

Energy Tidbits

March 24, 2024

Produced by: Dan Tsubouchi

Vitol “seeing jet fuel now back to averaging around 6.9 mmb/d over the last 4-weeks, which is back to 2019 levels”

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. My 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 the review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector. My target is to write on 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. Vitol said they are now seeing jet fuel consumption averaging around 6.9 mmb/d over the last 4-weeks, which is back to 2019 levels and they see jet fuel going higher in Q2 to new record levels. [\[LINK\]](#)
2. Vitol says “not really building [Oil stocks} in the pricing centers. And when we’re not really building anything in the pricing centers, the market become more backwardated”. [\[LINK\]](#)
3. IEA Executive Director Fatih Birol op-ed today is the 2nd IEA admission this month that the energy transition isn’t working as aspired/planned. [\[LINK\]](#)
4. Trans Mountain says “We are feeling better and better every day about the startup” of 590,000 b/d TMX expansion in Q2. [\[LINK\]](#)
5. Shell say it is working towards a potential FID on 1.8 bcf/d LNG Canada Phase 2 by the middle of 2025. [\[LINK\]](#)
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn’t get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

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Natural Gas: +7 bcf build in US gas storage; now +336 bcf YoY surplus

There was a very small draw from gas storage in the US this week. For the week of March 15, the EIA reported a +7 bcf build. Total storage is now 2.332 tcf, representing a surplus of +441 bcf YoY compared to a surplus of +336 bcf last week. For this specific week, and the past few, total storage is the highest it's been in the past 5 years. Total storage is +678 bcf above the 5-year average, up from the +629 bcf surplus last week. Below is the EIA's storage table from its Weekly Natural Gas Storage report [\[LINK\]](#).

+7 bcf build in US gas storage

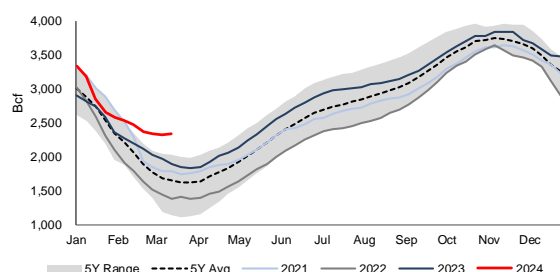
Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	03/15/24	03/08/24	net change	implied flow	Year ago (03/15/23)		5-year average (2019-23)	
East	406	412	-6	-6	365	11.2	323	25.7
Midwest	551	561	-10	-10	469	17.5	397	38.8
Mountain	166	167	-1	-1	85	95.3	88	88.6
Pacific	216	213	3	3	72	200.0	144	50.0
South Central	993	972	21	21	929	6.9	701	41.7
Salt	300	294	6	6	263	14.1	202	48.5
Nonsalt	694	678	16	16	665	4.4	499	39.1
Total	2,332	2,325	7	7	1,921	21.4	1,654	41.0

Totals may not equal sum of components because of independent rounding.

Source: EIA

Figure 2: US Natural Gas Storage



Source: EIA

Natural Gas: NOAA forecasts warmer than normal temps in April for northern states

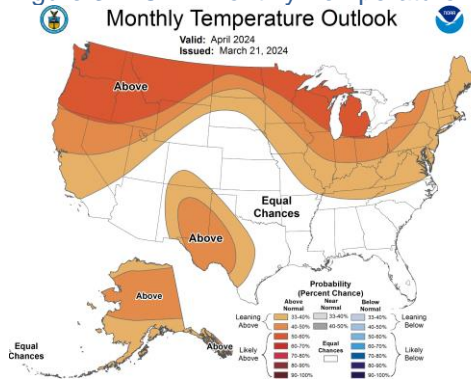
April is the shoulder season for natural gas where there really isn't any strong weather related demand for natural gas. There are always exceptions but, as a norm, April is generally not cold enough to drive big natural gas home heating demand and generally not hot enough to drive big air conditioning demand. Its mostly what we have always called leave your windows open temperature. On Friday, we tweeted [\[LINK\]](#) "No significant temperature driven demand for #NatGas expected based on @NOAA 30-day temperature outlook for April. For the most part, it will be leave your windows open weather, no need for A/C or for furnaces. Thx @NOAA @AccuWeather #OOTT." NOAA's temperature forecast for April is warmer than normal for the northern half of the US and for part of Texas. And then basically normal temperatures for the rest of the US. Our tweet included the AccuWeather temperature forecast for Chicago, Dallas, Miami and New York City. Other than a few hot days, the other temperatures would be such that it wouldn't drive any significant weather

NOAA monthly temp outlook

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driven demand. Our Supplemental Documents package includes the AccuWeather forecast maps for Chicago, Dallas, Miami and New York City. Below is NOAA's temperature forecast for April.

