Energy Tidbits

April 30, 2023

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NOV Q1 Call: "*Growing Confidence that US Unconventional Growth is Slowing Significantly*"

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. Our target is to write on 48 to 50 weekends per year and to post by noon MT on Sunday. The Sunday noon timing was because PMs said they didn't have research to read on Sundays and Sundays are a day when they start to think about the investing week ahead.

This week's memo highlights:

1. NOV mgmt. "*in all likelihood in North American activity is at best flat for awhile*" and "*growing confidence that US unconventional* [oil] *growth is slowing significantly*" (Click Here).

2. Cdn WCS less WTI differentials are seasonally narrowing but being impacted by increasing Venezuela oil hitting PADD 3 Gulf Coast refineries (Click Here).

3. Exxon CEO warns "*this is a depletion business... basically, on a treadmill, every barrel is another barrel you have to replace"* (Click Here).

4. Definitely worth checking key assumption in IEA's new forecast that EVs will displace nearly 6 mmb/d of oil demand by 2030 (Click Here).

5. Bloomberg: Germany is facing a shortfall of about $13.2 billion in its special climate-protection fund, suggesting the government in Berlin has significantly underestimated the cost of greening Europe's biggest economy (Click Here).

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

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

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Natural Gas – 79 bcf build in US gas storage; now 525 bcf YoY surplus

It's April so it's the normal natural gas injection season absent some unusual event. For the week of Apr 21, the EIA reported a +79 bcf build (vs expectations of a 75 bcf build), compared to the +40 bcf build reported for the week of Apr 22 last year. This compares to last week's build of +75 bcf, and the 5-year average build of +43 bcf. Total storage is now 2.009 tcf, representing a surplus of +525 bcf YoY compared to a surplus of +488 bcf last week and is +365 bcf above the 5-year average vs +329 bcf above last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [LINK].

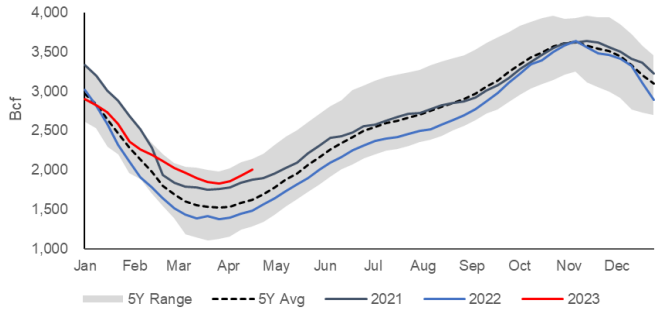
US gas storage 525 bcf YoY surplus

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Year ago (04/21/22)		5-year average (2018-22)	
Region	04/21/23	04/14/23	net change	implied flow	Bcf	% change	Bcf	% change
East	390	363	27	27	238	63.9	286	36.4
Midwest	468	450	18	18	308	51.9	344	36.0
Mountain	90	84	6	6	90	0.0	93	-3.2
Pacific	90	83	7	7	171	-47.4	184	-51.1
South Central	971	949	22	22	677	43.4	738	31.6
Salt	275	266	9	9	213	29.1	234	17.5
Nonsalt	695	684	11	11	464	49.8	504	37.9
Total	2,009	1,930	79	79	1,484	35.4	1,644	22.2

Source: EIA

Figure 2: US Natural Gas Storage - Historical vs Current



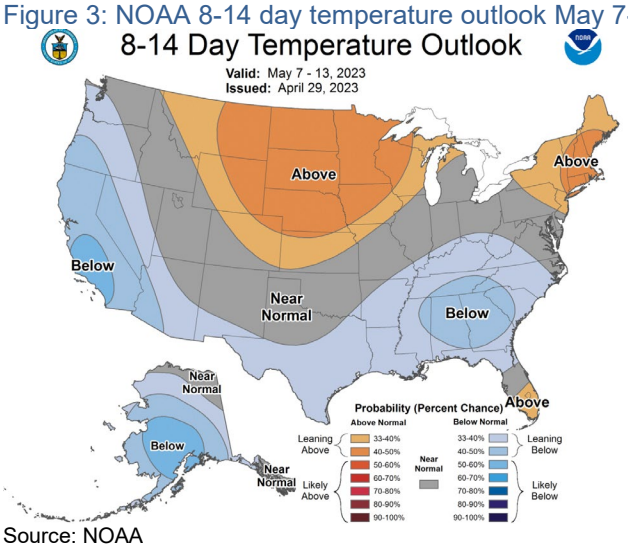
Source: EIA, SAF

Natural Gas – NOAA 8-14 day temperature outlook is really no weather driven demand

We are now into May and the hope for natural gas markets is that it's hot in May so there would be some temperature driven demand for natural gas. But, based on the current forecasts, it doesn't look to be the case. NOAA posts daily an updated 6-10 day and 8-14 day temperature probability outlook. Yesterday's NOAA 8-14 day outlook [LINK] is valid for May 7-13, and calls for below normal temps for the west coast, all of the southern US and 2/3 up the east coast. To put in perspective, it's really what we call leave the windows open temperatures. Not cold enough for heating demand and not hot enough for air conditioning demand. We checked AccuWeather's current monthly daily forecasts for all of May. Los Angeles is generally daily highs in the low 20sC and overnight lows below 15C. New York is generally daily highs 20 to 25C and overnight lows 12 to 16C

NOAA 8-14 day outlook

Figure 3: NOAA 8-14 day temperature outlook May 7-13



Source: NOAA

US February gas production hits all-time high

Natural Gas – US dry gas production hits all-time high in Feb at 101.5 bcf/d

The big picture natural gas story is unchanged this month in that US natural gas supply, driven by shale/tight natural gas, continues to be up significantly YoY and has hit an all-time high of 101.5 bcf/d in Feb. As a precursor to the key takeaways from this month's Natural Gas Monthly it is important to note that in our April 2, 2023 Energy Tidbits, we pointed out that Jan's (+6.1 bcf/d YoY to 101.5 bcf/d) was the biggest YoY increase to start a new year since Jan 2019 and that Jan posted the highest monthly production in 10+ years. However, Jan's data was revised down by -0.2 bcf/d to 101.3 bcf/d since then. With that in mind, the EIA released its Natural Gas Monthly on Friday [LINK], which includes its estimated "actuals" for February dry gas production. Key items to note are as follows: (i) Feb's production of 101.5 bcf/d was up +7.0 bcf/d YoY from 94.5 bcf/d in Feb 2022 and +0.2 bcf/d MoM from Jan's revised production of 101.3 bcf/d. (ii) This puts Feb's production at a 10+ year high vs the next closest of 101.3 bcf/d in Jan and 101.0 bcf/d in Nov 2022. (iii) In addition to being up +0.2 bcf/d MoM and +7.0 bcf/d YoY, Feb's production came in +15.3 bcf/d higher than the Covid low of 86.2 bcf/d in Feb 2021. Our Supplemental Documents package includes excerpts from the EIA Natural Gas Monthly.

Figure 4: US Dry Natural Gas Production

bcf/d	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jan	56.0	60.0	66.0	65.3	66.8	73.4	73.6	70.6	78.7	89.4	95.1	92.8	95.3	101.3
Feb	57.2	58.8	67.0	65.4	68.4	73.8	77.3	71.5	80.4	90.0	98.1	86.2	94.5	101.5
March	57.3	61.5	65.0	65.3	68.9	74.1	73.8	73.2	81.3	90.6	94.6	92.3	95.4	
Apr	57.6	62.3	64.8	66.1	70.5	75.2	73.7	73.3	81.2	91.0	92.9	93.2	96.5	
May	58.0	62.4	65.0	65.9	70.2	74.1	72.9	73.3	82.1	91.7	87.8	93.0	97.7	
June	57.2	62.1	64.6	65.8	70.5	74.0	72.2	74.0	82.5	92.0	88.4	93.2	98.5	
July	58.2	62.5	66.3	67.1	72.0	74.2	72.8	74.7	84.2	92.5	89.8	93.7	98.5	
Aug	58.9	63.2	66.0	66.9	72.4	74.3	72.2	74.7	85.9	94.8	90.2	94.3	99.3	
Sept	59.1	63.1	66.4	66.8	72.4	74.7	71.7	76.0	87.3	94.7	89.5	93.6	100.5	
Oct	60.1	65.1	66.5	67.0	73.1	74.2	71.4	77.3	88.4	96.0	88.9	95.6	100.6	
Nov	60.1	65.9	66.6	67.7	72.6	73.9	72.0	79.8	89.9	96.7	92.0	97.0	101.0	
Dec	61.0	65.6	66.0	66.5	73.2	73.9	71.2	80.4	89.5	97.0	92.5	97.0	99.3	
Average	58.4	62.7	65.9	66.3	70.9	74.2	72.9	74.9	84.3	93.0	91.6	93.5	98.1	101.4

Source: EIA

Natural Gas – US pipeline exports to Mexico up +0.2 bcf/d MoM to 5.4 bcf/d in Feb

US pipeline exports to Mexico up MoM

The EIA Natural Gas Monthly also provides its "actuals" for gas pipeline exports to Mexico, which were 5.4 bcf/d in February, up +0.2 bcf/d MoM from 5.2 bcf/d in Jan but was down -0.1 bcf/d YoY from 5.5 bcf/d in Feb 2022. The EIA doesn't provide explanation for the MoM increase, but we expect Dec at 5.1 cf/d and Jan at 5.2 bcf/d at some winter weather impacts, and we should see volumes increase moving into the summer. There were no material revisions to last month's data. Mexico's relatively unchanged production over the past five years has created the need for increased US pipeline exports as Mexico builds out its domestic natural gas infrastructure. Below is our table of the EIA's monthly gas exports to Mexico.

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

bcf/d	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jan	1.7	2.2	3.2	3.9	4.4	4.9	5.2	5.6	5.7	5.2
Feb	1.8	2.3	3.5	4.0	4.5	4.8	5.4	4.9	5.5	5.4
March	1.9	2.4	3.3	4.2	4.3	4.8	5.4	5.9	5.5	
Apr	1.9	2.6	3.5	3.7	4.4	4.7	4.6	6.1	5.9	
May	2.0	2.8	3.7	4.0	4.4	5.0	4.7	6.2	6.0	
June	2.2	3.0	3.9	4.5	4.6	5.2	5.4	6.6	6.1	
July	2.2	3.3	4.0	4.4	4.9	5.4	5.8	6.4	6.1	
Aug	2.1	3.3	4.3	4.4	5.0	5.4	6.0	6.2	5.8	
Sept	2.2	3.3	4.1	4.2	5.0	5.4	6.1	6.0	5.6	
Oct	1.9	3.2	4.2	4.2	4.9	5.5	6.0	6.0	5.5	
Nov	1.9	3.0	4.0	4.5	4.7	5.3	5.5	5.5	5.4	
Dec	2.1	3.2	3.6	4.4	4.5	4.9	5.3	5.4	5.1	
Full Year	2.0	2.9	3.8	4.2	4.6	5.1	5.5	5.9	5.7	5.3

Source: EIA

TC Energy expects +3 bcf/d of Permian gas via pipeline to Mexico by 2030

It may take a couple years to start to ramp up, but we believe an overlooked US natural gas factor is that there should be a big ramp up in Permian natural gas via pipeline to Mexico in the 2020s. TC Energy expects there will be an additional 3 bcf/d of Permian natural gas pipeline demand from Mexico to 2030. Here is what we wrote in our Dec 18, 2022 Energy Tidbits "*It won't affect stock trading, but for those that look at capital allocation on a mid to long term basis or look at tail-end risks/opportunities, the question of Mexico's natural gas infrastructure build-out is worth tracking. We had the opportunity to listen to a major energy analysis group recent US natural gas outlook and it didn't include any slides or commentary on the potential (or expectation by some) for Mexico to ramp up its natural gas pipeline imports from the Permian in the 2020s. It's something that most either overlook or discount or just don't care about, but a factor that could a material impact on the US natural gas view. TC Energy is probably the driving force behind much of Mexico's domestic natural gas pipeline infrastructure build-out and has a very bullish view that Mexico will attract an additional +3 bcf/d to 2030. If they are right, this will attract Permian natural gas, and that means there will be less Permian natural gas for LNG export. And will raise the question is there enough natural gas to support the growth in US LNG exports? And, since US LNG export growth, it means that there will be a need to try to get Appalachia natural gas down to the Gulf Coast. And, or course, TC Energy has the solution for that. But you can see how the TC view on Mexico has a*

very big impact on US natural gas in the 2020s, if not necessarily in the next couple years. We highlighted this in our Dec 4, 2022 Energy Tidbits."

Natural Gas – US LNG exports up +7.1% MoM to 11.7 bcf/d in Feb; +3.0% YoY

US Feb LNG exports

The April EIA Natural Gas Monthly estimates US LNG exports for February were 11.7 bcf/d, up +0.8 bcf/d MoM from 10.9 bcf/d in Jan and was up +0.4 bcf/d from 11.3 bcf/d in Feb 2022. March and April should both be up with the restart of Freeport LNG in March and reaching full operations in Apri The month-end timing for the EIA Natural Gas Monthly is also a reminder that the US LNG export data is available about two weeks prior to the Natural Gas Monthly. The EIA is a group under the Dept of Energy, and the Dept of Energy posts its LNG Monthly about two weeks before the EIA's Natural Gas Monthly. The data for LNG exports is either identical or just a round issue. In our April 23, 2023 Energy Tidbits memo, we noted, "*The DOE report is better as it provides detailed information on LNG imports and exports including LNG volumes to the top US export countries. The US Department of Energy reported the February LNG export actuals on Monday. February saw 326.0 bcf (11.6 bcf/d) of LNG exports, up +6.67% MoM from 10.9 bcf/d in Jan and up +2.54% YoY from 11.3 bcf/d in Feb 2022."* For the Feb data, EIA Natural Gas Monthly reported exports of 11.7 bcf/d vs the DOE's value of 11.6 bcf/d, a difference of 0.1 bcf/d. Our Supplemental Documents package includes excerpts from the DOE LNG Monthly.

Figure 6: US LNG Exports (bcf/d)

(bcf/d)	2016	2017	2018	2019	2020	2021	2022	2023
Jan	0.0	1.7	2.3	4.1	8.1	9.8	11.4	10.9
Feb	0.1	1.9	2.6	3.7	8.1	7.4	11.3	11.7
March	0.3	1.4	3.0	4.2	7.9	10.4	11.7	
Apr	0.3	1.7	2.9	4.2	7.0	10.2	11.0	
May	0.3	2.0	3.1	4.7	5.9	10.2	11.3	
June	0.5	1.7	2.5	4.7	3.6	9.0	10.0	
July	0.5	1.7	3.2	5.1	3.1	9.7	9.7	
Aug	0.9	1.5	3.0	4.5	3.6	9.6	9.7	
Sept	0.6	1.8	2.7	5.3	5.0	9.5	9.8	
Oct	0.1	2.6	2.9	5.7	7.2	9.6	10.0	
Nov	1.1	2.7	3.6	6.4	9.4	10.2	10.1	
Dec	1.3	2.7	4.0	7.1	9.8	11.1	11.0	
Full Year	0.5	1.9	3.0	5.0	6.6	9.7	10.6	11.3

Source: EIA, DOE

March and April US LNG exports to jump up with Freeport LNG restart

Here is what we wrote in our April 26, 2023 Energy Tidbits memo.Natural Gas – Natural gas deliveries to Freeport LNG averaged >2 bcf/d so far in April. US LNG exports will see an increase in March and then also again in April with the restart of Freeport LNG Freeport did not get the full approval for a restart until late Feb and so natural gas deliveries only ramped up in March before returning to full levels in the beginning of April. Bloomberg regularly reports on natural gas delivers (not LNG output) to all US LNG export facilities. Bloomberg reported natural gas deliveries to Freeport hit 1.94 bcf/d on March 31 and deliveries for March averaged 1.10 bcf/d. But for April, Bloomberg reports that natural gas deliveries to Freeport LNG have averaged >2 bcf/d.

Natural Gas – Two more long-term LNG deals: Hartree/Delfin, & JERA/Venture Global

2 more long-term LNG deals

There was a significant slowdown in long-term LNG deals in since the end of H1/22 compared to the activity seen from July 1, 2021 thru June 30, 2022. That's because most, if not all the available long term LNG supply available before 2026 was locked up by June 30, 2022 rush. Rather, the long-term deals now being done are generally for long term supply starting in 2026 or later. There was two long term LNG deal announced this week. (i) On Monday, Delfin Midstream announced that it finalized a long-term Sales and Purchase Agreement (SPA) to supply 0.08 bcf/d to Hartree Partners LP over a 20-year period [LINK]. The SPA stipulates Hartree's purchase of LNG on a free-on-board basis from the potential Delfin Deepwater port located off the coast of Louisiana. The agreement announced on Monday brings Delfin's total secured offtake commitments from the Deepwater facility to 0.41 bcf/d leading up to its FID that is expected by mid-2023. Delfin CEO, Dudley Poston said, "*The signing of this long-term SPA with Hartree represents another significant milestone for our company and signifies the beginning of a strong, mutually beneficial relationship with a world-class trading company such as Hartree. The Delfin project's ability to make FID one vessel at a time is attracting significant interest from buyers, and Delfin is already in advanced discussions for marketing LNG for its second FLNG vessel."* (ii) On Friday, Venture Global announced that it executed a long-term Sales and Purchase Agreement (SPA) to supply 0.13 bcf/d to JERA Co. over a 20-year period [LINK]. The SPA stipulates JERA's purchase of LNG from the CP2 LNG project that is expected to begin construction in 2023. The agreement announced on Friday brings Venture Global's SPA's to-date for the CP2 project to >0.88 bcf/d of the total 2.63 bcf/d offtake available. Venture Global CEO, Mike Sabel said, "*Venture Global is thrilled to be expanding our partnership with JERA, one of the world's premiere energy providers and largest buyers of LNG. Japan has taken a pragmatic approach to ensuring its energy security while advancing environmental progress. We are honored to supply our growing customer base in Japan with a clean and reliable source of lower carbon energy and look forward to supporting JERA in its efforts to bring LNG to the region for many years to come."* While JERA Sr. Managing Executive, Sunao Nakamura commented, *"LNG procurement competition has been intensifying and thus, stable procurement of LNG in a timely manner in line with the domestic electricity supply-demand situation is needed to secure a stable supply of energy in Japan. This is a destination free FOB contract, which enables JERA to secure LNG in a high flexible manner and is expected to help with our capability to respond to volatility in the domestic electricity supply and demand."* Our Supplemental Documents package includes both releases.

The buyer rush for long term LNG supply started in 2021, pre-Ukraine

There is no question that Europe's move to cut off imports of Russia pipeline natural gas led to a scramble in 2022 for more LNG. But we remind that the rush on LNG buyers committing to long term LNG contracts started in 2021, and that almost all of pre-2026 LNG supply was tied up in the 12-month periods July 1, 2021 thru June 30, 2022. And this rush to tie up long term LNG supply was dirven by Asian buyers and not Europe buyers. So the LNG supply crunch thru 2026 was not a 2022 development. Rather, it was clear in H1/21 that there was a major sea change in LNG outlook. We turned very bullish on LNG outlook for the 2020s once TotalEnergies went force majeure on its Mozambique LNG in April 2021. We posted our April 28, 2021 blog *"Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?"* as we

thought the market had overlooked that this force majeure backed up 5.0 bcf/d of Mozambique LNG that was originally planned to start in phases in 2024. And that this would create an earlier and larger LNG supply gap in the mid 2020s. Then we started to see validation of this view when Asian LNG buyers in July made an abrupt change to their LNG contracting and pivoted to trying to lock in long term LNG supply. On July 14, 2021 we posted our 8-pg "*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs".* Here is an excerpt from the blog "*The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog "Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?" and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum's massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas."* Our Supplemental Documents package includes our April and July blogs.

There have been 14.41 bcf/d of long-term LNG supply deals since July 1, 2021

We first highlighted this abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg "*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs".* We included a table of the deals done in that short two week period. We continue to update that table, which now shows 14.41 bcf/d of long term LNG deals since July 1, 2021. 66% of the deals have been by Asian LNG buyers, but we are now seeing rest of world locking up long term supply deals post Russia/Ukraine. Note in our non-Asian LNG deals will major LNG players (ie. Chevron, Shell, etc) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 75% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and other LNG buyers new long term supply deals since July 1, 2021.

Figure 7: Long Term LNG Supply Deals since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country	Volume	Duration	Start	End
			Buyer / Seller	(bcf/d)	Years		
Asian LNG Deals							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipec	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan/US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan/Oman	0.11	10.0	2025	2035
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.
Mar 6, 2023	Gunvor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042
Apr 28, 2023	JERA	Venture Global LNG	Japan/US	0.13	20.0	n.a.	n.a.
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				**9.51**			
Non-Asian LNG Deals							
Jul 28, 2021	PGNiG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNiG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Jan 25, 2023	Sempra	PKN ORLEN	US / EU	0.13	20.0	2027	2047
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	n.a.	n.a.
Apr 24, 2023	Hartree Partners LP	Delfin Midstream	US / US	0.08	20.0	n.a.	n.a.
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21				**4.91**			
Total New Long Term LNG Contracts since Jul/21				**14.41**			
*Excludes Asian short term/spot deals							
*on Dec 20, CNOOC also agreed to buy an additional 0.13 bcf/d from Venture Global for an undisclosed shorter period							
Source: Bloomberg, Company Reports							
Prepared by SAF Group https://safgroup.ca/news-insights/							

Source: Company reports, SAF Group

No TotalEnergies Mozambique LNG restart yet

Natural Gas – TotalEnergies, premature to make Mozambique LNG restart decision

TotalEnergies held its Q1 call on Thursday morning and we tweeted [LINK] "*Premature today for @TotalEnergies to make restart decision for Mozambique #LNG. @PPouyanne "we will rebuild some of the [contractor] packages because there is no way for us to accept some undue costs". Q1 call Q&A still on. #NatGas OOTT."* CEO Pouyanne was clear that it is premature for TotalEnergies to make a restart decision for its Mozambique LNG because they still don't have a satisfactory cost deal with all of its contractors on the project. And that it isn't prepared to restart until it has a satisfactory cost deal in place. Our tweet included the transcript we made of Pouyanne's reply in the Q&A. Please note that it was tough to hear so we put "honorable [?]" in our transcript and it appears he said "reasonable". Here is the transcript we made of his comments. SAF Group created transcript of comments by TotalEnergies CEO Patrick Pouyanne on TotalEnergies Q1 call Q&A on April 27, 2023. Items in "italics" are SAF Group created transcript. Question was asked for any update on TotalEnergies progress to get favorable cost terms for the Mozambique LNG restart decision? CEO Pouyanne "*Mozambique LNG. It's a good question. Based on the cost terms, you know you have understood that it's the last step before to restart. So some, I commented recently that we need the contractors to be honorable [?]. Some of them are not so we will rebid some of the packages because there is no way for us to accept some undue costs. We have paid what we had to pay because we stopped the project and we have to restart the project. That had an impact obviously, to stop and restart. We don't see why we should pay more than that. And so that's where we progress. So I think when we will be ready, we will come back to you. But I think today, it's premature. Our project team is working with the contractors with a view to be able to enlarge [?] the project but under the conditions that the costs are controlled*".

