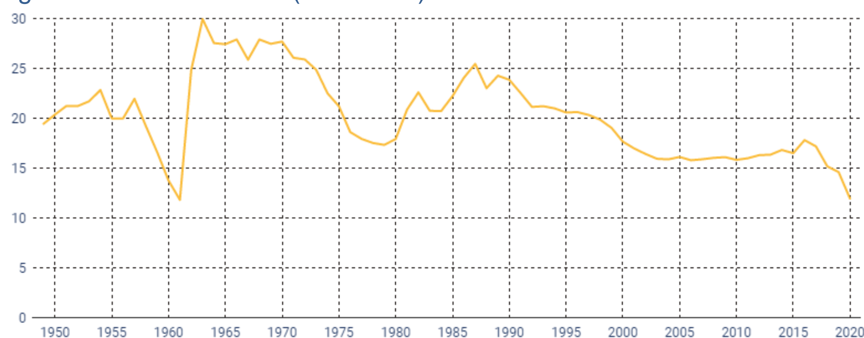
government estimates that the population will peak in 2027 being much more optimistic than most other estimates predicting peak population could be as soon as 2022. So another change with Xi now allowing each couple to have up to three children. This newest policy change (up to 3 children permitted) is in response to a declining birthrate and a fertility rate below the replacement level needed for a stable population (China's fertility rate was 1.3 children per woman, vs the 2.1 needed). In 2020, Chinese mothers gave birth to 12mm babies, down 18% from 2019, representing the 4th consecutive annual drop in the birth rate. As a result, population growth rate in the country is the slowest of any recorded decade since China first recorded Census data in 1953. The challenge will be for China to get young couples to have 3 children or at least 2 children. The South China Morning Post wrote " *State News Agency Xinhua polled 31,000 people, finding just 1,443 of them were "ready" to have a third child. It was "on the agenda" for 213 respondents, while 828 were "hesitant". The poll results, though, disappeared not long after they were posted.A report by demographers at Renmin University of China backed up the sentiment as they estimated that the policy would lead to an annual increase of 200,000 to 300,000 births in the next five years – a slight increase from the rate of 12 million births last year".* Our Supplemental Documents package includes the SCMP report.

Figure 42: China's births (in millions)



Source: Wind, National Bureau of Statistics

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

@Energy_Tidbits on Twitter

For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [LINK]. We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 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.

LinkedIn – Look for quick energy items from me on LinkedIn

Look for energy items 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].

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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Canadian Mackenzie Hughes tied for 1st going into the final round at US Open

Big shout out to Cdn golfer Mackenzie Hughes, who shot 68 to end up at -5 and tied for the lead with Louis Oosthuizen and Russell Henley going into today's final round at the US Open golf championship. And with the low 3rd round of the leaders, he is in the final pairing with Oosthuizen and will have honors. That is pretty fantastic. The annoying thing for Cdn golf fans is that the US TV coverage basically gave him almost zero coverage until he eagled 13 to go -4 and into second place. Prior to that, I had only seen one shot of his even though he was basically tied for 6th up until 13. After his eagle on 13, the US TV coverage had no choice but to cover him, which included his birdie on 18 to get to -5. He tees off at 1:55pm MT so I know what I will be doing on Sunday afternoon. Mackenzie grew up in Dundas, Ontario, which used to be a separate town until it was amalgamated into Hamilton.

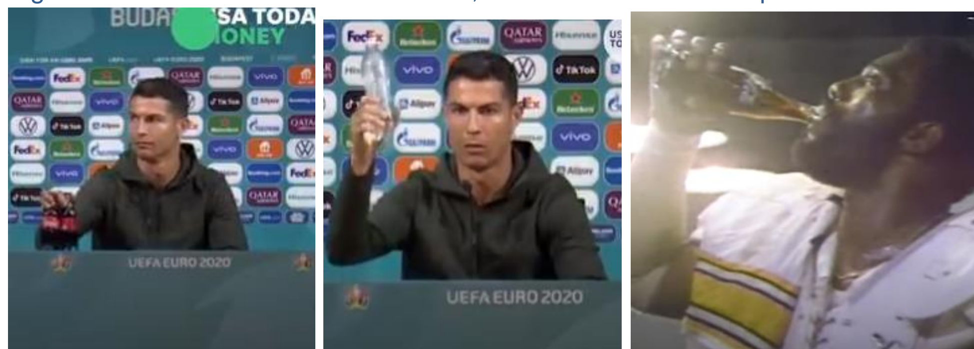
International Sushi Day was Friday

Q2 is a good period for Japanese food holidays. We had April 19 as National Rice Ball Day and this week, Friday June 18 was International Sushi Day. I couldn't help tweet [LINK] a shout out to Zipang. I think Naoya (the owner) has the best sushi in Calgary, especially the Nigiri Blue Fin Tuna. I tried to do takeout once a week since Covid started. And for anyone who has picked up some pre-packaged takeout from a Japanese department store, Naoya has done off the menu onigiri (rice balls).

Cristiano's moving Coke's product placement leads to $4b stock value loss

It was a tough week for Coca Cola shares, not because of company events but because Portugal's Cristiano Ronaldo's rejection of the two Coke bottles product placement in the post Portugal 3-0 win over Hungary on Tues when Critiano scored twice. He walks to the table, there are two Coke bottles right in front, he moves them to the floor and replaces with the water bottle. The market value went down that day by almost $4b. We tweeted [LINK] "This is what is great about @EURO2020 . not just great football so far but moving stock prices. wonder how much it would be worth to the footballer and to $KO stock if one of the top footballers at @EURO2020 pulled a Mean Joe Greene?" Even if you aren't old enough, any sports fan would have seen this 1979 Super Bowl Coca Cola commercial as it is considered one of the top Super Bowl commercials of all time. Here is the link to the Joe Greene commercial [LINK]. Its hard to be a bigger name than Ronaldo, but we have to believe Coca Cola would pay some good money if one of the top footballers at EURO 2020 would down a Coke like Joe Greene.