Figure 3: NOAA Monthly Temperature Outlook for April



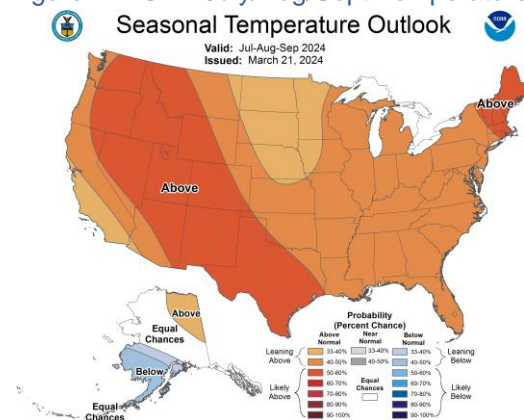
Source: NOAA

Natural Gas: NOAA's updated summer forecast is still for a hot Jul, Aug and Sep

We recognize that weather forecasts, even near term, are far from 100%, but, on Thursday, NOAA released its monthly update to its seasonal temperature forecasts. It didn't change much from the early look they issued on Feb 15; the outlook for the summer JAS [\[LINK\]](#) still calls for warmer than normal temperatures across almost all of the US, especially in the west. On Thursday, we tweeted [\[LINK\]](#) "Support for summer #NatGas prices. Summer temps aren't as much a swing factor for #NatGas prices as winter temps, BUT a hot summer will provide support for summer prices. @NOAA's updated seasonal temperature outlook. #OOTT." There is no bigger variable for natural gas price than winter temperatures but a hot summer normally provides support for natural gas prices. Below is NOAA's Mar 21 temperature probability map for JAS.

NOAA forecasts hot summer

Figure 4: NOAA July/Aug/Sept Temperature Probability Forecast



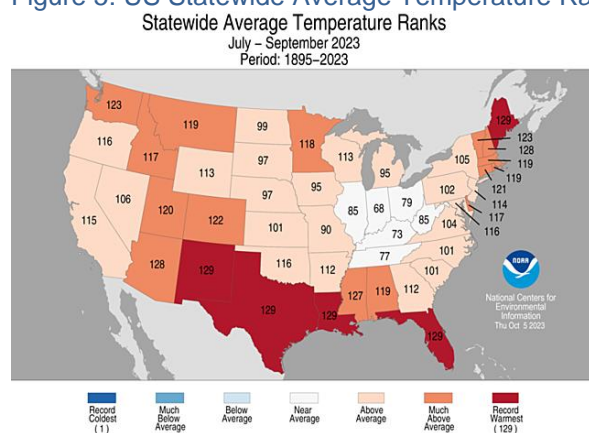
Source: NOAA

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But July/aug/Sept 2023 was 3rd hottest in the last 129 years

If NOAA's early look at JAS 2024 is right, it will be well above normal but cooler than last summer's JAS 2023. Our Oct 15, 2023 Energy Tidbits wrote "[September](#) [\[LINK\]](#). September was the 7th hottest in the last 129 years. It was record heat in Texas and New Mexico, and really hot in Plains, Midwest, Great Lakes NE and south. NOAA also posted its recap of summer July/Aug/Sept [\[LINK\]](#) and it was near record heat as the 3rd hottest in the last 129 years. It was record heat in a number of states and near record in many others. Below is NOAA's by state ranking for September and July/Aug/Sept temperatures."

Figure 5: US Statewide Average Temperature Ranks July/Aug/Sept 2023



Source: NOAA

Natural Gas: EIA, US shale/tight natural gas to stay above 100 bcf/d in April

US natural gas production is still up strong YoY with the US shale/tight natural gas plays up 3.0 bcf/d YoY, and this month's EIA DPR increased estimates for March and April. Recall the EIA revised historical months down in December's DPR due to a change in data methodology, stating on their website "*Our data vendor for oil and gas production data, Enverus, reported a change in the Texas Railroad Commission's (TX RRC) methodology for reporting natural gas production that discontinued applying a "well separation extraction loss factor" to condensate production reported by operators. For example, the impact of the methodology change lowers TX RRC reported natural gas gross production by 914 million cubic feet per day, nearly 3% in the month of January 2022. The December Drilling Productivity Report released on December 18, 2023, reflects this revision*". The EIA also wrote on their website "*The Drilling Productivity Report (DPR) rig productivity metric new-well oil/natural gas production per rig can become unstable during periods of rapid decreases or increases in the number of active rigs and well completions. The metric uses a fixed ratio of estimated total production from new wells divided by the region's monthly rig count, lagged by two months. The metric does not represent new-well oil/natural gas production per newly completed well. The DPR metric legacy oil/natural gas production change can become unstable during periods of rapid decreases or increases in the volume of well production curtailments or shut-ins. This effect has been observed during winter weather freeze-offs,*