Security doesn't seem to be a hold up factor for Mozambique LNG restart

It is important to note that the hold up to TotalEnergies restarting Mozambique LNG looks like it is down to the project cost issue noted above. Whereas security, which was the reason for the project halt, does not seem to be a factor that will hold up a restart decision. There was no mentions of any concerns on security nor were there any analyst questions on security. Rather in the Q1 call, TotalEnergies CEO inferred the restart is just about getting the costs under control. Pouyanne said *"the project team is working with the contractors with a view to be able to re-launch the project, but under the conditions that the costs are controlled. That's fundamental to us."* There was a specific question on the Exxon Q1 call on Friday if they had any concerns on the security situation in Mozambique. Exxon mgmt. replied "*Yeah. We work very closely with Total, obviously, given the same exposures and the work that we're doing together. So I'd tell you it's kind of a hand-in-hand approach that we're taking there, sharing information. We've had our own security folks out there assessing the situation. I would say our assessment is very consistent with Total's assessment. We don't see a lot of difference between what the conclusions they're coming up with and our conclusion. So we do like the progress that we've seen there. Obviously, we need to be convinced that that will sustain that progress, and today, I feel pretty optimistic about that."*

TotalEnergies says floating LNG not likely for their Mozambique LNG

In the Q1 call Q&A, TotalEnergies was asked if they are looking at floating LNG for future development like is being considered by Eni's offshore Mozambique. As a reminder TotalEnergies Mozambique LNG currently has its 1.7 bcf/d Phase 1 and a 1.3 bcf/d Phase 2. CEO Pouyanne said floating LNG is not something he prefers for the TotalEnergies LNG development given the massive natural gas reserves and the way to create more value is thru brownfield phases. Pouyanne replied "*No, I mean, honestly, when you have a Mozambique LNG, huge reserves, the question for us is to develop a scheme where we can really have the potential to take the most of these reserves. And so the floating LNG concept, which is honestly not fully adapted, I think it was quite adapted to the first development because it was a part of the reservoir which was not related to the big reservoir which we want to develop. But for us, honestly, in terms of allocation of capital, if I want to do LNG, I prefer to allocate capital for LNG to projects with the potential of upsides because you make much more value with additional trains on the brownfield way than on a greenfield project.*"

02/08: TotalEnergies CEO Pouyanne warned on need to control project costs

We shouldn't be surprised by Pouyanne's Q1 call comments on the need to have cost certainty as he stressed this in the Q4 call on Feb 8. Here is what we wrote in our Feb 12, 2023 Energy Tidbits memo. "*Will rising capex hold back TotalEnergies Mozambique LNG restart? After seeing TotalEnergies CEO Pouyanne's comments in the Q&A of the Q4 call on Wed, it doesn't seem like there will be as quick a restart to resuming construction at the Mozambique LNG project as we thought last week. (i) Last week's (Feb 5, 2023) Energy Tidbits memo noted Pouyanne making his first trip to the Mozambique area. TotalEnergies stopped the project due to area violence and Pouyanne had previously there couldn't be a restart decision until he could travel there. He did and TotalEnergies post trip release seemed to indicate that they were now comfortable with the security situation. And this was why they stopped. (ii) TotalEnergies had their Q4 call on Wed and. Pouyanne dealt with Mozambique in the Q&A. We tweeted [LINK] ".@PPouyanne 👇 on MZ #LNG restart. security conditions are okay. will execute recommendation on human rights. BUT "one key condition to restart will be to maintain the costs that we had. If i see the costs going up & up, we'll wait... & the contrators will wait as well". #OOTT." (iii) What won't hold up a restart is security in the region.. He signaled this last week by going there, he signaled to everyone what he weas comfortable the security situation was acceptable so a go ahead could happen. Security, violence and killing was why they called force majeure and stopped the project almost two years ago. But that is not an issue. Pouyanne said "He said "so there the security conditions, I Think are okay". (iv) The second issue they are waiting on is human rights within Mozambique. They hired someone to give them a report and they said they would follow his recommendations. We do not see this as any item to hold up the project. Rather it will be just things they will do for the regions. Pouyanne said 'The two next steps. It varies and because there are some, I would say controversies about human rights about the project around the project, not because of us we inherited that from the Anadarko acquisition. So I want a clear view on these human rights issues, which is a salient issue for me, it's important, I have given a mission to a specialist of human rights, a very well known Dr in France. Mr. Rufin, who has accepted, He is making*

his job so I'm waiting to see his report to understand exactly what is, I would say what are these issues. if are things to be done, we will execute the recommendation." (v) But Pouyanne raised a third issue that we don't believe was raised before. And we think has the potential to cause a delay to a restart decision. Pouyanne gave a big warning to contractors that they better not have changed their costs. And that he is prepared to wait them out if they have cranked up their costs in the last two years. We have trouble he is saying zero cost change given what has happened in the world in the last two years on inflation and interest rates. And believe he will allow some sort of cost inflation. But even still if he wants no or very little cost increases, we have to believe this causes some sort of delay. Here is what Pouyanne said on costs. "And there is a third step, which I can use this question to deliver is that, of course, we have to reengage with the contractors. And one key condition to restart will be to maintain the costs that we had. if I see the costs going up and up. We'll wait . We have wait, we can continue to wait and the contractors will wait as well. So I'm not really in this condition to restart don't." (vi) And his overall assessment in the Q&A, Pouyanne said 'So there are the security conditions I think are okay. Human rights and there is a report. Costs, I will need another report from my teams. We will ask them to reengage but smoothly. No hurry. Again I can wait on Mozambique LNG. If costs increase, we will review it. And we'll take the time. So that's where we are on these projects."

A TotalEnergies restart will set in motion 5 bcf/d of Mozambique LNG

It is important to remember that a restart of TotalEnergies Mozambique Phase 1 is more than a restart of the 1.7 bcf/d for Phase 1 – it's really sets in motion 5.0 bcf/d of Mozambique LNG. This is why we have highlighting TotalEnergies force majeure on its Mozambique LNG Phase 1 for the past 21 months as the game changing event for LNG markets. TotalEnergies Mozambique Phase 1 at 1.7 bcf/d is significant, but our view has been because TotalEnergies delaying Phase 1 of 1.7 bcf/d is actually leading to a delay of 5.0 bcf/d. This was the reason why, on April 28 2021, we posted a 7-pg blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" [LINK] We thought, and still think, there has been a major change to the outlook for LNG supply in the 2020s and one that is still being overlooked – there is a big new LNG supply gap starting around 2025 that is hitting faster and bigger than anyone expects. We saw Total's April 27, 2021 announcement of force majeure at its Mozambique Phase 1 LNG of 1.7 bcf/d was much more significant that viewed. We just didn't see market focused on the fact that this situation backs up an additional 3.3 bcf/d of LNG supply that is also being counted on in all LNG supply forecasts. Total's Phase 2 of 1.3 bcf/d was to follow, and Exxon's Rozuma Phase 1 of 2.0 bcf/d was originally expected to go FID in 2019 but is now not expected to have a FID decision until 2022 at the earliest. Mozambique is considered a premium LNG supply region for Asia and is in LNG supply forecasts. Total's original in service for Phase 1 is 2024. We had been warning that Mozambique has a major LNG market impact and its why we posted the April 28 blog. Its also why earlier we said that this is starting the clock running for other LNG projects wanting to go FID to make their mind up ie. like LNG Canada Phase 2."

Natural Gas – Japan weather forecast pointing to a warmer than normal May/Jun/Jul

Japan expects a warmer than normal start to summer

The Japan Meteorological Agency continues to forecast a warmer than normal Q2. Our Apr 2, 2023 Energy Tidbits noted the JMA's then new forecast for Apr/May/Jun for warmer than normal temperatures. Japan is now moving into the period for summer air conditioning demand. April tends to be what we call leave the windows open season and not air conditioning weather. May can start to see hot days and certainly June and July. On Thursday, the Japan Meteorological Agency updated its 30-day outlook [LINK] and is forecasting warmer than normal weather for May/Jun/July throughout the majority of the country. In particular, the outlook calls for above normal temps throughout the southern and more populous half of the main island, and to a lessor extent for northern regions. Although this may not have a significant impact on natural gas supply/demand, it would however be supportive of natural gas/LNG prices moving into the country.

Figure 8: JMA Temperature Probability May-July

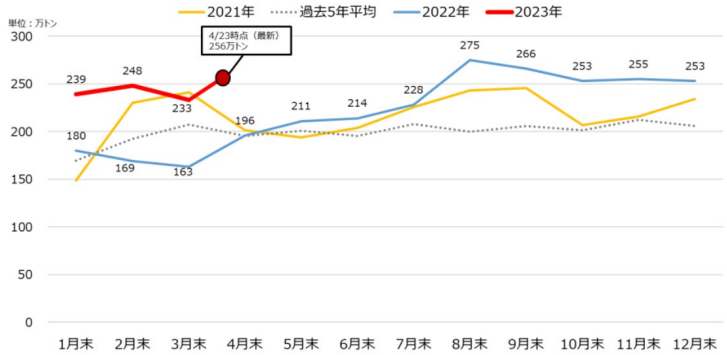
Source: Japan Meteorology Agency

Natural Gas – Japan's LNG stocks up +5.79% WoW to ~122.9 bcf

Japan LNG stocks +5.79% WoW

Japan had a mild winter with a hot March to end winter, so it was able to escape any weather-driven LNG shortages. It's shoulder season now so there isn't any strong weather related natural gas demand. LNG stockpiles held by Japanese power producers continue to exceed both last year's level and the seasonal average. Japan's METI weekly LNG stocks data was released on Wednesday [LINK]. LNG stocks on Apr 23 were ~122.9 bcf +5.79% WoW from Apr 15 of ~116.2 bcf and well above the 5-year average of ~93.7 bcf. Below is the LNG stocks graph from the METI weekly report.

Figure 9: Japan's LNG Stocks



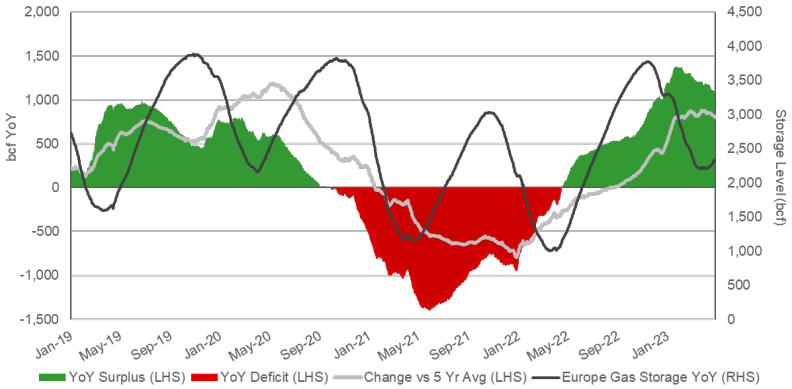
Source: METI

Natural Gas – Europe storage is now +19.47% vs 5-yr average, but within 5-yr range

Europe gas storage

The big global natural gas story for Q1/23 was how mild winters in Europe and Asia were the key reason why Europe made it through winter without a natural gas shortage. There was negligible weather driven demand for natural gas, which along with the continued industrial demand destruction, meant storage levels are at still at high levels. However, we are seeing a narrowing of the Europe gas storage surplus with the lower European natural gas prices and the impact of strikes impacting France LNG imports on and off over the past month. This winter (Nov 1/22) began with gas storage at 94.94% capacity, up 17.86% YoY and is now a YoY surplus of 26.42%. However, average temps continued to get warmer this past week resulting in storage increasing by +1.61% WoW to 58.74% on Apr 28. Storage is now +19.47% greater than last year levels of 32.32% and is +19.47% above the 5-year average of 39.27%. In addition, current storage is currently within the 5-year range, albeit at the top end of the range. Below is our graph of Europe Gas Storage Level.

Figure 10: Europe Gas Storage Level



Source: Bloomberg

Oil – US oil rigs flat WoW at 591 oil rigs on April 28

US oil rigs flat WoW

Baker Hughes released its weekly North American drilling activity data on Friday. This week total US oil rigs were flat WoW at 591 rigs as of April 28. Total US oil rig count is now at 591

rigs, +39 rigs YoY, +110 from the 2022 low of 481 rigs in January and +419 since the 2020 low of 172 rigs on Aug 14. Notably, on a per basin basis the Permian and "Others" both added +3 rigs to 357 and 84 oil rigs, respectively. In contrast, the Eagle Ford, Ardmore Woodford, Granite Wash, and Williston each saw -1 rig decline to 59, 2, 3, and 40 rigs, respectively; Cana Woodford was -2 rigs to 25 rigs. US gas rigs were up +2 rigs WoW to a total of 161 rigs, an increase of +17 rigs YoY. Below is our graph of total US oil rigs.

Figure 11: Baker Hughes Total US Oil Rigs

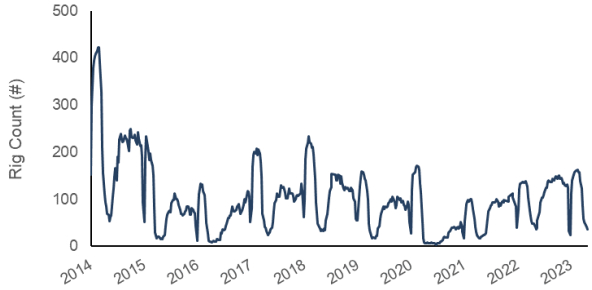
Source: Baker Hughes

Oil – Total Cdn rigs down -12 WoW to 93 total rigs, -2 rigs YoY

Cdn total rigs -12 WoW

Cdn drilling is now well into spring break up, which is the period of declining rigs that goes to the yearly trough in rigs. Traditionally, Cdn rigs hit their trough the last week of April or first week of May. So, we should see the 2023 Cdn rig trough in the next week or two. Total Cdn rigs were down -12 WoW to 93 rigs as of Apr 28. Notably, the week of Apr 28 saw a -10 rig decline in AB, -3 rig decline in BC, and a +1 rig add in SK with all other provinces flat WoW. There are now a total of 93 active rigs, +42 rigs vs the comparable Covid period of 51 rigs on Apr 30, 2021. Cdn oil rigs and gas rigs both fell by -6 rigs WoW to 36 and 57 rigs, respectively. Cdn oil rigs are now -9 YoY compared to 45 rigs last year while gas rigs are +7 YoY from 50 rigs. Below is our graph of total Cdn oil rigs.

Figure 12: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

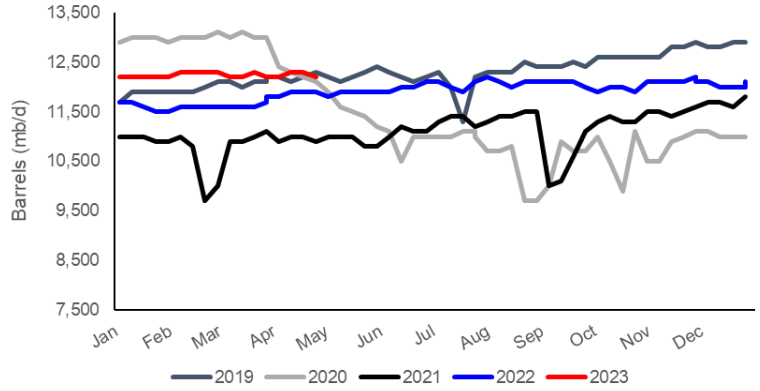
Oil – US weekly oil production down -0.100 mmb/d WoW to 12.2 mmb/d

US oil production down WoW

The EIA estimates US oil production was down -0.100 mmb/d WoW to 12.2 mmb/d for the week ended Apr 21 with the Lower 48 also down to 11.8 mmb/d and Alaska up to 0.441

mmb/d. US oil production, based on the weekly estimates, was mostly range bound in 2022 between 11.9 to 12.1 mmb/d since the 2nd week of May. But this year production broke above 12.1 mmb/d to 12.2 mmb/d for the week ended Jan 6, and has remained at or above 12.2 mmb/d ever since. The first time since it touched 12.2 mmb/d since the pandemic was the 1st week of August in 2022. Total US production reached its highest level since March 13, 2020, this year on Feb 3 at 12.3 mmb/d. US oil production is up +0.300 mmb/d YoY at 12.2 mmb/d but is still down significantly at -0.900 mmb/d since the 2020 peak of 13.1 mmb/d on March 13.

Figure 13: US Weekly Oil Production



Source: EIA, SAF

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
2021-Jan	01/01	11,000	01/08	11,000	01/15	11,000	01/22	10,900	01/29	10,900
2021-Feb	02/05	11,000	02/12	10,800	02/19	9,700	02/26	10,000		
2021-Mar	03/05	10,900	03/12	10,900	03/19	11,000	03/26	11,100		
2021-Apr	04/02	10,900	04/09	11,000	04/16	11,000	04/23	10,900	04/30	10,900
2021-May	05/07	11,000	05/14	11,000	05/21	11,000	05/28	10,800		
2021-Jun	06/04	11,000	06/11	11,200	06/18	11,100	06/25	11,100		
2021-Jul	07/02	11,300	07/09	11,400	07/16	11,400	07/23	11,200	07/30	11,200
2021-Aug	08/06	11,300	08/13	11,400	08/20	11,400	08/27	11,500		
2021-Sep	09/03	10,000	09/10	10,100	09/17	10,600	09/24	11,100		
2021-Oct	10/01	11,300	10/08	11,400	10/15	11,300	10/22	11,300	10/29	11,500
2021-Nov	11/05	11,500	11/12	11,400	11/19	11,500	11/26	11,600		
2021-Dec	12/03	11,700	12/10	11,700	12/17	11,600	12/24	11,800	12/31	11,800
2022-Jan	01/07	11,700	01/14	11,700	01/21	11,600	01/28	11,500		
2022-Feb	02/04	11,600	02/11	11,600	02/18	11,600	02/25	11,600		
2022-Mar	03/04	11,600	03/11	11,600	03/18	11,600	03/25	11,700		
2022-Apr	04/01	11,800	04/08	11,800	04/15	11,900	04/22	11,900	04/29	11,900
2022-May	05/06	11,800	05/13	11,900	05/20	11,900	05/27	11,900		
2022-Jun	06/03	11,900	06/10	12,000	06/17	12,000	06/24	12,100		
2022-Jul	07/01	12,100	07/08	12,000	07/15	11,900	07/22	12,100	07/29	12,100
2022-Aug	08/05	12,200	08/12	12,100	08/19	12,000	08/26	12,100		
2022-Sep	09/02	12,100	09/09	12,100	09/16	12,100	09/23	12,000	09/30	12,000
2022-Oct	10/07	11,900	10/14	12,000	10/21	12,000	10/28	11,900		
2022-Nov	11/04	12,100	11/11	12,100	11/18	12,100	11/25	12,100		
2022-Dec	12/02	12,200	12/09	12,100	12/16	12,100	12/23	12,000	12/30	12,100
2023-Jan	01/06	12,200	01/13	12,200	01/20	12,200	01/27	12,200		
2023-Feb	02/03	12,300	02/10	12,300	02/17	12,300	02/24	12,300		
2023-Mar	03/03	12,200	03/10	12,200	03/17	12,300	03/24	12,200	03/31	12,200
2023-Apr	04/07	12,300	04/14	12,300	04/21	12,200				

Source: EIA

Oil – EIA Form 914: US Feb oil actuals +183,000 b/d vs weekly estimates

EIA Form 914 February

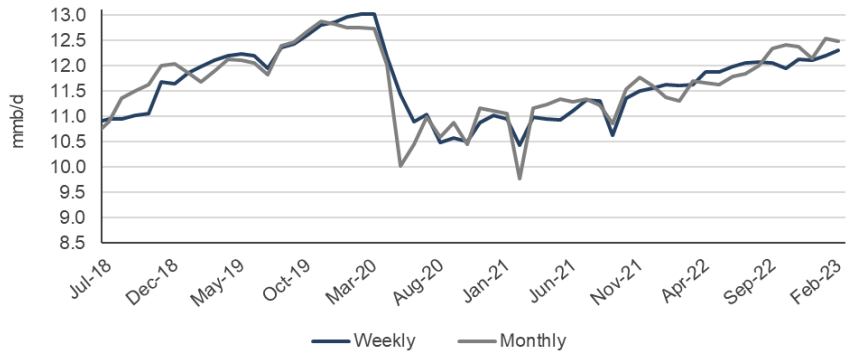
As a reminder there is a sizeable difference between what the EIA looks as "actuals" for US oil production vs the EIA's weekly estimates noted above. On Friday, we tweeted [LINK] "*#EIA Form 914 actuals: US oil production stronger than many expect. Feb 23 was 12.483 mmb/d, +1.177 mmb/d YoY. 2nd highest since Covid, following revised up Jan 23 of 12.536 mmb/d. Note Feb actuals of 12.483 mmb/d are +0.18 mmb/d vs @EIAgov weekly estimates. #OOTT."* On Friday, The EIA released its Form 914 data [LINK], which is the EIA's "actuals" for February US oil and natural gas production. There were two key takeaways from the EIA's weekly US oil production data for Feb – the actuals were 183,000 b/d more than the weekly estimates, and Feb was the 2nd highest US oil production since Covid at +1.177 mmb/d YoY to 12.483 mmb/d vs. Jan's post-Covid peak of 12.536 mmb/d. Note that Jan's data was revised up by +74,000 b/d since the March Form 914 release. (i) Form 914 estimates that total US oil production saw a marginal decrease of -53,000 b/d MoM to 12.483 mmb/d in February. The actuals for February were 183,000 b/d higher than the EIA's weekly estimates that worked out to 12.300 mmb/d. January actuals were adjusted higher to 12.536 mmb/d and were 336,000 b/d higher than weekly estimates of 12.200 mmb. (ii) There was a slight MoM decrease of -0.053 mmb/d vs Jan of 12.536 mmb/d. Our Supplemental Documents package includes the New Mexico, Texas and offshore Gulf of Mexico tables attached to our tweet.

Figure 15: EIA Form 914 US Oil Production (thousand b/d)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	12,536	12,483										
2022	11,369	11,316	11,701	11,668	11,629	11,797	11,844	12,002	12,337	12,417	12,379	12,149
2021	11,124	9,925	11,326	11,305	11,356	11,356	11,347	11,277	10,918	11,569	11,790	11,634
2020	12,852	12,842	12,797	11,914	9,713	10,442	11,006	10,577	10,921	10,457	11,196	11,168
2019	11,869	11,673	11,913	12,149	12,154	12,218	11,902	12,486	12,590	12,809	13,000	12,978
2018	10,001	10,281	10,467	10,500	10,435	10,641	10,897	11,392	11,443	11,509	11,886	11,945
2017	8,875	9,110	9,166	9,101	9,185	9,111	9,247	9,250	9,517	9,669	10,085	9,983

Source: EIA

Figure 16: EIA Form 914 US Oil Production vs Weekly Estimate



Source: EIA

Permian DUCs lowest since June 2014

Oil – Permian DUCs lowest since June 2014 when Permian production was 28% today

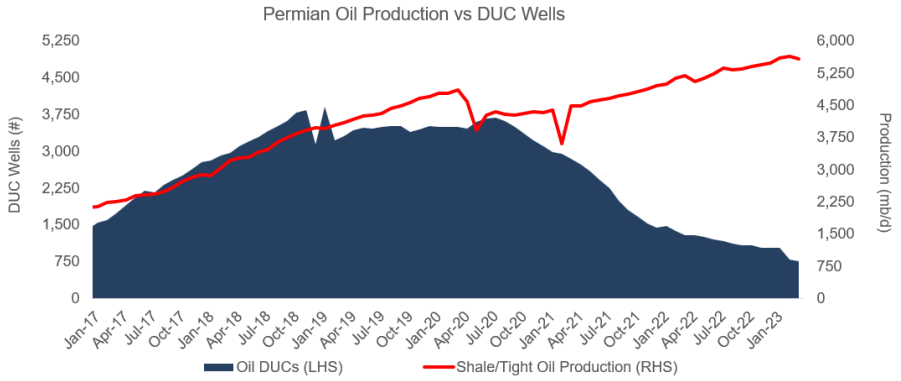
We had many calls this week on an item from last week's (Apr 23, 2023) Energy Tidbits memo – our questioning how much sustainable oil growth there can be in the Permian if DUCs are the same levels as June 2014, when Permian oil production was 28% of today's levels. Here is what we wrote in last week's (Apr 23, 2023) Energy Tidbits memo. "*We recognize that frac completions are hugely better in 2023 than in 2014 and that most continue to believe there is mult-year growth for Permian oil production, but we continue to question how much sustainable growth there is given the low relative levels of DUCs and that Permian oil rigs at 354 are still well below the 493 peak in Dec 2018. And the comments by industry that many producers are now forced to work on Tier 2 and 3 quality lands. (i) Yesterday, we tweeted [LINK] "Bullish for #Oil. How much sustainable Permian oil growth is there if Permian DUCs are lowest level in several yrs when Permian production was 1/3 today's b/d? ICYMI. @EIAgov revised its estimated Permian DUCs -251 to revised 793 DUCs. EIA estimates Mar is 761 DUCs. #OOTT." (ii) We were surprised that the EIA's big downward revision to its estimates of Permian DUCs didn't get attention. The EIA made a big downward revision to its estimates of Permian Feb DUCs, down 251 from the last month's estimate of 1,044 to the new Feb 28 estimate of 793 DUCs. This is way down and the new DPR estimate for Permian DUCs at March 31 is 761 Permian DUCs. DUCs are the inventory that is there, alongside new oil wells being drilled, to fuel near term Permian oil growth. (iii) The latest Baker Hughes Permian oil rigs count is 354 Permian oil rigs, which is well below the peak of 493 Permian oil rigs in Dec 2018. (iii) The EIA Drilling Productivity Report estimates Permian oil production is was 5.69 mmb/d in March. (iv) The last time EIA Permian DUCs were this low was June 2014 and Permian oil production was 1.59 mmb/d at that time, which is 28% of March 2023 production. (v) When we see the low level of DUCs relative to Permian oil production and Permian oil rigs still well below peak Permian oil rigs, its easy to question how much sustainable Permian oil growth there is over the next few years."*

Figure 17: EIA Estimated Drilled UnCompleted Wells

Drilled UnCompleted Wells, EIA Drilling Productivity Report													
											2023		
Drilled Uncompleted	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Anadarko	740	724	727	723	716	722	723	710	712	722	732	746	750
Appalachia	471	497	526	524	529	562	576	597	620	631	662	704	706
Bakken	426	429	425	427	426	474	494	501	528	552	579	609	608
Eagle Ford	642	612	598	611	620	593	582	561	517	482	434	423	413
Haynesville	395	419	441	466	483	513	535	558	595	624	662	707	719
Niobrara	317	320	310	328	345	362	393	443	497	539	641	704	719
Permian	1,302	1,294	1,244	1,218	1,180	1,117	1,097	1,051	1,068	1,079	1,042	793	761
Total	4,293	4,295	4,271	4,297	4,299	4,343	4,400	4,421	4,537	4,629	4,752	4,686	4,676

Source: EIA Drilling Productivity Report

Figure 18: EIA Estimated Drilled UnCompleted Wells vs Permian Oil Production



Source: EIA

Source: EIA Drilling Productivity Report

Oil – Are investors ignoring, at least for now, service co warnings on US oil growth

Service co' s warn on US oil growth

All of the major oil and gas service companies have reported Q1 and we have seen two key takeaways that are linked. Last week, we saw Baker Hughes and Schlumberger highlight the increasing commitment from international oil companies to long-cycle oil projects. This week, we saw that theme again, but the primary highlighted oil theme from Core Labs, Halliburton and NOV was a concern/warning on potential US unconventional oil growth. The themes are linked because if the international oil companies saw the same risk for US shale/tight oil growth as the last cycle, they wouldn't be committing to the broad range of long-cycle oil projects. They would fear that the US could crank up and add 2 or 3 or more million b/d of oil production in a short period and hammer prices. They don't see that fear, which is why they are committing to long-cycle projects on a broad basis, not just in the Middle East.