Figure 43: Cristiano Ronaldo on Jun 15, Joe Greene in 1979 Super Bowl commercial



Source: USA Today, YouTube

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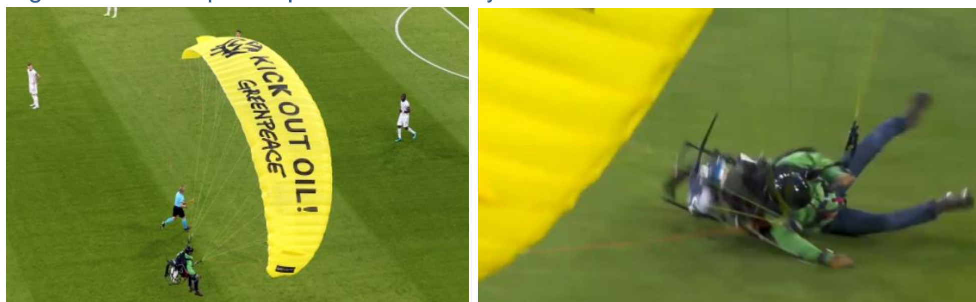
Oil featured in Greenpeace parachutist crash at Germany/France EURO match

Greenpeace featured oil in its protest at probably the highest profile match to date at EURO 2020 – the Germany/France June 15 match. The parachutist crash landed on the field with his parachute message "Kick Out Oil!". Pretty soon, Greenpeace will have to find another major protest issue because its hard not to believe the majority of the world's policymakers are doing their best to turn away from oil as quickly as possible. If not, they will be viewed as old news. Even though he crash landed, it was good that it didn't turn out to be a tragic event as the German security sharpshooters for the match had him in their target but did not shoot as someone made a security assessment that it wasn't any type of terrorist action. As to the match, France won 1-0 but we think it could have been a much worse score for Germany.

Figure 44: Greenpeace protests Germany/France EURO 2020 June 15



Source: The Sun

Jimmy Kimmel's asking how people are enjoying watching the Tokyo Olympics

Its amazing to see the lengths people will go to so they don't appear ignorant of world events without realizing they end up looking worse. On Tuesday, Jimmy Kimmel had his Lie Witness News, where they stopped people on the street to ask if they have been watching the Tokyo Olympics, which are still planned to start on Friday July 23. Its bad enough to say they are watching them, but then to say the favorite sport is figure skating. Then the final followup was about the injury to Nancy Harding and to be fair, that was in 1994 probably before the person was born. Its an amusing clip that is related to the Tokyo Olympics. The clip is at [LINK]

Peyton Manning says Eli's kids won't be going to an Ivy League school

How can you not love Peyton Manning loving to give a jab everyone including his family. On NFL Network's Good Morning Football on Thurs, there was a little clip of the @Buccaneers series on the Super Bowl season and the clip shows Peyton with his kids coming to the Sept 27, 2020 Bucs/Broncos game and meeting with Tom Brady and Bruce Arians before the game in the hallway. This is last fall during Covid, Brady asks Manning how Eli is doing. Its really a shame that Manning is wearing the old style cowboy mask so you can't see all his expressions. But Manning replies saying that Eli is home schooling his kids, and then throws in the zinger that "they're not going to an Ivy League school". We wish we could have seen the Peyton Manning smirk.

Archer debuted its first eVTOL Aircraft

Last Thursday, Archer unveiled its first demo aircraft via global livestream [LINK]. This electric aircraft is capable of a 60 mile range at 150 mph. The aircraft in the demonstration was their two-seater, but they also plan to have a 5 passenger version

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for commercial use, for which United Airlines has already put in an order for $1bn of the aircraft with an option to purchase a further $500mm. We still haven't seen any updated operation cost estimates from when we first highlighted Archer in our Feb 14 Tidbits, which was projected at $3.30 per passenger mile vs $1.50 for a ride sharing car. The aircraft would be used to transport people between regional hubs. We assume it will have the same logistical challenges as helicopters like pads, etc. but if Archer's math is correct, and people feel safe, this should narrow the cost premium and get a decent passenger interest. Their backing from the United Airlines commercial order and their recently announced merger with Atlas Crest Investment Corporation has them valued at $3.8 bn.

Big Alberta floods were 8 years ago

For many in Calgary, its hard to believe its 8 years since the big Alberta floods that hit Calgary, High River and other areas on June 19, 2013. At that time, it was the costliest natural disaster in Canadian history at $5 billion, but ultimately dwarfed by the May 2016 Fort McMurray wildfires at $9 billion. Global News recap of the impact on Calgary [LINK] included 35,000 homes under evacuation orders and 75-100,000 Calgarians evacuated from their homes.

It's the time of year for the 2021 wildlife newborns

On Tuesday, I tweeted a video [LINK] of a local Calgary deer have a big salad feast in our backyard. I looked out my window and watched her lunch for at least 10 minutes. On Wednesday, I found out why she was eating so much – she had two little fawns that couldn't be more than a week or two old. Here is a picture of her with her two fawns just after they left our backyard to go to our neighbour's backyard.

Figure 45: Calgary Mama Deer With Two Fawns

Source: SAF Group

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