Shale/tight gas production

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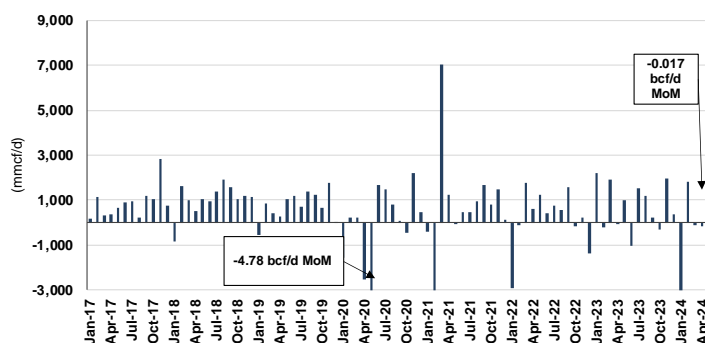
extreme flooding events, and the 2020 global oil demand contraction. The DPR methodology involves applying smoothing techniques to most of the data series because of inherent noise in the data". This comes in light of the very cold weather spurts that impacted some North American production in Jan. (i) On Monday, the EIA released its monthly Drilling Productivity Report for March 2024 [LINK](#), which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case March) and next month (April). (ii) The EIA forecasts US shale/tight natural gas for March at 100.619 bcf/d, which is up from last month's March estimate of 100.450 bcf/d. April natural gas production is estimated to be 100.451 bcf/d. (iii) The Permian is estimated to be above 24.000 bcf/d for 6 months; Nov 24.704 bcf/d, Dec 25.025 bcf/d, Jan 24.401 bcf/d, Feb 24.934 bcf/d, Mar 25.058 bcf/d, and now Apr 25.192 bcf/d. (iv) Haynesville has been falling gradually for the past 7 months; from Sep 16.931 bcf/d, Oct 16.738 bcf/d, Nov 16.862 bcf/d, Dec 16.766 bcf/d, Jan 16.248 bcf/d, Feb 16.521 bcf/d, Mar 16.436 bcf/d, and now Apr 16.271. (vii) Remember US shale/tight gas is ~90% of total US natural gas production. So, whatever the trends are for shale/tight gas are the trends for US natural gas in total. Below is our running table showing the EIA DPR data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes the EIA DPR.

Figure 6: EIA Major Shale/Tight Natural Gas Production

mmcf/d	2024												Feb DPR			Mar DPR				
	Jan	Feb	Mar	Apr	Apr YoY	Apr YoY%	Apr MoM	Apr MoM%	Mar	Mar	Change									
Anadarko	6,637	6,635	6,571	6,811	6,756	6,915	6,853	6,776	6,720	6,264	6,582	6,557	6,535	-102	-2%	-22	0%	6,556	6,557	1
Appalachia	35,471	35,757	35,822	35,911	36,369	35,841	35,910	37,094	37,168	36,309	36,487	36,359	36,286	814	2%	-73	0%	36,408	36,359	-49
Bakken	3,172	3,216	3,297	3,352	3,381	3,504	3,463	3,541	3,613	3,158	3,353	3,371	3,386	213	7%	15	0%	3,364	3,371	7
Eagle Ford	7,391	7,448	7,395	7,487	7,359	7,603	7,590	7,586	7,603	7,228	7,459	7,418	7,374	-17	0%	-44	-1%	7,426	7,418	-8
Haynesville	16,685	17,240	16,463	16,599	16,989	16,931	16,738	16,862	16,766	16,248	16,521	16,436	16,271	-414	-2%	-165	-1%	16,534	16,436	-99
Niobrara	5,031	5,131	5,178	5,262	5,394	5,363	5,379	5,392	5,428	5,332	5,417	5,420	5,408	377	7%	-12	0%	5,375	5,420	45
Permian	23,075	23,010	22,672	23,495	23,857	24,157	24,060	24,704	25,025	24,401	24,934	25,058	25,192	2,117	9%	134	1%	24,762	25,058	296
Total	97,462	98,436	97,398	98,917	100,104	100,315	99,992	101,955	102,322	98,940	100,753	100,619	100,451	2,989	3%	-167	0%	100,426	100,619	193

Source: EIA, SAF

Figure 7: MoM Change – Major Shale/Tight Natural Gas Production



Source: EIA Drilling Productivity Report

Source: EIA, SAF

Natural Gas: Shell working toward potential FID LNG Canada Phase 2 by mid-2025

We have been, and continue to be, in the camp that Shell will FID the 1.8 bcf/d LNG Canada Phase 2 although we had thought it would be a 2024 decision. It looks like any FID will not