Oil – NOV, *growing confidence that US unconventional growth is slowing significantly*

NOV warns on US shale/tight activity and growth

NOV (formerly known as National Oilwell Varcoe) is another major US oil and gas service company and held its Q1 call on Thursday. NOV warned on US shale/tight oil growth. We tweeted [LINK] "*Will US shale #Oil growth be less than expected? #NOV thinks so. $NOV Q1 call "in all likelihood in North American activity is at best flat for awhile" "growing confidence that US unconventional growth is slowing significantly". Thx @business. #OOTT.*" Our tweet included the excerpt from the Bloomberg transcript of the Q1 call. NOV said "*in all likelihood in North American activity is at best flat for a while, constrained by $2 gas and tepid oil prices*" and "*The recovery of global oil demand with the reopening of the Chinese economy, they're growing confidence that US unconventional growth is slowing significantly. And the fact that the world has been under-investing in-production for nearly a decade. Thus, we believe we are seeing growing confidence from our customer-base to make longer-dated capital investment decisions.*"

Oil – Core Labs "seen production roll over in some of the larger basins in the US"

Core Labs ongoing challenge to US oil

Core Laboratories held its Q1 call on Thursday and is another major oil and gas service company to raise concerns on US shale/tight oil growth and that they have seen *"production roll over in some of the larger basins in the US*". US has to increase drilling and fracking to offset declines and there are less Tier 1 lands than most describe. (i) On Thursday, we

tweeted [LINK] "*#CoreLabs "ongoing challenges with [US] crude #oil supply". Unconventionals are a very unforgiving treadmill, decline rates are so quick, need more wells just to maintain production, need more drilling & fracking. "less Tier 1 property out there". Thx @business #OOTT."* (ii) Ongoing challenges for US oil supply. Mgmt said "*According to the U.S., U.S. land activity was somewhat weaker than expected in the early part of 2023. The lower-than-expected activity growth, is associated with weak natural gas prices. However, we see ongoing challenges with crude oil supply, which should require increased spending by operators to grow and replace production. While operators remain focused on capital discipline, 2023 forecasts continue to indicate upstream spending will increase approximately 15% year-over-year".* (iii) Drilling and fracking has to pick up to offset decline rates. Mgmt highlighted the fundamental challenge of shale/tight oil – high decline rates. Mgmt said "*To your broader question about completion levels, we think they have to go up. I've gained some either infamy or notoriety maybe for saying that, phrasing it this way that. Unconventionals are a very unforgiving treadmill. The decline rates are so quick on these wells, that you have to keep drilling wells. And the more wells you have, you have to spool up more wells to maintain that level of production. We think that drilling has to pick up. We think that completions has to pick up if we're going to maintain, and certainly if we're going to try to grow production in the U.S."* (iv) Less Tier 1 lands than often described. This was a very interesting comment as we wonder who mgmt. was referring to as describing Tier 1 lands. Was it some producers? Or just analysts? In the Q&A, mgmt. said "*Yeah, so I think there's less Tier 1 property out there than is often discussed or described. It's a bit of a gray area because as technology advances, the quality of rock that can produce acceptable results over time has gotten a little bit lower. In other words, they're able to complete more efficiently in lower quality rock and get similar results with more investment in the completion process. John, this is going to sound a bit cheeky, but the reality is we have a really good view, I think, of Tier-1 property through our multi-company consortium studies that we do, but quite frankly -- sell that data. And so, don't want to get too much detail on that."* (v). Mgmt didn't say where, but, in the Q&A, replied " *I do think it's fair to say, though, that we've seen production rollover in some of the larger basins in the U.S. The operators have done, by and large, have done exactly what you or I would have done during challenging times. They went to their most productive gardens and picked the vegetables and fruit out of that. They used their better quality properties. So, I think over the next three to five years, I think that becomes even more apparent that Tier 1 properties are getting consumed."*

Haliburton on DUCs

Oil – Haliburton points to this need to increase drilling to add DUCs

Haliburton held its Q1 call on Tuesday. On Wednesday, we tweeted [LINK] ""*the fact is, they don't produce more without fracking wells" says #Haliburton. Fracking wells means fracking DUCs ie. why $HAL expects US drilling to increase to add DUCs. It's math! Lower levels of DUCs = less oil growth potential. See 04/22 tweet. Thx @business. #OOTT."* Our reference to our 04/22 tweet is to the above item on Permian DUCs. Haliburton didn't say it directly, but seemed to point to the need for US drilling to increase to build up more DUCs because DUCs are the engine to fuel US oil production growth. And, as noted above, less DUCs point to lesser growth potential. Here is what Haliburton said in the Q&A. "*Yeah. Look, I think, wells drilled in North America really a function of DUC count. So as the DUCs get drawn down, more wells have to be drilled. And so, I think fluctuation in drilling - - and it's interesting that you see fluctuation in drilling, but a very steady march in terms of frac. And I think some of that is managing cost at the margin. But the fact is, they don't produce more without fracking*

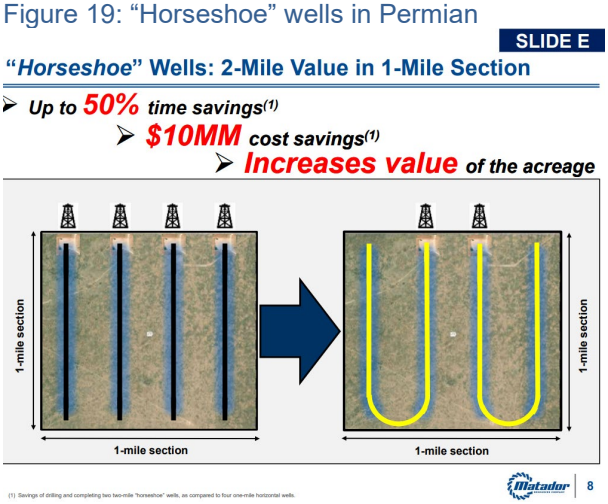
wells. And so, I'm not surprised to see that. I think our D&E business in North America remains strong. We're confident on what we're seeing there. We continue to sort of make gains in the drilling part of the business. And I would say, the other service lines are very strong."

Oil – Matador horseshoe/U-turn drilling in Permian, wonder what basin will be next?

Horseshoe or U-Turn drilling technique

We recommend reviewing Matador Resources new horseshoe or U-Turn drilling in the Permian as we have to believe this drilling technique will be tried in many basins. (i) Whenever we see a new drilling technique, we can't help remember how new drilling techniques always get applied to other plays and basins especially when the other produces see the big cost savings. We can't remember when a drilling technique only applied to a single company or play. So this horseshoe or U-turn drilling technique will be at least tried and it seems logical it will apply to other plays. Note in the Q&A, Matador mgmt. said this new drilling technique was being done in South Texas and we assume that it is likely a reference to the Eagle Ford. (ii) Matador drilled what they called a horseshoe well (see below graphic). They drill two wells that have horizontal legs that do a U-Turn to replace 4 horizontal wells. Their graphic says up to 50% time savings, >$10 mm cost savings, and increases value of the acreage. (iii) Matador held its Q1 call on Wednesday and provided more color on the benefits. The big cost savings is from steel casing savings. Horizontal wells start with a vertical section before turning to go horizontal. Matador saves by not having to drill vertical sections for four wells, only two wells. There are two benefits – saves time in drilling and using less steel casing. In the Q&A, mgmt said "*Obviously, we recognize and realize there is a time savings component to this of if you drill four single-mile wells versus two U-turns. We've calculated it's about a 50% reduction. So not only is there a cost savings associated with that, but you're bringing offset wells that you've shot in, you're bringing these wells to production faster. And so there's a time savings component to that, but then also a cost savings. We've documented it's about $10 million in estimated savings that we're going to realize. When you think about the amount of steel that's needed to case a four-string well if you're doing four single-mile laterals versus two U-turn horseshoes, we're actually saving about 10 miles of casing basically by reducing two vertical portions of these wells*." $10 million looks to be a big cost savings. Then later in the Q&A, mgmt. gave detail on the casing savings, they replied "*And, with that steel price, that's a big thing with those U-turn wells, we've been talking about the horseshoe wells, because eliminating 50,000 feet of casing, drilling those two wells versus four wells, that does a big savings. That alone was $4 million savings there*." (iv) Matador doesn't expect any difference in productivity. Mgmt was asked *"Are you guys expecting the productivity of those wells to be in line with kind of a normal two-mile lateral? Are there any changes in productivity per foot as you factor in the U-shape*?" Mgmt replied "*Hey, Kevin. It's Glenn Stetson. So, we are -- the short answer is that we're expecting the same kind of BO per foot, as you would a two-mile well. We're basing that of off -- there's not a whole lot of U-turn wells that are producing today. There's a few in South Texas, and then there are four in the Permian within a 20-mile kind of radius of where we're drilling these wells. And so, we do feel very confident in and again from the technical aspect to get these wells completed, and we'll wait and see. But for our projections, it's just a similar performance on a per-foot basis."*

Figure 19: "Horseshoe" wells in Permian



Source: Matador Resources

Patterson-UTI says drilling U-Turn wells for a "few different E&Ps"

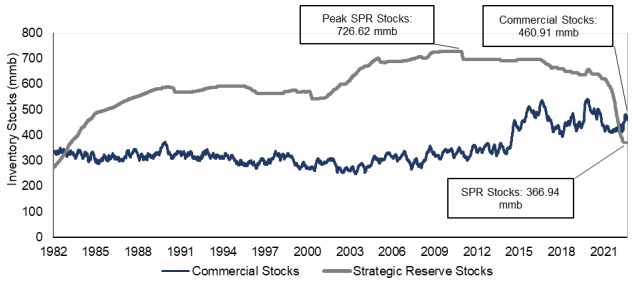
There was a good reminder from Patterson-UTI that they are going the U-Turn wells for other E&P companies besides Matador. Patterson-UTI held its Q1 call on Thursday. PTEN said "*We have established ourselves as leaders in conventionally drilling U-turn wells, which involves utilizing a high-performance mud motor to drill complex wells shaped like a U, enabling clients to drill 10,000 foot laterals within a single 5,000 foot section. We've even successfully drilled a well in a W shape for a customer recently."* In the Q&A, mgmt. was asked "*how broad based is this trend*?". Mgmt replied "*Yeah, for the jobs that I know of that we're doing the hydraulic fracturing on the U-shaped wells, I'm not aware of any difference on how we operate those versus just a straight lateral. And we've done the U shaped for a few different E&Ps, certainly the public data out there that shows that we work for Matador and really pleased to have them as a customer."*

Oil – US SPR reserves now -93.972 mmb lower than commercial crude oil reserves

US SPR reserves

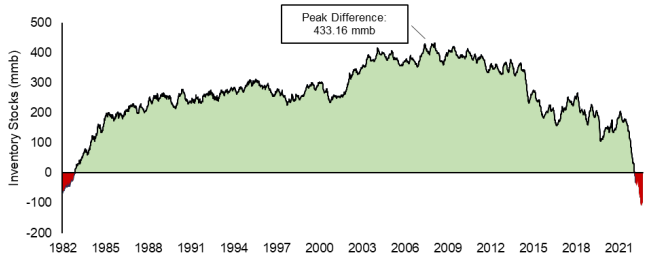
Oil in US Strategic Petroleum Reserves (SPR) moved below total US commercial crude oil reserves in the Sept 16, 2022, week for the first time since 1983 with the deficit narrowing again this week. The week of Apr 21 saw another SPR draw of -1.02 mmb compared to the -1.61 mmb draw last week after remaining flat for 10 consecutive weeks from Jan 13 to Mar 31. The EIA's weekly oil data has SPR reserves at 366.94 mmb vs commercial crude oil reserves at 460.91 mmb. The last time the SPR was down at this level was on Oct 28, 1983, at 366.14 mmb. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 20: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 21: US Oil Inventories: SPR less commercial



Source: EIA

Oil – Reminder US SPR has started its 26 mmb draw in Q2/23

SPR was to go 26 mmb lower

As noted above, we are seeing draws again in the SPR for the past few weeks. This was expected in Q2/23. Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. "*On Monday, Bloomberg reported "The Biden administration plans to sell more crude oil from the Strategic Petroleum Reserve, fulfilling budget directives mandated years ago that it had sought to stop as oil prices have stabilized. The congressionally mandated sale will amount to 26 million barrels of crude, according to people familiar with the matter. The sale is in accordance with a budget mandate enacted in 2015 for the current fiscal year, said a spokesperson for the Department of Energy. The Energy Department has sought to stop some of the sales required by 2015 legislation so that it can refill the emergency reserve, which currently has about 371 million barrels. After this latest release, the reserve will dip to about 345 million." The last time the SPR was 345 mmb was in Aug 1983 at 345.7 mmb.*

Oil – Cdn oil differentials narrowed $0.35 to close at $14.65 on Apr 28

WCS less WTI differentials

Yesterday, we tweeted [LINK] that Chevron's start of Venezuela oil imports into the Gulf Coast is likely impacting Cdn WCS less WTI differentials. But on the flip side, we still think it's work watching to see if the OPEC+ voluntary cuts, effective May 1, impact global heavy/medium oil differentials. Normally, the first barrels cut by OPEC members like Saudi Arabia are medium/heavy barrels, which would tend to compete vs WCS. So less barrels OPEC medium/heavy barrels is normally a boost to WCS prices. Since the Apr 3 OPEC+ announcement, WCS differentials actually widened slightly. WCS less WTI differentials were $14.15 on March 31, which was the Friday before the Sun Apr 2 reports that OPEC+ was

going to cut. The WCS less WTI differential widened to $15.40 on Apr 13, but narrowed $0.40 last week and by $0.35 this week to close at $14.65 on Apr 28. For perspective, a year ago, the WCS-WTI differential was $12.80 on April 28, 2022. Below is Bloomberg's current WCS–WTI differential as of April 28, 2023 close.

Figure 22: WCS less WTI oil differentials including April 28 close

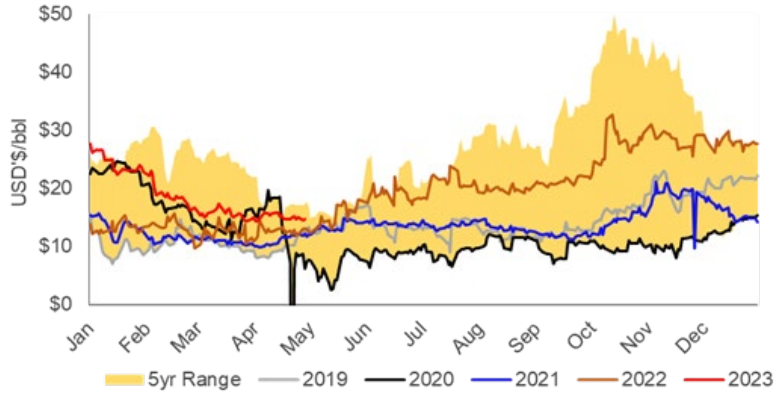
Source: Bloomberg

Oil – May is normally when Cdn heavy oil differentials are at their narrowest

WCS differentials normally narrow in spring

There are always unplanned events (ie. last year's Keystone interruption) that impact WCs-WTI differentials. And also big items like uge item, the release of mostly medium oil out of the SPR. It's not just unplanned events, but there are many items that impact Cdn heavy oil differentials, but we remind that we are just moving into the time of the year that normally sees Cdn heavy oil differentials narrow. This is the time of year, when refineries tend to maximize production of asphalt ahead of the annual summer paving season. As is said in Canada, there are two seasons in Canada – winter and paving season. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials from Feb thru May.

Figure 23 WCS less WTI oil differentials



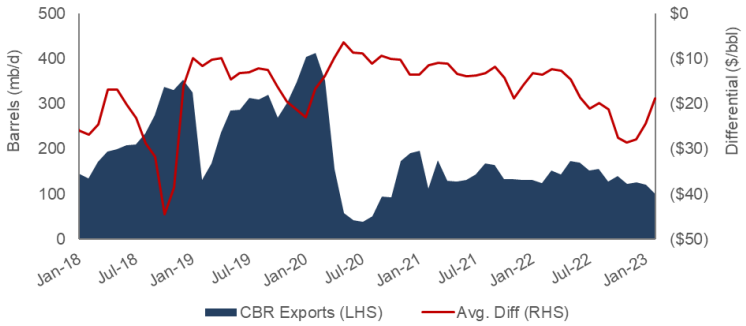
Source: Bloomberg

Oil – Cdn crude by rail exports at 99,387 b/d in February, down -20.4% YoY

Cdn crude by rail exports

The Canadian Energy Regulator (successor to NEB) reported Canadian crude by rail exports were down -20,688 b/d MoM to 99,387 b/d in Feb vs 120,075 b/d in Jan [LINK]. This puts export volumes at -25,394 b/d YoY (-20.4%) vs Feb 2022 of 124,871 b/d. CBR volumes are +60,520 since the Covid low of 38,867 b/d in July 2020. WCS-WTI differentials decreased to -$18.83 in Feb and up 39% YoY which continues to serve as an economic deterrent to shipping Cdn crude by rail into US markets. The CER doesn't provide any explanation for the MoM changes but the MoM drop is directionally consistent with the EIA data that shows less Cdn crude were down in Feb to the US Gulf Coast. Below is our graph of Cdn crude by rail exports compared to the WCS–WTI differential.

Figure 24: Cdn Crude by Rail Exports vs WCS Differential



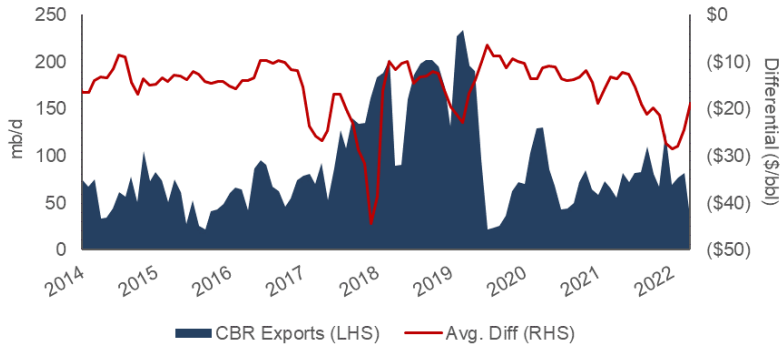
Source: Canadian Energy Regulator, Bloomberg

Oil – EIA estimate total Cdn crude by rail imports down ~57% MoM to 35,250 b/d in Feb

EIA Cdn crude by rail imports

The EIA posted its monthly "U.S. Movements of Crude Oil by Rail" [LINK] on Friday, which also provided EIA data on Cdn crude by rail exports. EIA estimates that total Cdn crude by rail exports to the US decreased significantly by -56.7% MoM to 35,250 b/d in Feb. Canadian CBR volumes to PADD 3 (Gulf Coast) of 35,250 b/d in Feb reflect a -46,105 b/d MoM decrease from 81,355 b/d in Jan, and a -20,107 b/d YoY decrease from 55,357 b/d in Feb 2022. Note that Jan's data was revised down by -3,431 b/d to from 84,786 b/d previously. Below is our graph of Cdn CBR exports to the Gulf Coast and WCS differential over time.

Figure 25: Canada CBR exports to US Gulf Coast vs WCS differential



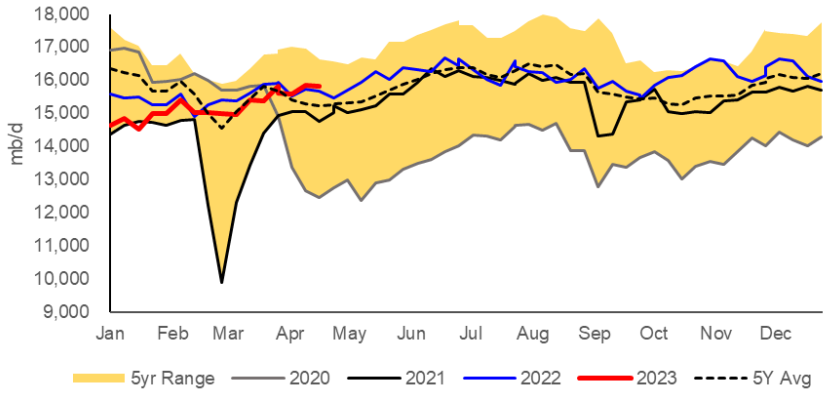
Source: EIA, Bloomberg

Oil – Refinery inputs down -0.011 mmb/d WoW to 15.833 mmb/d

Refiners switching to summer fuel blends

Refinery crude oil inputs decreased this week after being up last week. There are always unplanned refinery issues, and we remind Feb/early March is normally when we see refineries move into turnaround/maintenance i.e., crude oil inputs seasonally decline as refineries switch to produce more summer blend fuels. And normally, refineries come out of turnarounds in late March/early April to start their ramp up in refining of summer blend fuels. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended Apr 21. The EIA reported crude oil inputs to refineries were down -0.011 mmb/d this week to 15.833 mmb/d but are up +0.149 mmb/d YoY from 15.684 mmb/d for the week ended Apr 22, 2022. This week's refinery utilization was up +0.3% WoW to 91.3% and is up +1.0% YoY. Total products supplied (i.e., demand) increased WoW, up +0.891 mmb/d to 20.208 mmb/d, and Motor gasoline was up +0.992 mmb/d to 9.511 mmb/d from 8.519 mmb/d last week. The 4-week average for Motor Gasoline was up +0.339 mmb/d YoY to 9.065 mmb/d. The 4-week average of Total demand was up +0.435 mmb/d YoY to 19.795 mmb/d.

Figure 26: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

Oil – US "net" oil imports down -0.166 mmb/d WoW to 1.557 mmb/d

US net oil imports

US "NET" imports were down -0.166 mmb/d to 1.557 mmb/d for the Apr 21 week. US imports were up +0.082 mmb/d to 6.376 mmb/d. US exports were up +0.248 mmb/d to 4.819 mmb/d. The WoW increase in US oil imports was driven mostly by "Others" while the Top 10 posted a decrease of -0.246 mmb/d. Some items to note on the by country data. (i) Canada was down -0.192 mmb/d this week to 3.327 mmb/d. (ii) Saudi Arabia was up 0.054 mmb/d to 0.393 mmb/d. (iii) Colombia was down -0.160 mmb/d to 0.143 mmb/d. (iv) Ecuador was down -0.095 mmb/d to 0.036 mmb/d. (v) Iraq was up +0.042 mmb/d to 0.222 mmb/d. (vi) Mexico was up +0.113 mmb/d to 0.728 mmb/d.

Figure 27: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Feb 3/23	Feb 10/23	Feb 17/23	Feb 24/23	Mar 3/23	Mar 10/23	Mar 17/23	Mar 24/23	Mar 31/23	Apr 7/23	Apr 14/23	Apr 21/23	WoW
Canada	3,856	3,556	3,197	3,605	3,780	3,371	3,240	2,957	3,980	3,590	3,519	3,327	-192
Saudi Arabia	384	262	545	310	476	385	483	228	514	376	339	393	54
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	913	690	683	725	556	633	1,118	541	920	450	615	728	113
Colombia	70	143	284	143	222	294	244	269	71	159	303	143	-160
Iraq	230	322	251	290	265	346	144	138	345	241	180	222	42
Ecuador	207	156	145	97	55	46	0	118	80	242	131	36	-95
Nigeria	248	75	256	98	243	170	129	104	302	236	112	104	-8
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Top 10	5,908	5,204	5,361	5,268	5,597	5,245	5,358	4,355	6,212	5,294	5,199	4,953	-246
Others	1,150	1,028	965	940	674	971	814	970	932	899	1,095	1,423	328
Total US	7,058	6,232	6,326	6,208	6,271	6,216	6,172	5,325	7,144	6,193	6,294	6,376	82
Source: EIA													

Source: EIA

Oil – Chevron expects its Venezuela production +50,000 b/d to 150,000 b/d in 2023

Chevron increasing Venezuela oil

It is important to remember Chevron CEO Wirth's prior comments that, given the Administration's license is only for six months and the Administration is under no obligation to do a monthly rollover to keep a six-month effective license, Wirth said Chevron wouldn't be doing any drilling in the first six months. Wirth wanted to know there was a longer term before they committed to a drilling program. As a result, Chevron would be increasing oil production by well workovers, fixing operations, bringing in diluent, etc ie. non-drilling items. The reminder is that if Chevron ever gets at it, they could ramp up production by probably 250 to 500,000 b/d within a year or so. And expects it to increase production by 50% from current 100,000 b/d in 2023. Production was 50,000 b/d at the end of Nov when Chevron got the license. In the Q1 call, mgmt. was asked about Venezuela oil production. Note it looks like a typo in the transcript that says it was a six-month license from OPEC as the license was from the US. Mgmt replied "*Is there a maximum? I mean, it's limited by our position there, and the entities that we're involved in, and what our portion of that production that we're entitled to market is. We're currently seeing about 100,000 barrels a day of production up from about 50,000 when the license terms changed. That could go up further this year, maybe another 50% if everything goes well. The crude comes to the U.S. and we're finding a market for the crude. And yes, it's a six-month license from OPEC and we have to bear that in mind. So that's why we are proceeding as you said which is we've got some past receivables that are being paid from some of these proceeds and there's a lot of relatively straightforward work over another activity that can help bring production up at -- without major capital commitments. And so that's current model, we'll see how things unfold, and hopefully, pointed in a good direction, but it's been a bit of an up-and-down situation and we have to -- we just have to take this one step at a time.*"

Huge Chevron Venezuela oil production capacity without drilling a single well

Here is what we wrote in our Dec 25, 2022 Energy Tidbits memo. "*There was an overlooked Argus report on Wed [LINK] "High hurdles to grow Chevron's Venezuela oil output." It was likely overlooked for the title of the report. (i) But, yesterday, we tweeted [LINK] "Tip of the Iceberg! Chevron VEN Nov production is ~90,000 b/d, 1,400 wells, ~65 b/d ave well. Note 👇category 2: ~8,700 wells need ~$0.5 mm/well to become operational. At 65 b/d ave = ~550,000 b/d capacity add without drilling one well. Thx @ArgusMedia Carlos Camacho! #OOTT." (ii) The Argus report reminds*

of the huge near term upside For Chevron to add production in Venezuela without drilling one well. (iii) Recall that the US only gave a waiver for six months. It s a rolling six-month waiver as the current month ends so it's basically saying to Chevron you have six months from today, but no guarantee for longer. This lack of visibility beyond the six-month window is why Chevron CEO said they aren't planning to do any drilling within six months. Rather working to move the existing oil in inventory and do some well reworking. (iv) Chevron's go-slow plan looks to add >110,000 b/d in the next six months in the Occiente basin. I think most refer to it as the Oriente Basin. Production was 150,000 b/d early this year and is down to 90,000 b/d in Nov. Argus reports "An internal Chevron plan to increase Venezuelan oil production to 200,000 b/d by mid-2023 relies on efforts to rehabilitate some 18,000 wells in various states of disrepair in the country's once-prolific Occidente region". This addition makes sense given the rolling six-month term and what we call the go-slow plan. (v) Adding >110,000 b/d by mid-203 is the Tip of the Iceberg. (vi) We believe Chevron could crank up to add another 200,000 b/d by end of 2023, and a further 200,000 b/d or likely a lot more in 2024. We don't think it's unreasonable to see this up at 500,000 b/d to 1,000,000 b/d in two years if Chevron moves from a go-slow to a get-at-it plan. And this is without drilling one new well. This Argus report shows these elements. (vii) There is so much low-hanging fruit to Chevron to grow Venezuela oil production without drilling any wells. It's all existing wells that need some sort of work or power. (viii) Remember, this is apart from the previously reported 1.79 mmb of oil in storage ready for export. (ix) Argus reporting on an internal Chevron plan. Says "Occidente" region was 150,000 b/d earlier in 2022, but is now down to 90,000 b/d in Nov. Says there are 18,000 wells in total. But only 1,400 producing wells, that is ~65 bpd per well on average. Remember, this is in an industry starved for capital, equipment and basic operating efforts. The question is how much would these 1,400 producing wells be producing with proper maintenance, etc? we suspect a lot more than 65 bpd, would guess something over 100 bpd on average. Category 1 is producing wells. ~7% or 1,400 wells producing oil "but many at decline rates". As noted, these are on average producing 65 bpd. They don't say it, but these heavy oil wells are all likely now or soon to be candidates to reworking so we would expect also some upside here to effectively hold production if not increase. Category 2 is the huge low hanging fruit with "About 8,700 wells fall into Category 2, which includes non-operating wells that may just need minor work to become operational. These wells may need around $500, 000 each in new investment to be viable, according to sources familiar with the field." If we use the current producing average of 65 bpd, that is ~550,000 b/d of incremental production capacity for $4.35 billion. That assumes the 65 b/d average. Is it reasonable to assume the average as these are wells that down for some reason? If Chevron is prepared to spend $500,000 per well, it's safe to say these aren't stripper wells that produce a very low amount of production. Rather, we can't believe Chevron would put in this category any wells that aren't capable of a decent level of production and we suspect much more than the average well of 65 b/d. Again, this is not drilling, rather we expect well cleanouts, reworking, etc. If use 100 bpd, that is 870,000 bpd of incremental production capacity. Category 3 "are more than 7,900 wells that need between $5mn-$6mn of investment each to be commercially viable". We are not clear what is required here. Plus upside from wells that don't fit in to category, 1, 2 or 3. Argus notes 'Hundreds

of wells in the PdV report are reportedly shut down just for a lack of reliable electricity, which plagues many parts of the country". This is where something like diesel power generation comes into play. The reality is that reliable power is something that is also involved in the above categories. Our Supplemental Documents package includes the Argus report."

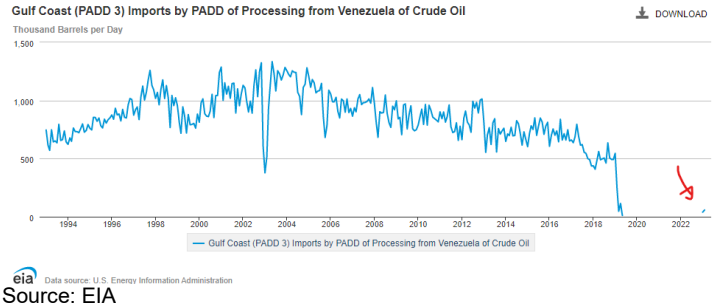
03/22/22. Chevron said could double Venezuela's 800,000 b/d within months

Here is what we wrote in our March 27, 2022 Energy Tidbits memo. "*On Tuesday, we tweeted [LINK] on the WSJ report "Chevron, Waiting It Out in Venezuela, Tells U.S. Now Is the Time to Pump Oil Company pledges to make up for fall in Russian exports". [LINK]. Chevron reportedly is telling the administration they can double Venezuela's oil production within months. The WSJ wrote "For months, Biden administration officials snubbed top executives and lobbyists for Chevron Corp. who had pressed officials in Washington to ease sanctions so the company could boost production in Venezuela, where the U.S. has banned such activities since 2019. Then Vladimir Putin invaded Ukraine. Now the Biden administration is listening closely to Chevron, say people familiar with the conversations, which says it can help double Venezuela's 800,000 barrels-a-day production within months. That could replace the loss of roughly 700,000 barrels a day the U.S. was importing from Russia before it attacked Ukraine. And it could help lower gasoline prices—a major concern for the Biden administration in a tough election year." Our Supplemental Documents package includes the WSJ report.*

A return of Venezuela is negative for Cdn differentials

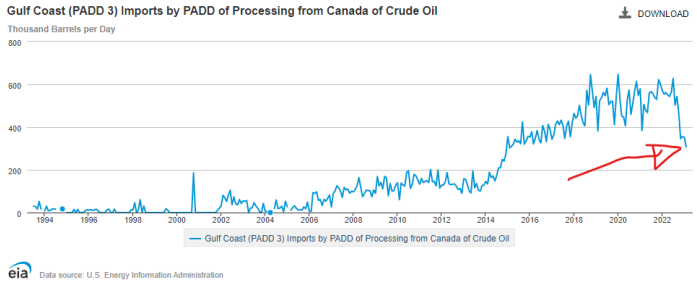
We have been concerned that the return of Venezuela oil imports into the Gulf Coast would impact the market for Cdn heavy/medium into the Gulf Coast and therefore hurt WCS-WTI differentials. Yesterday, we tweeted [LINK] "*#Chevron' start of Venezuela #Oil imports (40 kbd in Jan, 58 kbd in Feb) into Gulf Coast looks to be impacting Cdn oil into Gulf Coast & WCS-WTI differentials. May is normal trough for diffs. Have narrowed seasonally to $14.65 on Fri, but down YoY vs $12.80 on 04/28/22. #OOTT".* Venezuela oil imports into Gulf Coast started in Jan with Chevron Venezuela restart for the first time in 3 and ½ years.. 40,000 b/d in Jan, 58,000 b/d in Feb and going higher in March and even higher in April. And Canadian crude oil imports into Gulf Coast have started to go down. 352,000 b/d in Jan, 308,000 b/d in Feb. Our tweet included the below EIA graphs of crude oil imports into the Gulf Coast PADD 3. They remind how Cdn heavy/medium crude was able to penetrate PADD 3 (Gulf Coast) because there was a need with declining Mexico and Venezuela crude oil. Conversely, if Venezuela increases, it will mean more Venezuela crude to the Gulf Coast and less need/increased pressure on Cdn differentials. It's hard to see form the graph but we pointed to the first Venezuela oil imports into the Gulf Coast in about 3 ½ years were 40,000 b/d in Jan and 58,000 b/d in Feb, and this will be higher in March.

Figure 28: Gulf Coast PADD 3 Crude Oil Imports From Venezuela



Source: EIA

Figure 29: Gulf Coast PADD 3 Crude Oil Imports From Canada



Source: EIA

Especially since Chevron has 460,000 b/d of refining capacity in Gulf Coast

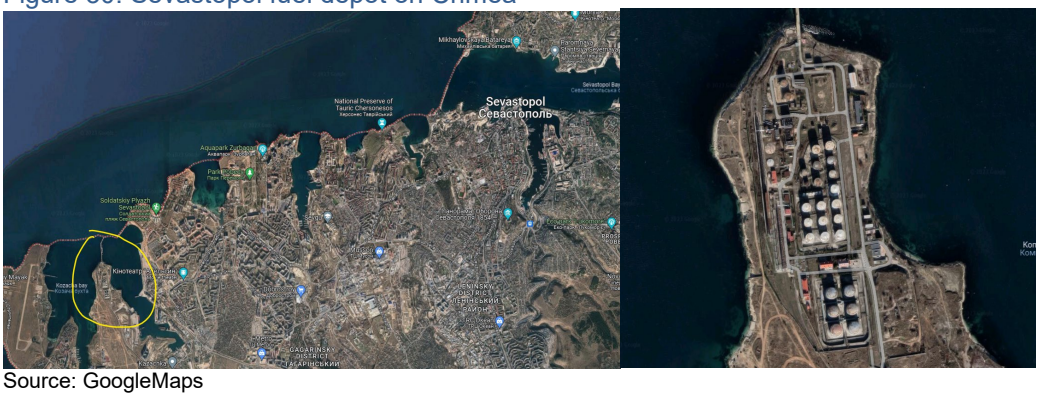
We have previously highlighted that Chevron has its 350,000 Pascagoula refinery that could take Venezuelan crude oil, but other Gulf Coast refineries are also now taking Venezuelan crude oil once again. The General License 41 says "*Sale to, exportation to, or importation into the United States of petroleum or petroleum products produced by the Chevron JVs, provided that the petroleum and petroleum products produced by the Chevron JVs are first sold to Chevron;"* Chevron has two refineries in the Gulf Coast, one of which would take Venezuelan crude. (i) Pascagoula (Mississippi) refinery. [LINK] "*Chevron's Pascagoula Refinery processes 350,000 barrels (14.742 million gallons) of crude oil a day - an amount equivalent to the size of a football field covered to a depth of 41 feet. Chevron Pascagoula Refinery is primarily a fuels refinery, in that we mainly manufacture motor gasoline, about 130,000 barrels per day (BPD); jet fuel, 50,000 BPD; and diesel fuel, 68,000 BPD. Our other products include fuel oils such as Liquefied Petroleum Gas (LPG), aviation gasoline, petroleum coke and sulfur."* (ii) Pasadena Refinery (Texas) processes light sweet crude so would not process Venezuelan crude. [LINK] "*From gasoline, gasoline components, and distillate oils, to fuel gas and liquefied petroleum gas, the Chevron Pasadena Refinery manufactures products people use every day. Capable of processing up to 110,000 barrels of crude oil per day, we refine 100 percent Texas light, sweet crude, including Chevron-produced oil from the Permian Basin."*

Oil – Will Russia/Ukraine return to #1 market story, incl commodities, in May?

Russia/Ukraine escalation in May?

The successful drone attack, and dramatic video footage thereon, on Russia fuel depot in Crimea brought a lot of media coverage and expert views. Even still, we were surprised that more aren't wondering if May will turn out to be when the Russian/Ukraine war returns to be the #1 market story and for commodities. (i) Zelensky continues to say Ukraine will retake Crimea. Russia annexed Crimea in 2014 and reunifying Crimea with Ukraine has always been Zelensky's priority. On the day of the drone attack on Crimea, Kommersant reported [LINK] "*Ukrainian President Volodymyr Zelensky confirmed in an interview with Yle that the Ukrainian military is planning a counteroffensive. He is convinced that Ukraine "will be able to repel Russian forces, as well as return the Crimean peninsula under control." He did not name the timing of the offensive, but, according to Yle, it is believed that it is scheduled for late spring or early summer*." (ii) Retaking Crimea is a key part, but Zelensky's plan is to get Russia out of all of Ukraine. (iii) Drone attack on Russian main fuel depot in Crimea is being widely viewed as the setup for some sort of Ukrainian offensive on Crimea soon. Military runs on fuel and food. As of our 7am MT news cut off, it isn't clear how many fuel tanks survived the drone attack, but it certainly looks like a lot more than Russia saying four fuel tanks were impacted. And there are well reported pictures of Russia setting up defensive fortifications on Crimea. (iv) Wagner Group expects the Ukraine offensive after the rains pass. Yesterday TASS reported [LINK] "T*he Ukrainian military is ready for a counteroffensive that will be launched by May 15, Wagner private military company founder Yevgeny Prigozhin said in a video interview with journalist Semyon Pegov posted on Saturday. As the Wagner founder pointed out, the last strong rain will take place on May 2 and "the weather will by dry and tanks and artillery will be able to roll through. The wind will dry out the soil," he said. "The Ukrainian army is ready for the counteroffensive. It was impeded by bad weather and, perhaps, some internal problems that it had to resolve," Prigozhin said. "Perhaps, they will give us a rest on May 9 but the offensive will 100% begin before [May] 15," he said."* (v) Wildcard what will Putin do? This is the huge wildcard and, if Russia expects the Ukraine offensive in the next two weeks, why won't Putin do something in advance while he still has control over territory? (vi) If Putin is ever going to negotiate something, he has to do it while has some sort of position of strength, including control of territory.

Figure 30: Sevastopol fuel depot on Crimea



Source: GoogleMaps

Oil – Putin says allows oil exports to friendly states regardless of price cap

Putin trying to keep oil buyers

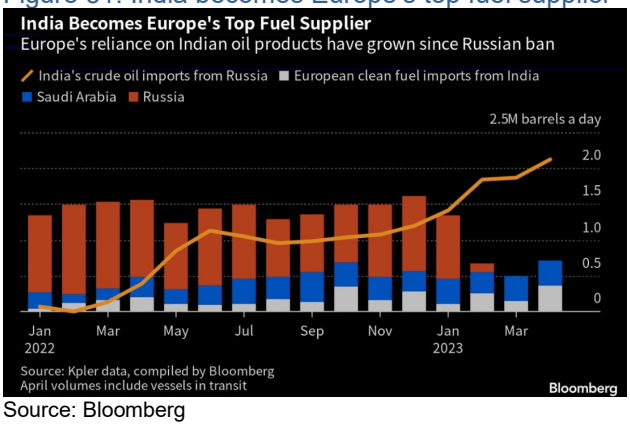
It looks like Putin is determined to not lose any of its new existing buyers to keep revenues coming in the door. He doesn't want to lose revenues but certainly can't lose customers Brent was lower this week, but it had been solidly over $80 and the risk was that it was tougher for Greek shippers and customers to say they were in compliance. On Friday, TASS reported [LINK] "*Putin allows oil exports under contracts with friendly states regardless of price cap"* And "*Russian President Vladimir Putin has withdrawn supplies to friendly countries under contracts signed before February 1, 2023, from the ban on exports of oil and oil products on conditions of the price cap policy. The relevant decree signed on April 28, has been published on the portal of legal information. "The effect of this decree does not cover supplies of Russian oil conducted under the contracts signed in implementation of Russia's effective international agreements on oil supplies to the states that are not included in the list of foreign states and territories approved by the Russian government, which are committing unfriendly actions regarding Russia, its legal entities and individuals," the document says*." Our Supplemental Documents includes the TASS report.

Oil – India and Saudi Arabia are 2 of the winners in sanctions on Russia oi/fuels

India and Saudi win on Russian sanctions

There was a great reminder from Bloomberg on Friday on how India has been a big winner in the Europe sanctions/bans on Russian oil and petroleum products. Early Friday morning, we tweeted [LINK] "*Two of the winners in US/EU sanctions/bans on RUS #Oil #PetroleumProducts - India, Saudi. India cranks up discounted RUS oil for refineries = increased India fuel exports to EU. Saudi imports more RUS fuels = increased Saudi fuel exports to EU. Thx @business #OOTT."* Our tweet included the below Bloomberg chart "*India becomes Europe's top fuel supplier*" that showed how India has cranked up its imports of discounted Russian oil and its refineries are cranking up clean fuel exports to Europe. The Bloomberg chart also shows modestly increasing Europe fuel imports from Saudi Arabia. Our tweet included a Kommersant report that we highlighted in our March 12, 2023 Energy Tidbits memo. On March 7, Kommersand (Russian media) reported [LINK] "*Russia began supplying diesel fuel to Saudi Arabia. Russia in February shipped in the direction of the ports of Saudi Arabia at least 190 thousand tons of diesel fuel, follows from the data of the company Refinitiv. Riyadh itself is a major supplier of diesel fuel to other countries. According to traders interviewed by Reuters, Russian diesel after processing can be re-exported to other countries. The tanker Srini loaded 66 thousand tons of diesel fuel in the port of Primorsk, now it is being unloaded at the terminal of the port of Jeddah. Two tankers, Apanemo and Zarya, are sailing to the port of Ras Tanura."*

Figure 31: India becomes Europe's top fuel supplier



Source: Bloomberg

India had record petroleum products exports to US in Feb

It looks like India is also taking advantage of processing discounted Russian crude oil to sell refined petroleum products to the US. On Friday, the EIA posted its actuals for Feb, which also includes US oil and petroleum products imports by source country. The EIA data for imported petroleum products from India in Feb. [LINK]. The US hit an all-time record with 177,000 b/d of petroleum products from India in Feb, which followed another strong month of 158,000 b/d imported from India in Jan. What was different is that Jan/Feb are normally lower months for imports of petroleum products vs the Apr/May/Jun/July period for imports of petroleum products from Italy.

Figure 32: US imports of petroleum products from India

U.S. Imports from India of Total Petroleum Products (Thousand Barrels per Day)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1995	0	0	0	0	8	7	8	0	0	0	0	0
1996	8	10	0	0	9	0	0	0	9	17	0	0
1997	0	0	0	0	0	34	0	0	0	17	0	5
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	7	0	0	0	0	0	0
2000	0	0	39	9	0	0	3	4	0	0	0	21
2001	44	18	0	0	8	44	21	8	11	0	12	0
2002	5	0	0	8	38	26	29	33	12	63	10	20
2003	20	0	17	5	21	94	17	52	0	0	0	7
2004	10	24	28	21	11	15	29			3		
2005	36	25	12		40	35	32	19	46	15	69	12
2006	53		15	12		9	25	20		10		
2007	16	14	30	28	24	39	27	28	4	32	90	12
2008	13	10	13	0	0					7	6	16
2009	23				9	6	22	9	22	27	37	16
2010	26	11	40	115	95	80	47	48	56	48	22	15
2011	32	34	24	134	99	138	63	36		21	7	
2012	24	39	26	68	33	25	62	87	28	17	45	28
2013	39	29	59	111	164	119	168	84	52	31	53	46
2014	71	31	112	140	150	68	103	104	98	100	53	58
2015	98	91	93	116	96	163	83	104	65	67	20	31
2016	49	99	54	105	136	81	134	96	83	97	45	95
2017	74	68	85	56	99	107	121	122	116	43	52	42
2018	50	62	55	120	121	124	98	95	30	82	0	53
2019	97	173	87	169	165	79	96	114	50	75	67	71
2020	88	20	81	44	131	117	112	106	74	25	56	90
2021	76	57	112	110	113	112	94	106	136	119	65	94
2022	50	46	54	108	104	107	74	79	51	74	0	71
2023	158	177										

Source: EIA

Oil – Russia suspends disclosing oil and gas production data until Apr 2024

Russia stops disclosing oil and gas production

On Friday morning, we tweeted [LINK] "*Russia to suspend publication of #Oil #NatGas #Condensate production data for 11 mths. It may well be as most expect so RUS can cheat & produce/export more oil than #OPEC+ quota but,have to wonder if the impact of sanctions is hurting production levels. #OOTT."* We recognize that the working assumption is that this is because Putin wants the oil and gas companies to maximize production to generate badly needed revenues. And that is most likely the case. But we still have to wonder if sanctions are having an impact on oil and gas production levels or spare capacity that is used to maintain near term oil and gas production. We will have to wait to see how the tanker tracker firms report on Russia exports as the primary indicator. Our tweet included the Kommersant report [LINK] "*The government suspended for 11 months the publication of statistics on oil and gas production. The Russian government has ordered to suspend the publication of statistics on oil, gas and condensate production until April 1, 2024. This is stated in a document published on the portal of legal information. Deputy Prime Minister Alexander Novak said yesterday that this year Russia will reduce oil and gas condensate production to 515 million tons, 20 million tons less than in 2022. On Wednesday, April 26, Rosstat's report on the situation in the industry for the first quarter did not include data on oil production*."

Oil – Increasing Russia/China energy deals now settled in Yuan/Ruble

More Yuan/Ruble energy deals

It's far from clear how many of the Russia/China energy deals are actually settled in Yuan and Ruble, but they are likely increasing. And the movement away from US $ is starting to pick up by these two and, most importantly, seems to be getting legs. On Mony, Global Times (China state media) reported [LINK] "*Energy trading between China and Russia has been settled in both the yuan and the ruble, Russian Deputy Prime Minister Alexander Novak said in interview with Russian media over the weekend, according to a report by China's state broadcaster CCTV. Trades using the yuan, the ruble and the Turkish lira are increasing and becoming common, while deals using the US dollar or the euro are trending down, Novak said. Moscow intends to abandon the use of the US dollar and the euro in energy transactions, while using the local currencies of relevant countries, Novak said."* We tweeted [LINK] "*Not clear how much RUS/China #Oil deals are actually settled in Yuan/Ruble but likely increasing. Hard to believe it's anywhere near 100% of 1.73 mmbd. BUT that would be a huge (>$40b/yr) even at discounted price. Then there's 2.1 bcfd of RUS #NatGas pipeline exports! #OOTT."* Putting aside the 2.1 bcf/d of Russian natural gas expected to go via natural gas pipelines in 2023 to China and the Russian LNG that will get to China, the volumes of oil is big. Just thinking of oil, there was 1.73 mmb/d of Russian oil in 2022 to China. It's hard to see they would get 100% of the oil deals done in Yuan/Ruble, BUT if they did and the discouinted price was something like $70 to reflect a big discount, that would be $121 million a day, or $44 billion a year. Again, that is only oil, and not natural gas and LNG. SO we don't know what percentage of energy deals is done in Yuan/Rubles but the potential is huge if they ever get to a majority of the deals. No question, it will be a factor to watch. Our Supplemental Documents package includes the Global Times report.

Oil – No one stops India from buying Russia oil at more than price cap

India pays more than oil price cap

India continues to remind that it will continue to buy Russian oil, even if it is at prices above the price cap. On Monday, we tweeted [LINK] "*India keeps buy discounted #Oil from Russia even if discounted price is above EU/US price cap. "Nobody stops us from buying Russian oil at above the price cap level provided. We are not using western service" says India Oil*

Secretary Jain. Thx @Nidhi712. #OOTT." Reuters had reported [LINK] on comments by India Oil Secretary Jain ""*Nobody stops us from buying Russian oil at above the price cap level provided. We are not using western service," Jain told reporters on the sidelines of an event. In case of Russian oil priced above the cap, the companies on their own manage to find alternative mechanisms to settle payments, he said, adding most Russian oil supplies to India are made at below the price cap level. He also said India is seeking to buy oil at discounts from other countries depending on grades."* Our Supplemental Documents package includes the Reuters report.

Oct 8, 2022, India in Washington said they would buy oil from anyone

No one should have been surprised to see India Oil Secretary Jain's comments as India has been clear in its meetings with the US and others that it will buy oil from anyone. Here is what we wrote in our Oct 9, 2022 Energy Tidbits memo. "*It got very little press but US Energy Secretary Jennifer Granholm met in Washington with India oil minister Hardeep Singh Puri. The US Dept of Energy released a joint ministerial statement from the ministers that does not even note their names or quotes. Not the norm. And, to no surprise, it made zero mention of oil, LNG or Russia. We did see the photo-op but didn't see a joint press conference as is normally the case. No surprise why it looks like they didn't have a joint press conference based Puri's comments at a subsequent press conference in Washington. We watched multiple ANI (Indian news) video clips and their posted stories hit the highlights. (i) Russian oil. We tweeted [LINK] "1/3. Great @ANI reporting on clear India energy position from @HardeepSPuri post @SecGranholm meeting. "Have I been told by anyone to stop buying Russian oil? The answer is a categorical No". #OOTT #NatGas #LNG". (ii) India will buy oil from anyone. We tweeted [LINK] "2/3. "India will buy oil from wherever it has to for the simple reason that this kind of a discussion cannot be taken to the consuming population of India" says @HardeepSPuri. #OOTT @ANI." (iii) Priority is energy security/affordability. We tweeted [LINK] "3/3. ""If you are clear about your policy, which means you believe in energy security, energy affordability you will buy from wherever you have to. Our energy purchases from sources hitherto unheard of, we are in discussion with them." @HardeepSPuri. Thx @ANI. #OOTT." (iv) India has been able to keep prices down. Puri also noted that they have been able to keep oil price impact low. ANI wrote ""In terms of petrol and diesel, if the increases in North America are 43-46 per cent, in India we allow prices to go up by only 2 per cent or so. In terms of gas, global benchmarks went up by 260-280 per cent and our own ability to contain gas price increases was something around 70 per cent," Puri told reporters in Washington DC." (v) There are other items n the ANI reports. Our Supplemental Documents package includes three ANI reports."*

Oil – Reminder OPEC+ 1.157 mmb/d voluntary cuts are to start May 1

OPEC+ voluntary cuts

We remind that tomorrow, May 1, is when the OPEC+ voluntary cut (production adjustments) of 1.157 mmb/d are effective and to run thru 2023. This was the breaking news in our April 2, 2023 Energy Tidbits memo, which OPEC followed up with their April 3, 2023 press release. [LINK] . These voluntary cuts were in addition to Russia's prior announcement of cutting 500,000 b/d vs Feb 2023 production and that would be until the end of 2023. The voluntary cuts were Saudi Arabia 500,000 b/d, Iraq 211,000 b/d, UAE 144,000 b/d, Kuwait 128,000 b/d, Kazakhstan 78,000 b/d, Algeria 48,000 b/d, Oman 40,000 b/d, and Gabon 8,000 b/d.

Oil – Are Iran and US tanker seizures just a tit-for-tat?

Iran and US tanker seizures

There was no real oil market reaction to the reports on Thursday that Iran seized a Marshall Islands flagged tanker in the Gulf of Oman that was reportedly signaled a destination in the US. Iran said the tanker didn't cooperate with requests to stop so, as Iran media showed in video, Iran military boarded and took control of the vessel. We expect that the lack of market response is that this was viewed as mostly a tit-for-tat move. Reuters reported [LINK] *"The sources familiar with the matter, who declined to be identified due to the sensitivity of the issue, said Washington took control of the oil cargo aboard the Marshall Islands tanker Suez Rajan after securing an earlier court order. The tanker's last reported position was near southern Africa on April 22, ship tracking data showed.*"

Oil – Still no visibility for restart Iraq/Kurdistan oil thru Turkey

Turkey holds up Kurdistan oil exports

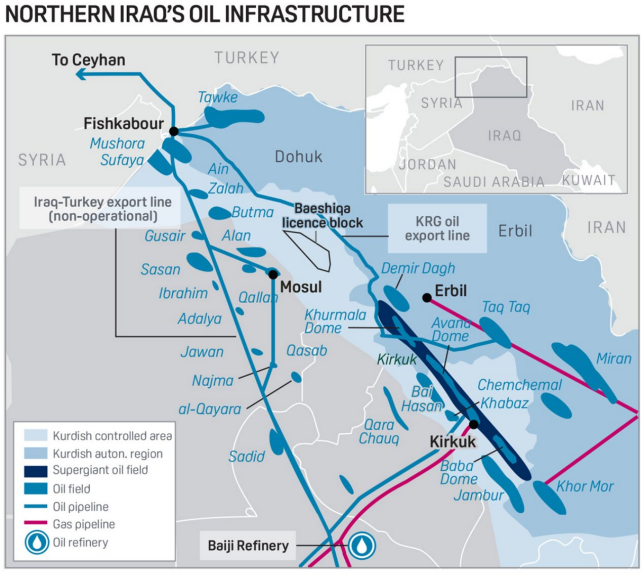
As of our 7am MT news cut off, we have not seen any reports giving any indication of when there will be a resumption of ~450,000 b/d of Iraq/Kurdistan oil exports via Ceyhan (Turkey). Nor have we seen any reports that any face-to-face negotiations have even started between Turkey and Iraq. And Iraq and Kurdistan need a deal of some sort that Turkey will allow the oil exports to flow thru the pipeline to the Turkish port of Ceyhan for export. We should note that, even though there was a preliminary agreement between Iraq and Kurdistan, there is still a final agreement that hasn't yet be done. On Friday, the Iraqi News Agency reported [LINK] "*Oil Minister Hayyan Abdul Ghani set on Friday the date for the resumption of oil exports from the Kurdistan region. "The central government has reached the final stages of implementing the agreement with Erbil on the resumption of oil exports from the Kurdistan region," Abdul Ghani told the Iraqi News Agency (INA), pointing out that "the oil marketing company that took care of the process of receiving and exporting oil from the region is now in the process of signing contracts with companies that buy oil." "In the coming days, the resumption of oil exports will be announced," he noted."* Recall that Iraq/Kurdistan reached a preliminary deal and Kurdistan originally thought it would lead to a resumption of its oil exports to resume on Tues Apr 4. That still hasn't happened and there is no visibility to when it might happen. The hold up remains the final Iraq/Kurdistan deal and then getting Turkey onside. The Turkey position seems unchanged for the past two weeks. On Apr 15, we tweeted [LINK] "*No visibility to when 450,000 b/d of Iraq/Kurdistan #oil exports via Turkey will resume. "Turkey is seeking in-person negotiations relating to the $1.5b if was ordered to pay Iraq in damages". Thx @RowenaCaine @warningforever @Ahmed_Rasheed_R @mahaeldahan. #OOTT."* Our tweet included the Reuters Apr 15 report "*Iraq's northern oil exports stuck on Turkey negotiations*".

Iraq's court case win halted 370,000 Kurdistan & 75,000 b/d Iraq oil exports

Here is what we wrote in our March 26, 2023 Energy Tidbits memo. "*Breaking news yesterday that Iraq reportedly halted 445,000 b/d of crude oil exports thru its north on the export pipeline to Ceyhan, Turkey. Iraq won an arbitration with Turkey, which means that Turkey has to deal with Iraq's oil marketing arm for approval of all Iraq oil exports, including oil from Kurdistan. It's not clear how long it will take to get to a mechanism for Iraq dealing with Turkey on the oil exports. Don't know if's wishful thinking but Kurdistan media was pointing to not too long to get an understanding. Regardless, until Iraq resumes oil exports via Turkey, it means there will be ~445,000 b/d of crude oil off the market. Yesterday, we tweeted [LINK] Iraq reportedly halts 370 kbd KRG + 75 kbd federal oil thru export pipeline thru Turkey reports*

@Ahmed_Rasheed_R @RowenaCaine. Positive for #Oil until Iraq resumes northern exports ie. agrees on mechanism to export Iraq oil thru Turkey in line with its arbitration win. #OOTT." Yesterday, Reuters reported [LINK] "Iraq halted crude exports from the semi-autonomous Kurdistan region and northern Kirkuk fields on Saturday, an oil official told Reuters, after the country won a longstanding arbitration case against Turkey. The decision to stop shipments of 450,000 barrels per day (bpd) of crude relates to a case from 2014, when Baghdad claimed that Turkey violated a joint agreement by allowing the Kurdistan Regional Government (KRG) to export oil through a pipeline to the Turkish port of Ceyhan. Baghdad deems KRG exports via Turkish Ceyhan port as illegal. The International Chamber of Commerce ruled in favour of Iraq on Thursday, Iraq's oil ministry confirmed on Saturday. Turkey has informed Iraq that it will respect the arbitration ruling, a source said. Turkish shipping officials told Iraqi employees at the Ceyhan oil export hub that no ship will be allowed to load Kurdish crude without the approval of the Iraqi government, according to a document seen by Reuters. Turkey subsequently halted the pumping of Iraqi crude from the pipeline that leads to Ceyhan, a separate document seen by Reuters showed. On Saturday, Iraq stopped pumping oil through its side of the pipeline which runs from its northern Kirkuk oil fields, an official told Reuters. Iraq had been pumping 370,000 bpd of KRG crude and 75,000 bpd of federal crude through the pipeline, according to a source familiar with its operations. "A delegation from the oil ministry will travel to Turkey soon to meet energy officials to agree on new mechanism to export Iraq's northern crude oil in line with the arbitration ruling," a second oil ministry official said." Kurdistan region Prime Minister Masrour Barzani expects this to be quickly resolved. Yesterday Kurdistan 24 news reported [LINK] "Kurdistan Region Prime Minister, Masrour Barzani, on Saturday reiterated the Kurdistan Regional Government's (KRG) good relations with the Iraqi federal government. "Our recent understandings with Baghdad have laid the groundwork for us to overcome the arbitration ruling today," PM Barzani wrote in the tweet. "A team from the KRG will visit Baghdad for talks tomorrow to build on the goodwill of our discussions," Barzani added." Below is a Platts Northern Iraq's oil infrastructure map from 2020 [LINK].

Figure 33: Northern Iraq's oi infrastructure map from 2020



Source: S&P Global Platts, PolGeoNow

Source: Platts

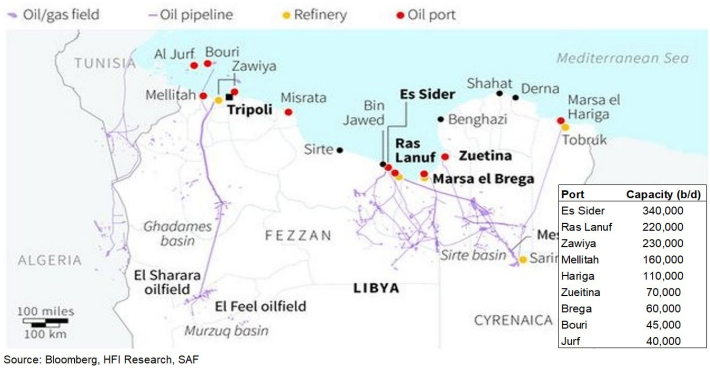
Oil – Libya NOC says oil production continues to be stable at ~1.2 mmb/d

We have to give the Libya National Oil Corporation credit that it's been able to keep oil production pretty stable right around 1.2 mmb/d for the past six months or so. The Libya National Corporation tends to post a short oil production update on its Facebook [LINK]. The latest update was yesterday Sat Apr 29 and the Google Translate was "*Crude oil production reached 1 million 211 thousand barrels per day, and condensate production reached 53 thousand barrels per day during the past 24 hours.*"

"

Libya oil production 1.2 mmb/d

Figure 34: Libya Ports, Major oilfields and Terminals map



Source: Bloomberg, HFI Research, SAF

Source: SAF Group

Libya sees low-risk development to go from 1.2 to 1.5 mmb/d in 2023

Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. "*We have been reporting on how Libya has surprisingly been able to keep oil production steady ~1.2 mmb/d. At the same time, we have always highlighted the big near term upside potential to its oil production if east vs west armed fighting can stay on the sidelines as that will see the return of foreign capital for both natural gas and oil. But even before foreign capital, the Libya National Oil Corporation has many low risk development opportunities to increase oil production. On Tuesday, the Libya Herald reported [LINK] on comments from one of Libya NOC's operating companies, Arabian Gulf Oil Company (AGOCO) Chairman Salah Gatrani. The Libya Herald wrote "The continuation of the Arabian Gulf Oil Company's (AGOCO) development operations at this pace will inevitably lead to Libya reaching a production rate of more than 1.5 million barrels of oil per day in 2023, AGOCO chairman Salah Gatrani said in an exclusive statement to Libya Herald. He said this was because of the stability witnessed by the country in general, and by the oil sector in particular. Therefore, he continued, the Gulf Company has developed its own plan within the efforts of the National Oil Corporation (NOC). Libya has been unable to maintain production beyond 1.2 million bpd. Gatrani was commenting to Libya Herald following Sunday's AGOCO's meeting on developing reserves and increasing oil production in the sector companies, attended by relevant AGOCO and NOC management. The AGOCO chairman said that his company has already begun to implement the plan prepared by the NOC to raise production and increase reserves." Our Supplemental Documents package includes the Libya Herald report."*

Oil – No one seems too worried about China's virus update last Sunday night

No one worried about China virus data

Last Sunday night, we thought China's virus update would be a big market and news story this week, but that doesn't seem to be the case. If anything, the comments we heard on Bloomberg TV on Tues night almost seemed to suggest the reports were not big deal. The reason why we noted it was that it wasn't from rumors or third parties, rather it was from China state media – Global Times. Early Monday morning, we tweeted [LINK] "*#Oil markets back on China virus info digging again? China state media. China CDC found 42 cases of XBB.1.16 new variant, the dominant variant in India since Mar. Also not "yet" in 2nd wave of COVID-19. but Covid-19 cases increasing. #OOTT."* We would have assumed that others would have a similar view of a report from China state media on a virus that the working assumption would have been that the virus numbers are understated. But, at least for now, no one else seems concerned on the Global Times report especially give the title of the report "*China not yet in middle of second wave of COVID-19: epidemiologists*". Not "Yet" sounded like a warning to us. Global Times wrote [LINK] "China not yet in middle of second wave of COVID-19: epidemiologists." *The Chinese Center for Disease Control and Prevention (China CDC), which has been monitoring COVID-19 infection numbers and new variants, said on Sunday that health departments reported 2,661 positive COVID-19 cases nationwide on Thursday. The COVID-19 positive rate for Thursday was slightly higher than it was on April 13. On March 13, the China CDC announced that 1.3 percent of those who took nucleic acid tests were positive, and the rate on Thursday was 1.7 percent."* And "*The China CDC claimed it had detected 12 new variants in this country. The center had found 42 cases of XBB.1.16 - referred to as "arcturus"— which has been the dominant variant in India since*

March. The China CDC assured the public, saying that there are a very small number of XBB.1.16 carriers, which have yet to form a transmission trend. Although the scale won't be as huge as the previous wave, Zhang still called for stockpiling of small molecule antivirals of COVID-19, and at the same time establishing a model that could treat COVID-19 patients within 48 hours." Our Supplemental Documents package includes the Global Times report.

Oil – Still a big reduction in forecast China scheduled domestic air flights for April

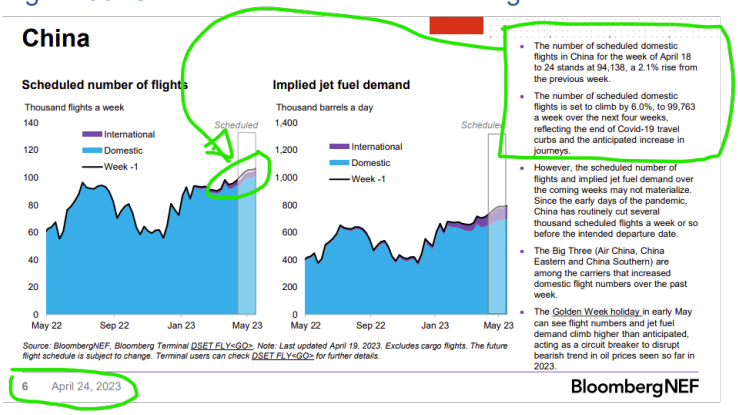
China domestic flights

The Chinese mobility indicators continue to point to a stalling or at least a slower than expected China recovery in April. On Monday, we tweeted [LINK] "*China scheduled domestic flights increasing but well below 03/28 scheduled. +2.1% WoW for Apr 18-24 to 94,138. Forecast to climb to 99,763 for next 4-weeks, BUT well below 119,180 for Apr per Mar 28 schedule. Thx@BloombergNEF Claudio Lubis. #OOTT."* China's scheduled domestic fights were +2.1% WoW, but the negative or the stalling of the China domestic air travel remains in that the scheduled next 4 weeks of domestic flights is 99,763, which is still well below the next 4 weeks flights forecast from March 28 for April of 119,180 flights. This big drop from the March 28 forecast for April flights is the negative as it is showing the recovery seems to be stalling out or at least is less than expected a month ago. This is still saying the big jump up in scheduled domestic flights for April didn't happen, but a more modest increase in April and a continued modest increase for May. BNEF wrote "*The number of scheduled domestic flights in China for the week of April 18 to 24 stands at 94,138, a 2.1% rise from the previous week. The number of scheduled domestic flights is set to climb by 6.0% to 99,763 9 a week over the next four weeks, reflecting the end of Covid-19 travel curbs and the anticipated increase in journeys*." Our tweet included the BloombergNEF chart and our listing of WoW changes from the prior BloombergNEF reports.

Figure 35: China scheduled domestic flights from BNEF Aviation Indicators Weekly reports

Apr 18-24: +2.1% WoW to 94.138
Apr 11-17: +0.7% WoW
Apr 3-10: -4.2% WoW
Mar 28-apr 3: +6.8% WoW
Mar 21-27: +1.5% WoW
Mar 14-20: -0.6% WoW
Mar 7-13 week: -0.8% WoW
Feb 27-Mar 3 week: -2.6% WoW
Feb 21-27 week: +0.0% WoW (note this was +0.01%
Feb 14-20 week -0.5% WoW
Feb 7-13 week -0.7% WoW
Jan 31- Feb 6 week +10.9% WoW
Jan 24-30 week -9.2% WoW
Jan 17-23 week +7% WoW
Jan 10-16 week +20% WoW
Source: BloombergNEF

Figure 36: China scheduled domestic air flights



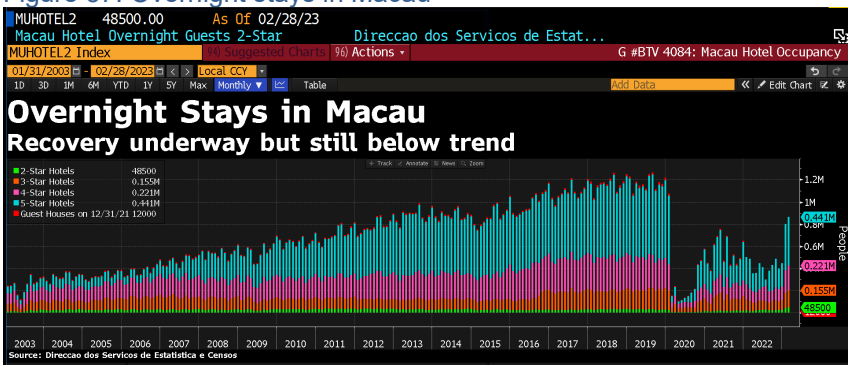
Source: BloombergNEF

Oil – Chinese ramping up travel to Macau, but still well below prior levels

Overnight stays in Macau are ramping up

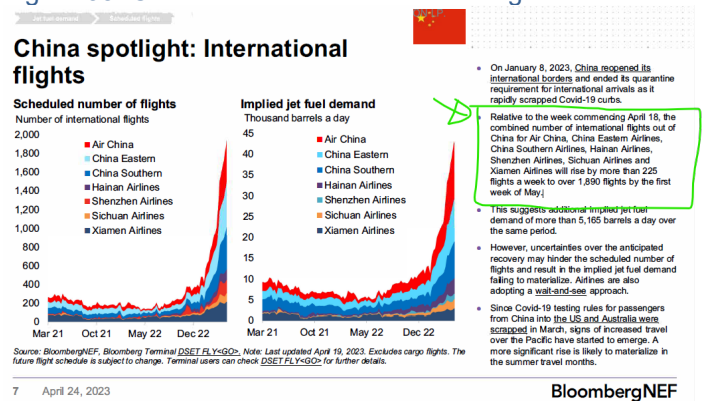
Macau is a city and special administrative region but is part of China and is best known as being a major gambling center and one of the major domestic travel destinations for Chinese. Chinese dominate the visitors to Macau so overnight stays in Macau is a good reflection of Chinese domestic travel. On Wednesday, we tweeted [LINK] "*Good reminder, Chinese are travelling domestically. Overnight stays in Macau on big incline. Still a way to go but on a big uptick. Should start to see Chinese ramping up international air travel now that summer travel season is starting. Thx @business @BloombergNEF. #OOTT.*" Our tweet included the below Bloomberg graph on overnight stays in Macau and how the "*recovery underway but still below trend*". Basically a reminder that there is still a way to go before China is back to pre-Covid levels in domestic travel. Our tweet also included the latest BloombergNEF graph on scheduled China international flights that reminds the big ramp up to Chinese international travel is just about to start.

Figure 37: Overnight stays in Macau



Source: Bloomberg

Figure 38: China scheduled international flights



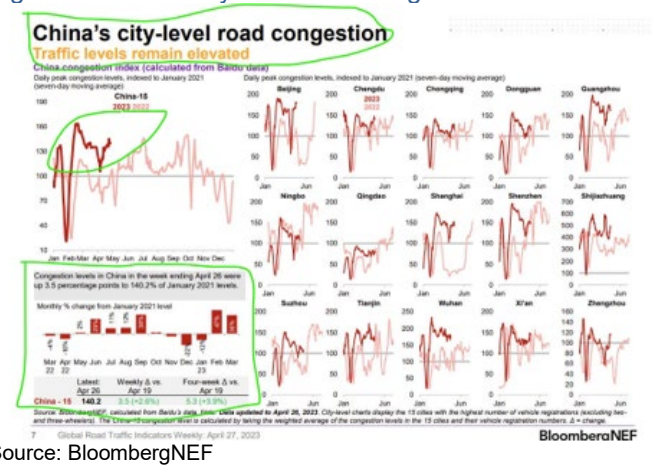
Source: BloombergNEF

Oil – China congestion sees another small increase and remains above 2021/22 levels

China road traffic congestion

This week's report reaffirms our view that the big nosedive in China's traffic congestion three weeks ago was likely an anomaly with congestion levels continuing to rise this week, further closing the gap between the YTD high seen in Feb. On Thursday, we tweeted [LINK], *"Road congestion: Up WoW in EU, NA and China, down in Asia Pacific excl China. BloombergNEF Global Road Traffic Indicators. EU +5.4% WoW, back >2019. NA +2.4% WoW, still <2019. Asia Pacific excl China -7.0% WoW, well <2019. China +2.6% WoW to 140.2% of Jan 2021 levels. #OOTT."* Three weeks ago, BNEF reported China traffic congestion fell -21.7% WoW, which was promptly followed by two consecutive WoW increases that resulted in a total 2-week gain of +28.9%. This week, China road congestion was up +2.6% WoW to 140.2% of January 2021 levels. Our tweet also included the below BloombergNEF graphic on China road congestion.

Figure 39: China city-level road congestion for week ended Apr 25



Source: BloombergNEF

Oil – Is China's May Day holiday travel the start of sustained travel back to 2019 levels

Walking and biking in Beijing

China's 5-day May Day holiday weekend is not over but the initial reports on domestic travel are that most areas are reaching or exceeding 2019 levels. The watch will be to see if this is just a holiday burst to the start of a sustained smmer travel season back to or above 2019 levels. (i) Earlier this morning, we tweeted [LINK] *"#Oil. Is China 5-day May Day holiday travel a burst or the start of sustained summer travel back to or above 2019 levels? #GlobalTimes. Rail travel expected +20% vs 2019. Guangzhou Fri domestic air travelers +18% vs 2019. Beijing Sat tourist attractions hit 2019. #OOTT".* (ii) Our tweet included Globald Times (China state media) reports today and yesterday on May Day travel. "*A total of 19.661 million railway passenger trips were made on Saturday with 12,064 passenger trains operating, which made a new high in terms of single-day passenger traffic," "Air travel has also surged. Guangzhou Baiyun International Airport, one of the top three hubs in terms of passenger throughput recorded more than 200,000 passenger trips for two consecutive days on Thursday and Friday. In detail, the domestic passenger throughput of the airport reached 184,200 on Friday, 1.18 times that of the same period in 2019." "Given the positive trends, the China Tourism Academy predicated that the number of tourists during this year's May Day holidays is expected to exceed the level of the same period in 2019, reaching 240 million passenger trips, according to CCTV.com."* Our Supplemental Documents package includes the two Global Times reports.

Oil – Beijing residents increasingly embrace "slow transportation"

Walking and biking in Beijing

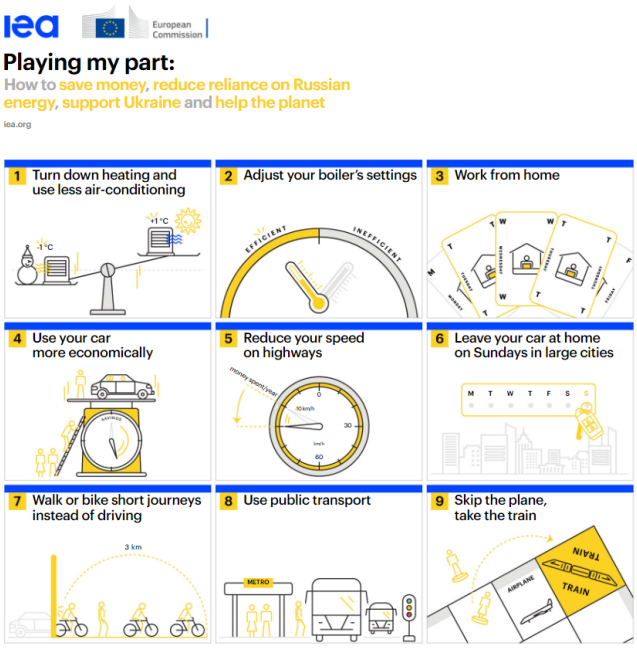
We recognize that China didn't say he reason for this data was Covid driven, but last Sunday, People's Daily (Chinese communist party news) reported [LINK] " B*eijing residents increasingly embrace "slow transportation". Residents in Beijing's six central districts have increasingly embraced slower means of transportation, the Beijing Municipal Commission of Transport has found. In 2022, 49 percent of the trips made by these residents involved walking or riding bicycles, said the commission, adding that the ratio was the highest in a decade. Specifically, 31.7 percent of the trips were made on foot while 17.3 percent by bike. In recent years, authorities in Beijing have taken various measures to encourage residents to use slower means of transportation, which helps ease traffic congestion and is more eco-friendly. Zhang Yan, an official with the transport commission in Haidian District, said that in 2022, 319 kilometers of bike lanes were widened and six walkways were upgraded in the district.*

Fits IEA's April 2021 suggestions on how to reduce energy demand

If this Beijing "slow transportation" had been in London or Paris or New York, we would have seen the IEA's Fatih Birol note this was in line with the IEA's April 21, 2022 suggestion on how to reduce demand by "*walk or bike short journeys instead of driving*." Here is what we wrote in our April 24, 2022 Energy Tidbits. "*We couldn't help think back to the 70s and how the US responded in response to the Arab Oil Embargo in 1973/74. Recall, it was very different back then as the Arab oil producers cut off supply and the US and other western countries has a real oil supply shortage. And don't forget this is before any strategic oil reserves. Strategic oil reserves and the IEA came about in response to the Arab Oil Embargo. The IEA posted its "Playing my part: how to save money, reduce reliance on Russian energy, support Ukraine and help the planet". [LINK]. This is right out of Jimmy Carter's 1976 election campaign playbook. Other than people couldn't' work remotely from home in*

the 70s as we didn't have computers and plane travel was still mostly for the rich. Rather it was the response to the real worry that the Arab oil producing countries would once again cut off oil exports to the West forcing immediate cut off of oil and gasoline. The IEA"s tips are right out of the post Arab Oil Embargo playbook like turning down heating, adjusting boiler setting, reducing your speed on highways, etc. Don't forget the US lowered its interstate highway speed to 55 mph after the Arab Oil Embargo for this very reason – to reduce gasoline consumption. Below is the IEA's graphic.

Figure 40: IEA's Playing my part



Source: IEA, April 21, 2022

Oil – Exxon CEO reminds oil & gas is a depletion business, basically on a treadmill

Exxon reminds of oil declines

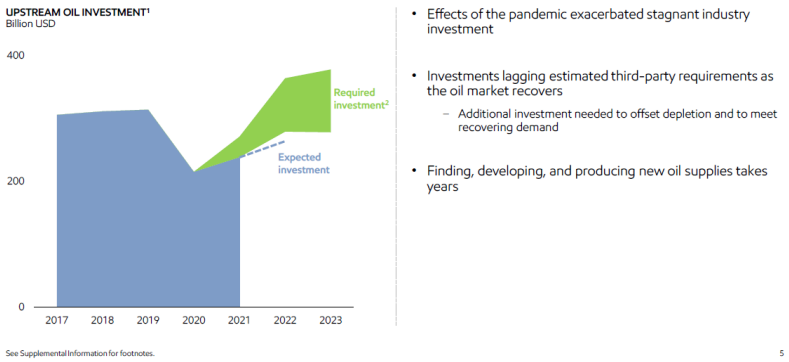
Exxon CEO Woods was on CNBC Squawk Box on Friday morning after the Q1 release and before the Q1 earning call. And he reminded that the first priority for Exxon is to replace declines. Basically every barrel produced has to be replaced just to keep production flat. He was asked about capital allocation priorities given the big profits. We tweeted [LINK] a video clip of Woods comments and wrote "*1st & foremost priority for #Exxon capital allocation. CEO woods "this is a depletion business on the #Oil & #NatGas side ... basically on a treadmill, every barrel is another barrel you have to replace". World needs ~5mmbd adds to stay flat. Thx @BeckyQuick @SquawkCNBC #OOTT."* Woods replied "*first and foremost*" and then went on to highlight how "*this is a depletion business on the oil and gas side and you're on basically a treadmill. Every barrel you produce is another barrel you have to replace. So finding the projects that do that cost effectively, have low cost of supply, that are advantaged versus rest of the industry is kind of job number one."* Note that in our tweet we

referred to ~5 mmb/d that needs to be added to keep global oil production flat. In a reply to one of our Twitter followers, we said we didn't use Exxon's prior stated 7% decline (ie. 7 mmb/d of adds needed) as Woods didn't refer to that in his Squawk Box comments and, given there is a range of views on global oil decline rate, we put in 5% or 5 mmb/d to make the point.

07/29, Exxon existing global oil production supply base declines ~7% per year

On Friday, Exxon CEO Woods did not reference any specific global oil decline rate. Here is what we wrote in our July 31, 2022 Energy Tidbits on Exxon's July 29 views that indicate an ~7% global oil decline rate. "*There was a great reminder from Exxon's Q2 call presentation of one of the reasons why oil looks good for the 2020s. Everyone has been made well aware of the underinvestment in the oil and gas sector, whether it be from industry, OPEC countries or pro-climate change agencies like the IEA. But most have overlooked the biggest challenge for the oil sector – the existing production supply base declines every day. This is very bullish for oil in the 2020s. We were reminded of this in the Exxon Q2 call prepared remarks. Exxon posted the remarks shortly before their Q2 call and we tweeted [LINK] "Bullish for #Oil. #Exxon reminds #Oil #NatGas supply declines at ~7% per year ie. need to replace 7% to stay flat. not a new argument, see 👇SAF 06/20/19 blog ""Exxon's Math Calls For Overall Global Oil Decline Rate of ~7%, A Very Bullish Argument For Post 2020 Oil Prices" #OOTT." On an existing oil supply base of 100 mmb/d, that is approximately 7 mmb/d of annual declines. Note that Exxon said for oil and natural gas and they have previously suggested the oil decline rate was lower ie. below 6%. So that is 6 mmb/d of declines. Exxon said "As a depletion business, large annual investments in oil and gas production are needed to offset the decline in supply – roughly a 7% per year reduction. Even more investment is required to grow net production. As the world began to recover from the pandemic, demand for all but jet fuels recovered far faster than the time required to bring on new investments. As a result, the industry hasn't been able to meet the recovery in demand." Our Supplemental Documents package includes the Exxon remarks on this oil call.* "

Figure 41: Industry Investment Not Keeping Up With Recovering Demand

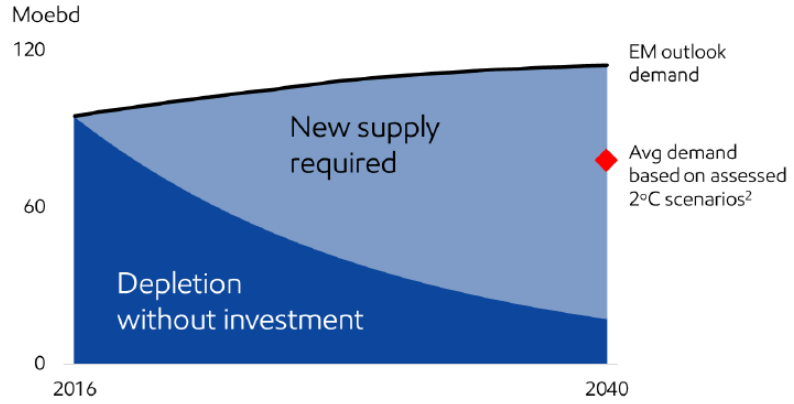


Source: ExxonMobil

Exxon was warning on oil declines before Covid

Our July 31, 2022 Energy Tidbits also wrote "*Our tweet this week reminded that Exxon's warning on global oil decline rates was not new. Rather, they highlighted this pre-Covid in June 2019. And that warning was the reason for our SAF Group June 19, 2019 blog "Exxon's Math Calls For Overall Global Oil Decline Rate Of ~7%, A Very Bullish Argument For Post 2020 Oil Prices" [LINK]. Exxon presented at a sellside conference that week and then thought Exxon presented a very bullish argument for oil prices beyond 2020 which was overlooked because most readers only flip thru a slide deck and don't listen to or read transcripts of management's spoken words. Exxon's spoken words highlighted one of the forgotten (and perhaps most important) oil supply/demand concerns for post 2020 – the mid term challenge to replace increasing rate of overall global oil declines. And what was eye opening was Exxon's estimated overall global oil decline rate, which is way higher than any we could then ever remember seeing. Our blog said "Its impossible to tell from the small oil supply/demand graph in the slide deck, but Exxon's spoken words says long term oil demand is 0.7% per year and then "When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year." Exxon may not specifically say what the global decline rate is, but their math is that the world needs new oil supply to grow annually at close to 8% to meet the 0.7% annual increase in oil demand and offset declines ie. an overall global decline rate of approx. 7%. This is an overall global oil decline rate for OPEC and non-OPEC". At that time in 2019, BP's estimate of overall global oil decline rate is 4.5% and we expect most are probably assuming something around 5%, certainly not above 6%. No one should be surprised by the increased decline rate given that high decline US shale and tight oil have increased by ~2.5 mmb/d in the last ~2 years. But an implied ~7% overall global oil decline rate is way higher than expectations. There is a big difference between needing to offset oil declines of ~7 mmb/d vs declines of ~4.5 mmb/d ie. an additional 2.5 mmb/d of new oil supply every year. Even if the implied difference was to 6%, it would still be an additional 1.5 mmb/d of new oil supply and that would also be very bullish for post 2020 oil. At that time, we said we recognized that the 2019/2020 oil supply demand story is the need for OPEC+ to keep cuts thru 2020, but Exxon's math implying ~7% overall global oil decline rate sets up a very bullish view for oil post 2020. We believe the reality to replace oil declines post 2020 is overlooked. Our Supplemental Documents package includes June 19, 2019 blog*.".

Figure 42: Exxon Estimated Oil Supply/Demand, June 2019 slide deck



Source: ExxonMobil June 2019

Oil – Haliburton, NOV, Weatherford also see stronger lasting long cycle oil investment

Stronger lasting long cycle oil investment

Last week's (Apr 23, 2023) Energy Tidbits memo highlighted the comments from Baker Hughes and Schlumberger Q1 on how they see stronger lasting investment in long cycle oil projects, which we believe points to stronger long term oil supply. The key being they are seeing this long cycle investment in many regions of the world. This week, we saw similar comments from Halliburton and Weatherford. (i) Haliburton wasn't specific on the short vs the long term oil supply in its Q1 release, but said oil and gas companies are focused on adding supply. Early Tuesday morning, we tweeted [LINK] *"#Halliburton Q1 out. "Our customers are clearly motivated to produce more oil and gas and service capacity is tight". Wasn't as specific as $SLB highlighting long cycle capex so will need to see $HAL Q1 call if get same takeaway for long term #Oil supply. #OOTT."* (ii) But in the Q1 call, it seems like they are pointing to long term oil supply as Halliburton sees strength & duration of this multi-year upcycle. Haliburton has a clear bullish view on the duration of this upcycle in investment. Mgmt said "*Everything I see today validates the strength and duration of this multi-year upcycle. The world requires more energy from all sources, including oil and gas, driven by population growth and economic development. Multiple years of structural underinvestment in oil and gas supply, can only be addressed by strong activity over the next several years. The commodity price volatility experienced in the first quarter, does not change our view of customer demand and a tight services market. Our customers around the world recognize this, and we expect their spending to grow in 2023 and beyond."* (iii) Weatherford reported on Tues afternoon. We tweeted [LINK] *"Long-lasting #Oil #NatGas spending. #Weatherford "strong outlook for international activity continues to support a robust growth scenario featuring a spending pattern that is more long-lasting and less prone to fluctuations in commodity prices compared to previous cycles"* #OOTT." Weatherford held its Q1 call on Wed. In the Q&A, mgmt. replied "*Look, I would say on the international side, our customers are really committed to their investment thesis their plans that they laid out, which are not look on a short-term basis, they've really talked us well through, there is a longer-term disconnect on the energy security and energy supply side that has got to be got to be fixed Given the longer term. Under investment that's happened in the sector. So we see our international customers very committed to that and are continuing to go forward with their*

plans. Regardless of the sort of day-to-day perturbations and headlines that appear." (iv) NOV reported on Thurs and also highlighted this confidence for oil companies to make long-cycle capex plans. Mgmt said "*he recovery of global oil demand with the reopening of the Chinese economy, they're growing confidence that US unconventional growth is slowing significantly. And the fact that the world has been under-investing in-production for nearly a decade. Thus, we believe we are seeing growing confidence from our customer-base to make longer-dated capital investment decisions."*

Oil – Key economic indicator companies Q1 highlight weak US and Asian economy

3M, Dow & UPS on economy

Early Tuesday morning, oil turned negative and it seemed to be because of the negative comments on the economy from a number of companies who are considered as good indicators for the economy. And these indicator companies being negative played into the reasons holding back oil – more worried about the near term economic outlook and how that will impact oil consumption. These three Tuesday morning reporting companies were 3M, Dow and UPS.

3M – "*Continued consumer-facing end-market weakness*"

Early Tuesday morning, we tweeted [LINK] "*#3M Q1 outlook also supports concerns on economy weakness holding back #Oil, at least for now. "managing in a challenging environment" "continued consumer facing and market weakness" "China impacts and EMEA geopolitical challenges remain". #OOTT."* 3M reported early Tuesday morning and provided their slide deck alongside their Q1 release. 3M highlighted the weakness in consumer retail. Our tweet included two of the slides that had clear commentary on their concerns on the economy. 3M said they are "*managing in a challenging environment*", *"End-market trends played out as anticipated; significant weakness in market trends played out as anticipated; significant weakness in consumer electronics and consumer retail* ", "*China impacts and EMEA geopolitical challenges remain", and "Continued consumer--facing end--market weakness."*

Dow – "*higher inflation on consumer demand & soft global economic activity*"

Early Tuesday morning, we tweeted [LINK] *"#Dow Q1 just out. Soft global economic activity provide support for holding back #Oil, at least for now. "challenging macroeconomic conditions" "navigate the impact of higher inflation on consumer demand and soft global economic activity". #OOTT.'* Dow reported early Tuesday morning and they also highlighted the soft global economy in the Dow CEO comments in the Q1 release. Our tweet included his quotes including "*Team Dow demonstrated its agility and remained disciplined through challenging macroeconomic conditions*" and "*Looking to the remainder of the year, our consistent and disciplined execution enhances our ability to navigate the impact of higher inflation on consumer demand and soft global economic activity*.".

UPS – ongoing demand in Asia, challenging macro conditions

Early Tuesday morning, we tweeted [LINK] "*Concerns on economy weakness holding back #Oil will be supported by #UPS Q1 just out. "deceleration in US retail sales" "ongoing weakness in Asia" "global volume environment deteriorated due to challenging macro conditions and changes in consumer behavior". #OOTT."* UPS

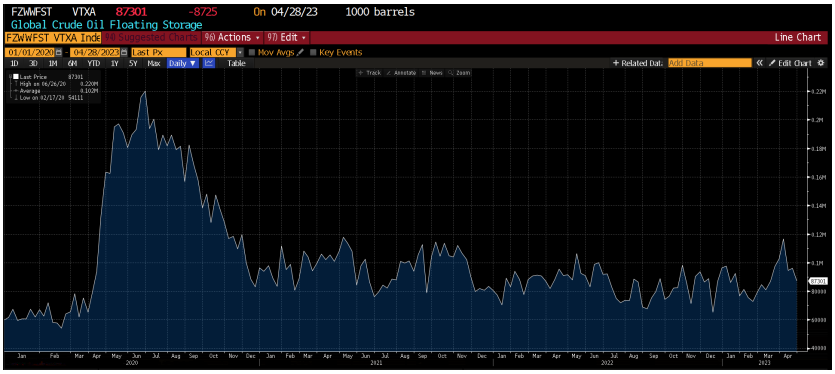
reported early Tuesday morning and highlighted challenges in US retail sales, demand in Asia and overall challenging macro conditions. Our tweet included excerpts from their Q1 release such as ". "*In the first quarter, deceleration in U.S. retail sales resulted in lower volume than we anticipated, and we faced ongoing demand weakness in Asia"* and "*Over the first quarter of 2023, the global volume environment deteriorated due to challenging macro conditions and changes in consumer behavior."*

Oil – Vortexa crude oil floating storage at Apr 28 was 87.30 mmb, -8.73 mmb WoW

Vortexa floating storage

We are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Apr 22 at 9am MT. (i) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Apr 28 at 87.30 mmb, which was -8.73 mmb WoW vs upwardly revised Apr 21 of 96.03 mmb. Note Apr 21 was revised +2.56 mmb vs the 93.47 mmb posted on Bloomberg as of 9am MT on Apr 22. (ii) All of the revisions for the lasts seven weeks were decent sized downward revisions. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am on Apr 22 are as follows: Apr 21 revised +2.56 mmb. Apr 14 revised -7.39 mmb. Apr 7 revised -3.79 mmb. Mar 31 revised -2.10 mmb. Mar 24 revised -3.98 mmb mmb. Mar 17 revised -4.14 mmb Mar 10 revised -4.31 mmb. (iii) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 97.34 mmb, which is down vs last week's then seven-week average of 101.10 mmb. The decrease is due to all of the last seven weeks being revised down. (iv) Also remember Vortexa revises these weekly storage estimates on a regular basis and we do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. (v) Apr 28 estimate of 87.30 mmb is -132.75 mmb vs the post-Covid peak on June 26, 2020 of 220.05 mmb. (vi) Note the below graph now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (vii) Apr 28 estimate of 87.30 mmb is +21.69 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (viii) Apr 28 of 87.30 mmb is -4.34 mmb YoY vs Apr 29, 2022 of 91.64 mmb. (ix) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Apr 29, 9am MT Apr 22, and 9am MT Apr 15.

Figure 43: Vortexa Floating Storage posted on Bloomberg Apr 29 at 9am MT



Source: Bloomberg, Vortexa

Figure 44: Vortexa Estimates Posted Apr 29 9am MT, Apr 22 9am MT, Apr 22 9am MT

Posted Apr 29, 9am MT

Date	FZWWFST VT... Last Px
Fr 04/28/2023	87301
Fr 04/21/2023	96026
Fr 04/14/2023	94491
Fr 04/07/2023	116.598k
Fr 03/31/2023	102.661k
Fr 03/24/2023	97293
Fr 03/17/2023	87009
Fr 03/10/2023	80922
Fr 03/03/2023	84681
Fr 02/24/2023	79295
Fr 02/17/2023	72822

Apr 22, 9am MT

Date	FZWWFST VT... Last Px
Fr 04/21/2023	93468
Fr 04/14/2023	101.875k
Fr 04/07/2023	120.394k
Fr 03/31/2023	107.335k
Fr 03/24/2023	101.269k
Fr 03/17/2023	91152
Fr 03/10/2023	85234
Fr 03/03/2023	86891
Fr 02/24/2023	82811
Fr 02/17/2023	75854
Fr 02/10/2023	77442

Apr 15, 9am MT

Date	FZWWFST VT... Last Px
Fr 04/14/2023	93477
Fr 04/07/2023	115.359k
Fr 03/31/2023	106.904k
Fr 03/24/2023	102.396k
Fr 03/17/2023	90897
Fr 03/10/2023	84666
Fr 03/03/2023	85714
Fr 02/24/2023	81712
Fr 02/17/2023	74957
Fr 02/10/2023	77699
Fr 02/03/2023	82290

Source: Bloomberg, Vortexa

Vortexa floating storage by region

Oil – Vortexa crude oil floating storage WoW changes by regions

Bloomberg also posts the Vortexa crude oil floating storage in the key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the "Other" or rest of world. The largest WoW changes were in Asia -4.13 mmb WoW, Middle East +2.61 mmb WoW, and West Africa -2.33 mmb WoW. Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data that was posted on Bloomberg at 9am MT on Apr 22.

Figure 45: Vortexa Floating Crude Oil Storage Weekly Changes by Region

Vortexa Crude Oil Floating Storage (mmb)				Original Posted
Region	Apr 28/23	Apr 21/23	WoW	Apr 21/23
Asia	40.29	44.42	-4.13	42.80
Europe	11.78	13.37	-1.59	15.69
Middle East	10.39	7.78	2.61	7.43
West Africa	4.31	6.64	-2.33	5.87
US Gulf Coast	0.00	2.17	-2.17	1.46
Other	20.53	21.65	-1.12	20.22
Global Total	87.30	96.03	-8.73	93.47
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Apr 29				

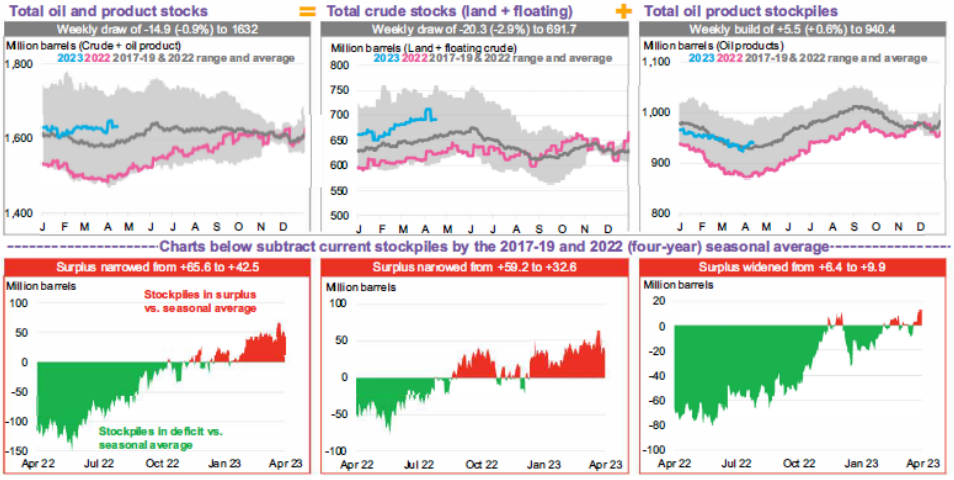
Source: Bloomberg, Vortexa

Oil – BNEF: global oil and product stocks surplus narrowed WoW to 42.5 mmb

BNEF's global oil inventories

One of the negatives for oil going into 2023 was that there was expected to be surplus oil in Q1 and a building of global oil inventories. That's happened. So, a key data point to watch will be does the building in Q1 and early Q2/23 start to turn into a draw as markets move thru Q2/23. And we remind that there are weekly changes that can flip flop but the key will be to watch the trend. Last week's (April 23, 2023) Energy Tidbits memo noted that the widening of the oil and product stock surplus with this week's data showing a reversal. For those with a Bloomberg terminal we recommend flipping through BloombergNEF's "Oil Price Indicators" weekly that came out on Monday as it provides good charts depicting near-term global oil demand and supply indicators. The global stockpile for crude oil and products surplus narrowed from 65.6 mmb to 42.5 mmb for the week ending Apr 14. Land crude oil inventories decreased by -1.18 mmb WoW to 590.4 mmb, widening the deficit to 15.3 mmb against the five-year average (2016-2019, 2022). Total crude inventories (incl. floating) decreased by -20.1 mmb WoW to 691.7 mmb, narrowing the surplus from 59.2 mmb to 32.6 mmb. Total product stocks were up by +5.6 mmb WoW to 940.4 mmb, further widening the stockpile surplus against the 4-year average (2017-2019,2022) to 9.9 mmb for the Apr 14 week. The gas, oil, and middle distillate stocks were flat WoW at 149.3 mmb/d, with the deficit against the four-year average narrowing to 16.0 mmb. Jet fuel consumption by international departures for the week of April 30 is set to increase by +30,700 b/d WoW, while consumption by domestic passenger departures is forecast to decrease by -3,800 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 46: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF

Bloomberg Oil Demand Monitor

Oil – Bloomberg Oil Demand Monitor: "Gauges Resilient in Face of Economic Worries"

We recommend reading the Bloomberg Terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. Jet fuel, the most impacted indicator of oil demand by the Covid-19 pandemic is set to play a pivotal role in oil consumption growth this year. Oil consumption has increased so for this year due to China re-opening and an increase in road travel. OPEC is forecasting continued demand growth throughout 2023 followed by an eventual supply deficit later in the year and estimates that consumption will reach a record high of 101.89 mmb/d with non-OECD countries (i.e., China) expected to underpin demand growth. In contrast, EIA is forecasting global oil supply to exceed demand by year-end and expects diesel demand to contract YoY in 2023. Despite these favourable signals, Friday's report noted that economic uncertainty and talks of refinery output cuts have led to a weakened futures market and emphasized the deterioration of the diesel-crude spread. To this end, the IEA and Bloomberg commented, "*The market is grappling with mixed signals on the health of the global economy. Futures have tumbled, with the gains that followed the announcement of OPEC+ output cuts evaporating, amid concerns about the strength of China's post-virus rebound and the prospects for the US economy. There's a focus on the diesel market, where premiums against crude futures have plunged. But running alongside that narrative, a variety of real-world measures suggest that - for now at least - there is robust appetite for fuels in many parts of the world, with gasoline and jet fuel set to underpin demand growth through the rest of the year."* China, the world's largest oil importer, saw a rebound in demand following the Lunar holiday and lifting of Covid restrictions. India's consumption of oil also reached a new high over the last 12 months and the US has shown signs of increased gasoline demand heading into the summer peak driving season. The article noted, *"China's air passenger traffic gained for a fourth month in March to the highest since the summer of 2021, according to data from the country's civil aviation administration. Those levels are set to get a further boost from the country's Golden Week holidays in early May. Oil refiners in India - lately a key driver of global demand growth - processed a record volume of crude in March, according to government data. There was a similar picture in*

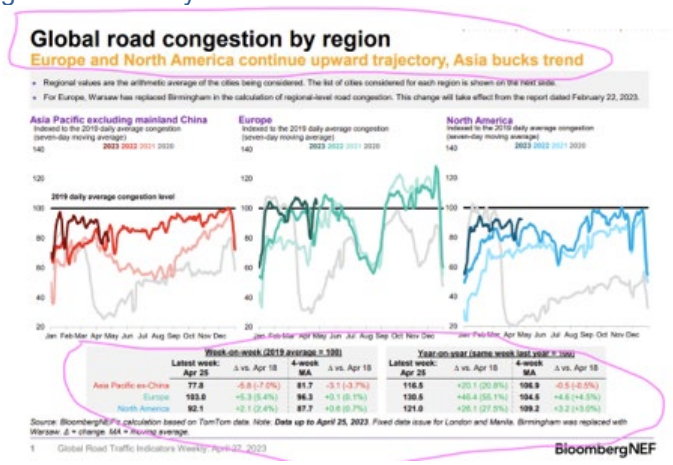
China, as the nation's post-Covid Zero recovery continued. In the US, the latest government data showed a jump in weekly implied gasoline demand of almost a million barrels a day to the highest level since December 2021, bringing the four-week average back up and setting the country's gasoline consumption on a bullish path before peak driving season." However, headwinds such as sticky inflation, elevated interest rates, and looming recessionary fears continue weigh on the oil demand outlook moving forward. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Oil – TomTom mobility indicators: Europe and NA traffic remains strong, Asia weakens

Global road traffic indicators

In the BloombergNEF Global Road Traffic Indicators Weekly report we continue to see the same signals as the US gasoline consumption data from BloombergNEF US Oil Indicators Weekly. On Thursday, we tweeted [LINK], *"Road congestion: Up WoW in EU, NA and China, down in Asia Pacific excl China. @BloombergNEF Global Road Traffic Indicators. EU +5.4% WoW, back >2019. NA +2.4% WoW, still <2019. Asia Pacific excl China -7.0% WoW, well <2019. China +2.6% WoW to 140.2% of Jan 2021 levels. #OOTT."* Mobility indicators like TomTom data point to stable levels in global driving YoY, although road congestion has yet to recover to 2019 levels in Asia Pacific (ex-China) and North America. For the week ended April 25, traffic levels across all tracked regions aside from Asia Pacific (ex-China) were up WoW, which is not surprising given that the significant recovery from the Easter holiday seen last week likely continued to play out to a lesser extent again this week. European road congestion was up +5.4% WoW, North America congestion was up +2.4% WoW and in contrast, Asia Pacific (ex-China) congestion was down -7.0% WoW. On an annual basis, traffic levels in the Asia Pacific (ex-China) region were up +20.8% YoY and sat at 77.8% of average 2019 levels for the week ending Apr 25, European traffic levels were up +55.1% YoY to 103.0% of 2019 levels, and finally North American traffic was up +27.5% YoY and now sits at 92.1% of 2019 levels. Note that the YoY increases were unchanged from last week, which we expect to be an error and will look for revised data next week. Traffic in the Asia-Pacific region had been exceptionally high since Feb, but this week's data showed a material decrease which looks to have marked an end to the ~3-month trend with road congestion dipping down to below 2022 levels and remains well below pre-Covid. The TomTom mobility data seems logical because despite the large WoW increase seen across Europe and North America road congestion remains strong relative to 2020 and 2021 and is up slightly from 2022 levels. It its worth noting that TomTom data on congestion levels now reflects daily average congestion compared to peak congestion previously. The change in methodology took effect from January 19.

Figure 47: Mobility Indicators



Source: BloombergNEF

Tough Q1 reporting for Cdn E&P

Oil & Natural Gas – Tough Q1 reporting ahead for E&P with prices down QoQ & YoY

We should start to see the start of Q1 reporting for the Cdn oil and gas companies this week and one thing is clear, it will be a tough Q1 reporting when comparing to Q4/22 and Q1/22 with oil and gas prices down QoQ and YoY. On April 8, we tweeted [LINK] "*Tough Q1 reporting for E&P in a few weeks. See 👇#Oil #NatGas price table. Q1/23 prices down QoQ for all prices except WCS. Q1/23 prices down even more YoY for all prices. Looking further ahead, Q2/23 YoY price comparison will be even worse as Q2/22 was peak prices.* #OOTT." Our tweet included our quarterly oil and gas price table. Q1/23 Ed Par prices of US$73.80 were -7.5% QoQ and -21.0% YoY. Q1/23 WCS prices of US$56.52 were +3.4% QoQ and -31.3% YoY. Q1/23 AECO prices of $3.10 were -38.2% QoQ and -31.2% YoY. Our tweet reminded that the YoY comparisons for Q2/23 reporting this summer will be even worse as Q2/22 was the period of peak oil and natural gas prices. Below is our updated table of quarterly oil and natural gas prices.

Figure 48: Oil and Natural Gas Prices

Quarter	Brent US$	WTI US$	EdPar US$	WCS US$	HH US$	AECO C$
Q1/18	$67.00	$62.86	$57.19	$37.07	$3.11	$1.97
Q2/18	$74.41	$67.83	$60.78	$49.88	$2.83	$1.17
Q3/18	$75.27	$69.69	$59.81	$42.32	$2.92	$1.18
Q4/18	$68.18	$59.41	$36.53	$25.63	$3.79	$1.53
Q1/19	$62.91	$54.49	$50.28	$43.79	$2.93	$2.42
Q2/19	$68.58	$59.96	$54.41	$47.46	$2.57	$1.07
Q3/19	$61.95	$56.48	$52.43	$43.91	$2.38	$0.94
Q4/19	$62.51	$56.83	$50.61	$37.98	$2.40	$2.33
Q1/20	$51.28	$46.73	$39.75	$28.55	$1.92	$1.94
Q2/20	$31.14	$27.67	$21.84	$18.02	$1.70	$1.90
Q3/20	$42.70	$40.87	$36.83	$31.13	$1.96	$2.14
Q4/20	$44.47	$42.67	$37.92	$31.34	$2.46	$2.51
Q1/21	$60.51	$57.75	$54.17	$45.83	$3.39	$2.97
Q2/21	$68.44	$65.90	$61.94	$53.11	$2.89	$2.80
Q3/21	$72.95	$70.57	$66.90	$57.65	$4.28	$3.40
Q4/21	$79.45	$77.26	$73.78	$60.87	$4.74	$4.47
Q1/22	$99.08	$94.57	$93.40	$82.27	$4.60	$4.51
Q2/22	$112.72	$108.76	$107.10	$93.41	$7.46	$6.89
Q3/22	$99.67	$92.38	$90.52	$71.50	$7.98	$4.17
Q4/22	$88.35	$82.63	$79.74	$54.66	$5.59	$5.02
Q1/23	$81.44	$76.17	$73.80	$56.52	$2.69	$3.10
Q1/23 YoY	-17.8%	-19.5%	-21.0%	-31.3%	-41.6%	-31.2%
Q1/23 QoQ	-7.8%	-7.8%	-7.5%	3.4%	-52.0%	-38.2%

Source: Bloomberg

Oil & Natural Gas – sector/play/market/global insights from Q1 calls

Sector insights from Q1 calls

This was the first real week of Q1 reporting with all the major oilfield service companies and the start of supermajors reporting. The oil and gas services companies are first to report and we typically get some of the best macro insights from the services, pipelines, refineries and utilities. We find we get the best insights into a range of oil and gas themes/trends, sectors and plays form the conference calls. As a reminder, our Energy Tidbits memo does not get into the quarterly results, forecasts, or valuation. Rather the purpose of highlighting a company is to note themes/trends and plays that will help shape a reader's investment thesis to the energy sector. In the conference calls, we also tend to find the best insights from the Q&A portion as opposed to the prepared remarks.

Dow – Expects continued soft US natural gas prices relative to oil prices

Dow held its Q1 call on Tuesday. (i) Earlier in the memo, we highlighted Dow's concern on the economy and soft global economic activity. (ii) Dow highlighted its views for continued weak US natural gas prices relative to oil prices ie. provides good margins for their business. In their prepared remarks, mgmt. said "*We expect healthy oil-to-gas spreads to continue to favor our cost advantage positions as rates increase to meet seasonally higher demand levels.*" In the Q&A, mgmt. replied "*The other thing is oil to gas spreads really improved in the month of March primarily. We didn't see so much impact in the month of February, but the month of March, we saw that. So we -- I would expect that to carry into the second quarter.*" And "*Oil and gas spreads promptly are a little bit less than where we ended the quarter. And I would expect as we get into the second quarter, and demand for the natural gas picks up a little bit, we should see some of that natural gas pricing move up a little bit, but still it's going to be good oil to gas spreads here in the U.S.*"

Exxon – CEO when you increase production in a tight market, you make money
Exxon held its Q1 call on Friday and CEO Woods was on CNBC Squawk Box. (i) Earlier in the memo, we highlighted Woods comments on the recent WSJ report that Exxon had talked about buying Pioneer. (ii) Earlier in the memo, we highlighted Woods reminder on decline rates and Job 1 was to replace produced barrels. (iii) The White House. On Friday morning, we tweeted [LINK] ""*they [White House] keep asking us to increase production. Frankly, when you increase production in a tight market, you make more money" #Exxon CEO Woods. also "we will continue to try to explain to the White House how the markets work". #OOTT* @JoeSquawk." Our tweet included a video clip. The lead up to our tweet quote was "*there are mixed messages coming out. On one hand, they like the fact we are making money. On the other hand, they keep asking us to increase production …. ".* (iv) Watch oil inventories for a gauge where oil prices are going. We tweeted [LINK] "*#Exxon CEO sounds like @ericnuttall on always watch inventory levels. Woods "generally if you want to kind of gauge where [oil] prices are going, you got to gauge where inventories are at", then reminds seasonal demand, China etc, & risk to get back into a tight position. #OOTT."*

Haliburton – "*firmly believe that the gas market softness will be solved*"
Haliburton held its Q1 call on Tuesday. (i) Earlier in the memo, we noted Haliburton's comments on the level of DUCs and that they see this leading to an increase in US drilling. (ii) Also earlier in the memo, we noted their clear view that "*Everything I see today validates the strength and duration of this multi-year upcycle."* (iii) US rigs being shifted from natural gas to oil. This has been noted by others and expected given the low HH gas prices. Mgmt said "*Second, in response to market conditions, we are moving three fleets from gas basins to oil basins to satisfy specific customer demands."* (iv) Haliburton sees the natural gas price being corrected by the need to supply LNG. In their prepared remarks, mgmt. said *"So, let me briefly discuss the natural gas markets. First, I firmly believe that the gas market softness will be solved as 6 billion cubic feet per day of additional LNG export capacity comes online in the next 24 months."*

Nabors – US natural gas challenges "*may persist through next year*"
Nabors held its Q1 call on Tuesday. (i) Nabors doesn't see US oil plays absorbing all the decline in US natural gas drilling ie. expects US rigs to decline. We tweeted [LINK] *"US #NatGas drilling rigs declining in Q2. #Nabors Q1 call. "Although oil basins have remained supportive and have started to provide incremental activity, these increases have not been enough to accommodate the full redeployment of gas rigs. "Thx @business transcripts. #OOTT."* Nabors said "*As anticipated during prior earnings call, the current environment in the predominantly gas basins in the US had a noticeable impact on our Lower 48 rig count during the first quarter, as contracts in these areas started to expire, gas rig count dropped over the last several weeks dragging down the overall rig count for the market."* (ii) Any rig decline is temporary. Nabors said "*At this point, the pace of reduction in gas basin activity is exceeding the incremental opportunities in the oil basins. We expect average rig count in the second quarter to decrease by roughly 3 rigs from the first quarter exit*

rate and then to trend back up during the second half of the year as oil activity continues to increase." (iii) In the Q&A, mgmt. was asked how many rigs are being moved out of gas basins into oil basins and replied "*Right now 4 or 5 that order magnitude right now*." (iv) Sees risk of natural gas challenges may persist through 2024. This was a negative view for US natural gas in 2023 and 2024. In their prepared remarks, mgmt. said "*While challenges may persist through next year, we believe the pipeline of several large LNG projects expected to come online the next 2 years will support a burgeoning export gas market."*

NOV – Offshore is back after being largely absent since 2014

NOV held its Q1 call on Thurs. (i) Earlier in the memo, we noted NOV's comments on US unconventional growth is "*slowing significantly*". (ii) Earlier in the memo, we noted NOV seeing its customers with increasing confidence to make long-dated capital investment decisions. (iii) Offshore is back after being largely absent since 2014. This fits the theme of how the oil and gas companies have increased their focus in long-cycle projects. In the Q&A, mgmt. replied "*And so. I think why there's so much enthusiasm across oilfield services with respect to the offshore coming back is the fact that you've been largely absent since 2014 and so just to run it now and obviously. (inaudible) Technologies as the leading OEM provider of equipment that seen on almost all the offshore rig fleet this those rigs go back to work, where the kind of the first call drilling contractors make when it comes to reactivating rigs to upgrading their rigs, which is why we're seeing rising demand for activity in shipyards around the world*." (iv) Offshore demand is leading to reactivation of equipment. "*The world is getting back to reinvesting in its critical energy infrastructure. The floating rig count has recovered quickly off the bottom in established during the pandemic and has now recovered more than 35% with the current contracting pace an FID outlook indicating many more needed by 2024. Drillships in good working condition have already been reactivated. And with the low-hanging fruit contractors will have to go deeper into their stack-defined rigs to meet growing demand*." (v) Offshore is broad. Mgmt said "*but offshore activity in Brazil, Guyana, the Gulf of Mexico and West Africa, along with land and offshore activity around the Arabian Gulf point to strong growth over the next several years, underpinned by expected project FIDs and double-digit E&P CapEx growth plans*". (vi) NOV highlighted tightening industry capacity, which typically means that costs and timelines will be increasing.

Patterson-UTI – "expect whitespace to continue for our [frack] spreads" in Q2

Patterson-UTI released its Q1 on Wed night and held its Q1 call on Thurs. (i) Earlier in the memo, we noted PTEN 's comments on the horseshoe or U-turn drilling by Matador Resources. (ii) Ahead of the call, on Thurs morning, we tweeted [LINK] "*More shifting from #NatGas leading to lower Q2 drilling & fracking activity for $PTEN. Average rig count down 2-3 rigs in Q2 as "activity transitions more to #Oil from #natgas". "for Q2, we expect whitespace to continue for our [frack] spreads in the spot market". #OOTT".* (iii) PTEN is similar to other big oil and gas service companies in seeing that weak natural gas prices will lead to declining rigs for natural gas and that oil plays are not fully absorbing all the rigs ie. total US rigs will go lower. CEO Hendricks said "*We currently expect our average rig count to be down two to three rigs in the second quarter as activity transitions more to oil from natural gas*."

This makes sense with the weak natural gas prices. But it is important to remember that service companies don't move rigs from basin to basin on a weekly basis. It costs money to move rigs between basins and those costs have to be absorbed. So often, the service companies will leave the drilling rig stacked in the gas basin until there are contracts to justify the costs of moving. (iv) PTEN didn't say why but we have to believe the weak natural gas prices is also the key reason why PTEN said they expect to see continued "*whitespace*" for their frack crews. PTEN said ""*For the second quarter, we expect whitespace to continue for our spreads in the spot market, which is expected to modestly impact revenue and adjusted gross margin. We currently plan to operate 12 spreads through 2023 and no longer plan to reactivate a 13th spread this year.*"

Raytheon – Didn't realize Switzerland had Patriot missiles

Raytheon Technologies held its Q1 call on Tuesday. For anyone who has lived in Switzerland, it has been fiercely neutral and never really think of them having to have weapons like Patriot missiles. On the Raytheon call, mgmt. said "*As an example, RMD received a $1.2 billion award for Patriot, for Switzerland, which marks the 18th Patriot Nation.*" But the key reason we reviewed the Raytheon call was to we were expecting analysts to ask about how many Stinger and Javelin missiles had been used in the fight to defend Ukraine. But, there were no analyst questions. Our Dec 11, 2022 Energy Tidbits memo highlighted the Raytheon CEO Hayes comments on Dec 6 on CNBC Squawk Box. We then wrote "*and he said some amazing stats on how many missiles have been delivered to the Ukraine. Hayes noted how all the weapons delivered to the Ukraine were being done so out of current inventory and that they were drawing down inventory much faster. The levels are huge relative to current production rates. We tweeted [LINK] "h/t to US for UA key weapons defence support. "... we've gone thru in the 1st 10 mths of the war, 5 yrs worth of Javelin anti-tank missiles and we've gone thru 13 yrs worth of Stinger [surface-to-air missiles] production" @RaytheonTech CEO to @andrewrsorkin." And he concluded "it's going to take us some time to catch up." We hate to think where Ukraine would be without the US stepping up on Javelins and Stinger missiles*."

Weatherford – US activity starting to flatten driven by gas prices

Weatherford held its Q1 call on Wed. (i) Earlier in the memo, we noted Weatherford's view for a strong international oil and gas spending pattern that is more long-lasting and less prone to fluctuations in commodity prices compared to previous cycles. (ii) Weatherford also sees US activity flatten as rig counts have decreased. Mgmt said "*let's turn to our view on the markets in North America, we are seeing signs of the growth trajectory is starting to flatten as expected as rig counts have slightly decreased due to the softening in the gas market*."

Electricity – Large geomagnetic storm hits Earth on Sun/Mon

Large geomagnetic storm

It looks like the there weren't any significant electrical grid or widespread communications issues from the big geomagnetic storm that hit the earth on Sun/Mon. Rather the most significant impact of the big geomagnetic storm that hit the earth this week was that there was spectacular viewing of the aurora borealis across most Canada and the US even down the US Southwest. But the worry that we always watch is for impacts to the grid. On

Wednesday, NOAA reported [LINK] "*Large Geomagnetic Storm Hits Earth*" and "*On April 21, 2023, a coronal mass ejection (CME) erupted from the sun, spewing out a burst of plasma that raced toward Earth at nearly two million miles per hour and generated a severe geomagnetic storm (level 4 out of 5 on NOAA's space weather G- scale) at 3:26 p.m. EDT on April 23. Increased solar radiation and associated geomagnetic storms can have various effects: • They can affect power grids on Earth as well as radio signals and communications systems. • They can affect our satellite operations and GPS navigation capabilities. • They can impact astronauts in space, particularly if they are doing a spacewalk. Outside of the Earth's protective atmosphere, the extra radiation they are exposed to may cause radiation poisoning or other harmful health effects. • They can create spectacular auroras on Earth. This is the third severe geomagnetic storm (G4) since Solar Cycle 25 began in 2019. The other storms took place on November 4, 2021, and March 24, 2023. Forecasters observed the elevated solar winds measurement for these events using NOAA's DSCOVR spacecraft, which informed the geomagnetic storm forecasts."* Our Supplemental Documents package includes the NOAA report.

Figure 49: Aurora Borealis seen over Death Valley

Source: Twitter @KennethLerose

Quebec March 13, 1989 blackout was from a geomagnetic storm

There was a massive blackout on March 13, 1989 that hit all of Quebec, and it was caused by a geomagnetic storm. NASA wrote [LINK] "The Day the Sun Brought Darkness. *On March 13, 1989 the entire province of Quebec, Canada suffered an electrical power blackout. Hundreds of blackouts occur in some part of North America every year. The Quebec Blackout was different, because this one was caused by a solar storm! On Friday March 10, 1989 astronomers witnessed a powerful explosion on the sun. Within minutes, tangled magnetic forces on the sun had released a billion-ton cloud of gas. It was like the energy of thousands of nuclear bombs exploding at the same time. The storm cloud rushed out from the sun, straight towards Earth, at a million miles an hour. The solar flare that accompanied the outburst immediately caused short-wave radio interference, including the jamming of radio signals from Radio Free Europe into Russia. It was thought that the signals had been jammed by the Kremlin, but it was only the sun acting up!"*

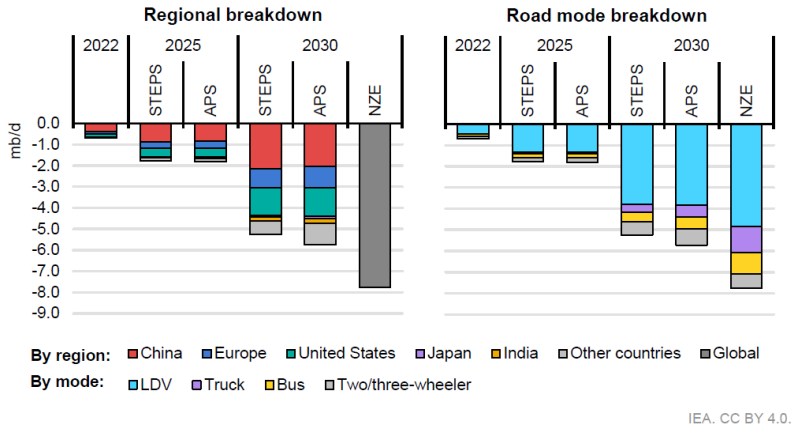
Energy Transition – Will EVs displace ~6 mmb/d of oil as IEA forecast this week?

IEAs on EVs displacing oil

The most important assumption on when peak oil demand hits is how quickly the accelerating share that EVs have of all new car sales leads to a big decline in oil consumption. The IEA forecasts EVs will displace nearly 6 mmb/d of oil demand by 2030 if governments deliver on their stated policies. And says that EVs displaced 700,000 b/d of oil demand in 2022. We had a 7-tweet Twitter thread that reminded that the displacement is all about forecast assumptions. We agree that EVs have to displace some oil demand, but we question the primary assumption and therefore believe this nearly 6 mmb/d displacement is too optimistic. (i) On Wed, the IEA released its major report "*Global EV Outlook 2023: Catching up with climate ambitions*". [LINK]. There is no question it is an excellent report with a lot of data and global EV insights. We recommend adding to reference libraries. (ii) We tweeted [LINK] "*1/7. @IEA Global EVs Outlook 2023. #Oil Bears and Bulls will both love it! Oil Bears and western leaders like headline, EVs to be 60% of total car sales in 2030, EVs to displace nearly 6 mmbd of oil by 2030, already displaced 0.7 mmbd in 2022. #OOTT."* We expect western leaders will just run with the nearly 6 mmb/d displacement and not worry about the key assumption. (ii) Oil bears assume this nearly 6 mmb/d means the IEA expects oil demand to be down ~6 mmb/d by 2030. But we reminded in our tweet [LINK] "*2/7. Oil bulls remember @IEA World Energy Outlook Oct/22 incl EVs to be 50% of total car sales in 2030, and IEA forecast #Oil demand to increase 0.8%/yr this decade to peak around 103 mmbd n mid 2030s."* The IEA's flagship annual report World Energy Outlook in Oct 2022 assumed EVs would be 50% of total car sales in 2030, so less than its new forecast of 60% in 2030. But even including a 50% assumption, the IEA WEO forecast oil demand to keep increasing in the 2020s and not peak until the mid 2030s at ~103 mmb/d. (iii) Here is the key assumption to displacing ~6 mmb/d that most probably didn't read. We are big believers that it is important to look at the key forecast assumption on pg 132. We tweeted [LINK] "*Oil bulls also note KEY assumption to @IEA #EVs replacing 6 mmbd is that distance travelled by EVs basically replaces the distance an ICE or hybrid would have driven. ie. infers a new EV is added to fleet, an ICE is effectively retired from fleet. #OOTT."* The IEA wrote "*How much oil really gets displaced by electric vehicles? Oil displacement through the use of EVs can be estimated by assuming that the distance (total kilometres) travelled by EVs by segment each year would have otherwise been travelled by ICE vehicles or hybrid electric vehicles (HEVs) (based on the stock shares of each)."* Basically, the IEA assumes the EV effectively replaces the distance driven by an ICE vehicle. (iv) We don't believe this effective one-for-one replacement in terms of distance driven has proved out so far. We tweeted [LINK] "*4/7. But for many, an EV is a 2nd or 3rd car. Norway is recognized leader in terms of EVs penetration. 03/22 tweet. Yet #EVs distance driven 22.6% in 2022. EVs were >80% of new car sales in 2022, been 60% for ~4 years. [LINK] #OOTT*". (v) On March 25, Equinor highlighted this EVs are 2nd or 3rd cars in Norway. We tweeted [LINK] "*5/7. In Norway, EVs are 2nd or 3rd cars! 03/25 Equinor explains why Norwegians #EV mileage is low relative to new car sales. "We've bought an EV instead of taking the bus, or it becomes the second or the third car" says @EWaerness [LINK] #OOTT."* (vi) Absent governments mandating ICE vehicles get junked, the other key factor is that ICE vehicles are lasting longer. We tweeted [LINK] *"6/7. A concept everyone has experienced - ICE vehicles are lasting longer. 03/31. @BloombergNEF. at least in China, ICE vehicles retirements are at a very low level even in the face of increasing EV and ICE sales. #OOTT."* (vii) It is important to remember that the IEA forecasting a 60% EV share of total car sales means a displacement of nearly 6 mmb/d in 2030 is not an IEA forecast that says its oil demand forecast will be reduced by 6 mmb/d.

It's WEO Oct 2022 assumed EVs were 50% of total car sales in 2030 and didn't see peak oil demand until the mid 2030s. So the incremental 10% EV sales penetration, by itself, isn't likely to move its peak oil demand closer by very much. Our last tweet [LINK] "*7/7. #Oil Bears and western leaders will love @IEA EVs headlines on increasing EV sales and oil displacement. #Oil Bulls (Saudi Arabia) will love the IEA report and think this won't have much impact on @IEA forecast for peak oil demand around 103 mmbd in mid 2030s. #OOTT."* (viii) EVs are having an impact on oil and energy, but it isn't a one-for-one replacement. Plus we wonder if it's just additive on an "energy" basis in what it does to the demand for natural gas and other forms of reliable electricity to power the new EV ecosystem. Our Supplemental Documents package includes excerpts from the IEA Global EVs Outlook report.

Figure 50: Oil displacement by region and mode, 2022-2030



Notes: STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario; LDV = light-duty vehicle. Oil displacement based on internal combustion engine (ICE) vehicle fuel consumption to cover the same mileage as the EV fleet.

Source: IEA

Equinor chief economist says Norwegians bought EVs as 2nd or 3rd cars

Here is what we wrote in our March 26, 2023 Energy Tidbits memo. "*The Equinor Chief Economist Wareness comment to the FT also supported the above item on how Norwegians aren't using their EVs as much as would be expected given the massive penetration of new car sales over the past several years. Yesterday, we tweeted [LINK] "Here's why Norwegians #EV mileage is low relative to new car sales. "We've bought an EV instead of taking the bus, or it becomes the second or the third car" says @EWaerness. many other reality check energy transition views in his @FT interview [LINK] #OOTT." Waerness says that Norwegians really have bought EVs as their 2nd or 3rd cars and not the principal car. Whereas historically car buyers buy new cars as a principal car other than the wealthy who have more than a couple cars. The FT wrote "Norway's experience with electric vehicles provides an example, Wærness suggested. Subsidies to buy battery-powered cars had rapidly increased their number, and Norway has been repeatedly cited as an example of how quickly customers could switch to EVs. But the overall car fleet had swollen too, Wærness*

said. "We've kept a lot of the diesel cars and gasoline cars, and we've added EVs, and it took 10 years before gasoline demand went down," he said. "We've bought an EV instead of taking the bus, or it becomes the second or the third car."

Energy Transition – Germany "has significantly underestimated" the cost to go green

Germany huge cost of going green

We always wonder the reason for a government leak. Is it because some within the government want to get the real message out, or is it because the government wants to get the bad news out to gauge the level of public discontent. But we keep saying no one should be surprised to see reports like the Bloomberg report on Tuesday that "*the government in Berlin has significantly underestimated the cost of greening Europe's biggest economy."* We understand that western leaders had to get buy-in from their citizens on the energy transition so a key selling feature was that it wouldn't just lead to cleaner energy, but that it was also not going to lead to higher cost of energy and higher cost of living. It would have been difficult to get the buy-in by telling citizens basic every day energy would cost a lot more, it would lead to a higher cost of living and citizens would have to make other cuts to their way of life. But it's now we continue to see more data/admissions, albeit not direct admissions, that cost of energy and cost of living are going higher. On Tuesday, we tweeted [LINK] "*Higher cost of living/energy ahead. Leaders should have at least warned #EnergyTransition will cost citizens. @KowalczeKamil reports Germany facing $13.2b shortfall in climate protection fund ie. "significantly underestimated cost of going green. This excl 04/19 cost to stop #Oil #NatGas heating. #OOTT."* Bloomberg wrote "*Germany is facing a shortfall of about €12 billion ($13.2 billion) in its special climate-protection fund, suggesting the government in Berlin has significantly underestimated the cost of greening Europe's biggest economy. Commitments to climate—protection projects exceed earmarked resources through 2026, according to people familiar with the budget details, who asked not to be identified discussing confidential information. The estimated deficit doesn't take into account subsidies to ease the financial burden of replacing fossil-fuel heating systems, which could be as much as €15 billion, the people said. The ruling coalition agreed last week to ban new gas- and oil- fired heaters in Germany from next year. Spokespeople for the economy and finance ministries did not immediately respond to requests for comment. The Climate and Transformation Fund (KTF) was set up last year outside the regular budget to provide subsidies for programs including renovating buildings, switching to e-mobility and clean manufacturing, expanding renewable energies and improving energy efficiency."* Our Supplemental Documents package includes the Bloomberg report.

Germany to phase out oil/gas heating systems at a cost of $10b/yr

The Bloomberg story above highlighted that the $13.2b shortfall in the climate protection fund did not include the cost/deficit for Germany to subsidize the phase out of oil and gas heating systems. Here is what we wrote in last week's (April 23, 2023) Energy Tidbits memo. "*No one should be surprised to see the reports that the German cabinet has approved a bill to phase out oil and gas heating systems. We have continued to believe that no one should be surprised to find out the energy transition will cost citizens and lead to higher energy and cost of living. It's been obvious. But it sounds like some are surprised to see that this will cost Germans $10 billion a year. We suspect the surprise comes from western leaders selling the energy transition as something that will lead to lower energy prices, not higher. At least they needed that to sell the vision to people and get people committed to the*

view that the energy transition would lead to both a reduction in emissions and energy costs cheaper than fossil fuels. On Wednesday, we tweeted [LINK] "This was known yrs ago. but leaders chose not to warn #EnergyTransition will increase cost of living. German cabinet approves bill to phase out #Oil #NatGas heating systems. Est cost $10b annually but some subsidies to partially offset. Thx @RihamKousa @MarkusWacket #OOTT." Reuters reported "The German cabinet on Wednesday approved a bill that bans most new oil and gas heating systems from 2024, the economy minister said, a policy designed to cut greenhouse gas emissions but that critics warned could be costly for poorer households. Berlin's ruling coalition last month agreed that almost all newly installed heating systems in Germany should run on 65% renewable energy from 2024, both in new and old buildings." And "Such a shift could cost Germans around 9.16 billion euros ($10 billion) annually until 2028, the draft bill showed. The costs would fall to 5 billion from 2029 as Berlin expects renewable energy expansion and a ramp up of heating pumps production to make the switch cheaper. The government will offer a subsidy of 30% for residential properties occupied by owners and 10% extra if the owners opt for an earlier climate-friendly heating switch than required by law, regardless of the household income.Homeowners who receive income-related welfare benefits could get 20% extra subsidy for the switch." Our Supplemental Documents package includes the Reuters report.'

Energy Transition – Germany's €49 national all transit pass will cost >€3 billion per yr

Germany's new national transit pass

We have to wonder who is going to end up paying for all the underfunding in Germany's energy transition. Will it just be the normal suspects of rich and corporations but the costs keep going up and there has to be others involved in funding the deficit. In addition to the above underfunding, Germany just added something north of €3 billion per year for its new National Mass Transit. On Friday, Bloomberg reported "*Germany Sets the New Standard for Cheap, National Mass Transit. • €49 buys a month of rides on all urban buses, trams and trains • Plan puts pressure on government to upgrade patchy network. Germany will start one of the most affordable public transit offers anywhere in the world on Monday, setting a new benchmark to encourage consumers to ditch their cars and putting pressure on Berlin to make the shift work. For just €49 ($54) a month, holders get unlimited travel on all city buses, subways and trams in every municipality across the country.*" Bloomberg also noted that national and state govts will provide €3 billion per year to offset the revenue. BUT this does not include any funding for the cost of any additional services to support this program. Bloomberg wrote " *To offset initial estimates of lost revenue, the federal government will provide €1.5 billion a year and Germany's 16 states have agreed to contribute the same amount. Any additional costs will also be split. The plan though doesn't include investment in more services, which will likely limit its impact, according to Philipp Kosok, a public transport analyst at think tank Agora Verkehrswende. "There is currently not one euro earmarked for expanded operations," he said. "We need a prioritization that says rail before road. We don't currently have that in German politics.".* Our Supplemental Documents package includes the Bloomberg report.

Capital Markets – Militarization of Asia is an under the radar geopolitical risk

Militarization of Asia

Our big concern on military buildups in areas like the Persian Gulf is that someone either accidentally or stupidly does something that leads to a response. There has been a big push in increasing military capability in Asian countries. It's not just Europe countries. And the risk of something military in Asia would have a huge impact on markets. On Monday, we tweeted [LINK] "*Biggest fear with military buildups anywhere - someone accidentally/stupidly does something that leads to an escalation. @sean_evers militarization of Asia is under the radar .... does have very serious geopolitical consequences & market relevance everywhere. #OOTT."* We listen to the replays of Gulf Intelligence's Daily Energy Markets podcast every day, and Monday's brought this reminder on the militarization of Asia. Our tweet included the transcript we created of Sean Evers (Managing Partner of Gulf Intelligence) comments on this issue on the Gulf Intelligence PODCAST: Daily Energy Markets – April 24th. [LINK]. Items in "italics" are SAF Group created transcript. Evers in speaking what he called the biggest story in Asia – militarization. "*well it seems you [Australia] will be the last one to the party there because the Japanese are at it big time, the Philippines now, the US base is going in there. Of course the Chinese are spending records , etc, etc. It doesn't bode well when everybody spends such big amounts of money on military hardware. Usually, that hardware ends up being used in order to empty the warehouses for the next bunch of stuff. But we'll have to see. Obviously watch that space. But the militarization of Asia is a story that is a little bit under the radar, no pun intended. But one definitely to keep an eye on because it does have very serious geopolitical consequences and market relevance everywhere*."

Capital Markets – IFIC: Equity and balanced funds see net redemptions in March

IFIC Cdn mutual fund data

On Thursday, we tweeted [LINK] *"Continued net redemptions! @IFIC Cdn balanced & equity mutual funds net sales / redemptions data for Mar 2023. Q1/23 net REDEMPTIONS of $11.74b. Q1/22 net SALES $17.15b. YoY diff is -$28.89b. See 👇01/26 tweet, 2022 YoY diff was -$138.9b. #OOTT."* One of the big Cdn equity stories in 2022 continues to play out to start 2023 – the continuation in Q1/23 of massive net redemptions from active Cdn balanced and equity mutual funds in 2022, which was a huge change from the massive net sales into balanced and equity mutual funds in 2021. On Wednesday the IFIC (Investment Funds Institute of Canada) reported [LINK] mutual funds and ETF sales for March. IFIC reported net redemptions for mutual funds balanced funds were $4.167b in Mar (vs $0.945b in Feb and $4.380b in Jan). IFIC also reported net redemptions for mutual funds equity funds were $1.982b in Mar (vs net sales of $0.42b in Feb and net redemptions of $0.67b in Jan). Last year net redemptions in balanced and equity funds totalled $38.47b, which was a massive YoY crashing of $138.92b vs 2021 that saw net sales in balanced funds and equity funds of $100.45b. Despite the relatively slowed pace of net redemptions in balanced and equity funds in Feb, March's data brings YTD net redemptions to a total of $11.7b, which is a drastic change from the YTD net sales of $17.2b reported in March 2022. Our Supplemental Documents package includes the IFIC release.

Figure 51: Cdn mutual fund net sales/net redemptions ($ millions)

Asset Class	Mar. 2023	Feb. 2023	Mar. 2022	YTD 2023	YTD 2022
Long-term Funds					
Balanced	(4,167)	(945)	257	(9,512)	8,419
Equity	(1,982)	423	1,104	(2,228)	8,733
Bond	497	2,365	(511)	6,324	(317)
Specialty	427	114	175	1,188	1,049
Total Long-term Funds	(5,225)	1,957	1,024	(4,227)	17,884
Total Money Market Funds	1,823	1,301	102	4,222	392
Total	(3,402)	3,258	1,126	(6)	18,276

Source: IFIC

There were massive redemptions in Cdn active equity/balanced funds in 2022

2023 is not off to a good start for Cdn balanced and equity funds, but 2022 was brutal. Our Thursday tweet on the Jan/Feb IFIC data referenced the brutal 2022 data. Here is what we wrote in our Jan 29, 2023 Energy Tidbits memo. "*One of the big Cdn equity stories in 2022 continued to play out in the final month of the year – the massive net redemptions from active Cdn equity fund manager's balanced and equity mutual funds in 2022, which is a huge change from the massive net sales into balanced and equity mutual funds in 2021. On Thursday, we tweeted [LINK] "WOW! @IFIC balanced & equity mutual funds net sales/redemptions data for 2022. YTD 12/31/22 net REDEMPTIONS of $38.5b. YTD 12/31/21 net SALES $100.4b. YoY diff is -$138.9b!! Makes #Oil #NatGas stocks big outperformance vs TSX and oil prices even more impressive. #OOTT." On Tuesday the IFIC (Investment Funds Institute of Canada) reported [LINK] mutual funds and ETF sales for Dec. IFIC reported net redemptions for mutual funds balanced funds were $4.97b (vs $5.07b in Nov and $5.66b in Oct) and YTD Dec 31 of $29.99b. IFIC reported net redemptions for mutual funds equity funds were $3.08b in Dec (vs $3.01b in Nov and $1.89b in Oct) and YTD Dec 31 of $8.48b. The change vs 2021 is huge and has widened since the Nov update. YTD Dec 31, net redemptions in balanced funds and equity funds was $38.47b, which is a YoY crashing of $138.92b vs YTD Dec 31, 2021 that saw net sales in balanced funds and equity funds of $100.45b.*"

Capital Markets – USDA consumer price index for food +8.5% YoY in March

USDA CPI for food +8.5% YoY

The USDA's official food price data keeps going up YoY, but we continue to believe it is nowhere as much as what Americans feel when they go to the grocery stores in the US. This feels like what we heard in summer 2021 about inflation being transitory, the real food price increases that people pay at the grocery store are way higher than the consumer price index for food. The USDA posted its March consumer price index for food data on Tuesday [LINK], which pointed to food prices being up +0.1% MoM and +8.5% YoY. This compares to February's reading of -2.6% MoM and +7.7% YoY. While food prices in March were up over 8%, it still seems very low relative to the impact inflated prices are having on consumers. We have many US friends and none of them have though their grocery bills are only up less than 10% YoY or anywhere close to the level. The +8.5% YoY increase is for the overall food price index, which has a relative weighting for the various food categories. Some notable YoY index changes (compared to the 20-year average) in the March data were: fats/oils +15.9%

YoY (+3.2% avg), poultry +7.5% YoY (+2.9% avg), fresh fruits -1.5% YoY (+2.1% avg), fresh vegetables +1.4% YoY (2.2% avg), eggs +36% YoY (4.7% avg), and dairy products +10.7% YoY (2.3% avg). The USDA also provided a full-year 2023 outlook and is forecasting a +4.9% to +8.2% YoY increase in overall food prices, which compares to the last forecast of +5.5% to +10.3% published in January and the 20-year average of +2.8%.

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 and Calgary items.

Tough night for four Green Room prospects who didn't get picked in 1st round

It was a hugely exciting night for the NFL prospects invited to the Green Room for the 1st round of the NFL draft on Thursday night that ended up getting picked in the 1st round, especially those who went a little earlier than expected. There were 17 prospects invited who sat in the Green Room on Thursday night and there were 31 first round picks so good odds. Miami forfeited its first round pick this year. But four didn't get picked in the first round – Kentucky QB Will Levls, Penn State cornerback Joey Porter Jr., Alabama safety Brian Branch and Georgia Tech defensive tackle Keion White. Being a QB, the camera focused on Levis as each pick was called. Couldn't help feel sorry for Levis and his family with the camera watching his every reaction. We also feel bad it is something that will be part of his narrative for his career much like when Aaron Rodgers thought to be in the running to be the 1st pick, kept falling in the draft but ended being picked 24th in the first round by Green Bay Packers. Or former QB Brady Quinn thought to be a top 10 pick, kept falling but was picked 22nd in the first round. At least Rodgers and Quinn both got picked in the 1st round. Porter was the 1st pick of the 2nd round by the Steelers where his dad Joey Porter was a start play, Levis, the 2nd pick of the 2nd round by the Titans, Branch the 14th pick of the 2nd round by the Lions, and White the 15th pick of the 2nd round by the Patriots.

Why KFC only follows 11 Twitter accounts & 5 of them are the Spice Girls?

KFC's Twitter account @kfc notes they have 1.6 million followers and only follow 11 accounts on Twitter. We didn't know that until we saw the pop up story on the Microsoft Start page on Friday "*Why does KFC only follow 1 accounts on Twitter, and of them are the Spice Girls".* [LINK] Most people know the 5 Spice Girls, and the other six are random non-celebrity men with fhe first name Herb. KFC fans will know get it. As it looks to be a play on the Harland D. Sanders original secret recipe for making Kentucky Fried Chicken that had 11 ingredients that consisted of six "Herbs" and five "Spices".

Toronto Maple Leafs get the monkey off their back and win a playoff series

Like it or not, the Toronto Maple Leafs are still the big NHL team brand in Canada and, like the Dallas Cowboys, Cdn hockey fans tend to have either a strong like or dislike of the Leafs. So the big Cdn sports story last night was the Toronto Maple Leafs finally got the monkey off their back and won game 6 in overtime over the Tampa Bay Lightning n Tampa Bay last night to win their opening playoffs round. The last time the Leafs made it past the first round of the Stanley Cup playoffs was in 2004. Since then they have missed the playoffs 10 times. But they have been in the playoffs every year since 2017 but never made it past the first round. But they did last night. Now all the Leafs fans can get on the bandwagon!

Manchester City's fans not happy about the £10 scampi and chips

It was a great week for Manchester City FC fans when City thumped Arsenal at the Ethiad Stadium in Manchester on Wednesday. But the negative for the City fans seems to be the cost of food at the concessions. The Sun reported [LINK] "*FANS have slammed Manchester City for the price of a tiny portion of scampi and chips. The grub has been priced at £10, with many suggesting that it is the Citizens' way of being able to afford Erling Haaland. Some fans argued the price is set so the club can pay for Erling HaalandCredit: Getty The meal consists of a few bits of scampi, some chips, and a small pot of mushy peas. One match-goer pictured it ahead of Man City's win over Arsenal in the Premier League earlier this week. Many fans suggest that while the food looks good, the price is a bit fishy."*

Figure 52: Manchester City £10 scampi and chips

Source: The Sun

Ukraine drone attack reminds of another famous Henry Kissinger quote

Earlier in the memo, we highlighted the successful drone attack on the main fuel depot in Crimea and how that seems to be a strategic targeting the essential for any military – fuel. It reminded us of another famous quote by Henry Kissinger, who was er, we reference former Secretary of State under Richard Nixon in the 70s. That quote was "*Who controls the food supply controls the people; who controls the energy can control whole continents; who controls money can control the world*".