LNG Canada 1.8 bcf/d Phase 2

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be until mid-2025. This is especially so given Shell's continued priority to LNG. And also because it is a brownfield project. Our prior memos have noted the item that isn't clear to us is if LNG Canada proceed with a commitment to use hydro power when available or does it need a firm timeline for that. Even still we have continued to expect to see a FID on the 1,8 bcf/d LNG Canada Phase 2, now it looks like before mid 2025. On Thursday, we tweeted [\[LINK\]](#) *"Shell-led LNG Canada export project is working toward a potential FID " on its brownfield 1.8 bcf/d Phase 2 by middle of 2025 reports @ruthcoverslng. If they weren't working toward or hoping for FID, they would downplay the potential. #OOTT."* On Wednesday night, Bloomberg reported *"The Shell-led LNG Canada export project is working toward a potential final investment decision on whether to expand in a second phase by the middle of next year, Shell's executive vice president of LNG, Cederic Cremers, said in an interview Wednesday. * Shell, partners will work with stakeholders in Canada, including the government: Cremers ".* We believe Cremers would have downplayed any potential FID of LNG Canada Phase 2 if they weren't expecting to do so.

Natural Gas: ADNOC and SEFE (Germany) sign LT LNG agreement for 0.13 bcf/d

The big rush in long-term LNG deals was from July 1, 2021 through June 30, 2022 that locked up almost all the available LNG supply that was available prior to 2026. There was a slow down but there was a pickup again over the last 15 months as buyers moved to lock up very long term LNG supply for the late 2020s and some continuing even out past 2050. Plus there was a push from global LNG suppliers to lock up other long-term LNG supply to add to their supply portfolio to be able to use to supply to their customers. This week, there was one new long-term LNG deal. (i) On Monday, ADNOC (UAE) announced they signed a 15-year LNG Heads of Agreement with SEFE (Securing Energy for Europe GmbH, Germany) [\[LINK\]](#), whereby SEFE will purchase 0.13 bcf/d from Woodside beginning in 2028 to supply gas to Germany. ADNOC Executive VP of Downstream Business Management, Fatema Al Nuaimi, said *"This LNG agreement, the first with a European company from the Ruwais lower-carbon LNG project, underscores ADNOC's position as a reliable and responsible global energy provider. Gas accounts for almost a quarter of Germany's primary energy use, and we look forward to supporting its efforts to diversify its energy sources and enhance its energy security".* Our supplemental documents package contains the ADNOC news release.

Long-term LNG deal

There have been 21.61 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 21.61 bcf/d of long-term LNG deals since July 1, 2021. 64% 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 53% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long-term supply deals since July 1, 2021. Our Supplemental Documents package includes our July 14, 2021 blog.

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Figure 8: Long-Term LNG Buyer Deals Since July 1, 2021

Table with columns for Date, Buyer, Seller, Country, Volume (bcfd), Duration, Start, End for Long-Term LNG Buyer Deals Since July 1, 2021 and Non-Asian LNG Deals.

Source: SAF

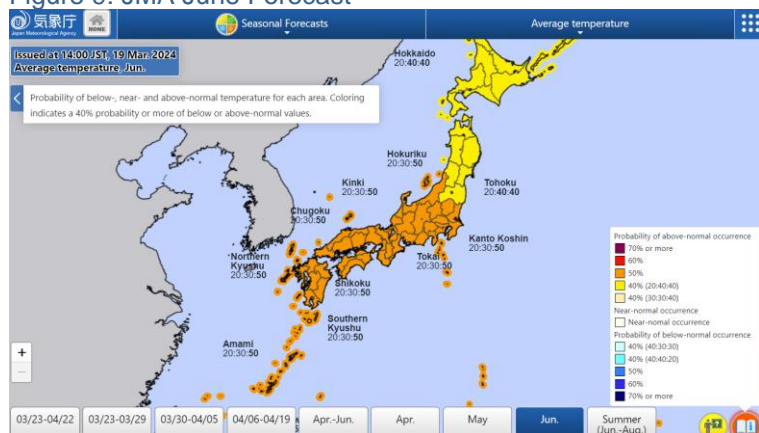
Natural Gas: JMA forecasts a warm June, start to Summer

On Tuesday, JMA updated its temperature forecast for June. In-line with their previous spring and summer forecasts, June is forecast to be warmer than normal. Southern prefectures especially will be warmer than normal. For June this will normally mean >25C but <30C. So warm. And if anyone has ever been to Japan in June, it's humid. So there should be some support for electricity and natural gas but not as much as would be the case in North America as Japanese businesses and homes are notorious for setting air conditioning at much higher temperatures. Still, it will be warmer than normal and provide some support for natural gas. Below is JMA's forecast for June.

Japan's June temperature forecast

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Figure 9: JMA June Forecast



Source: JMA

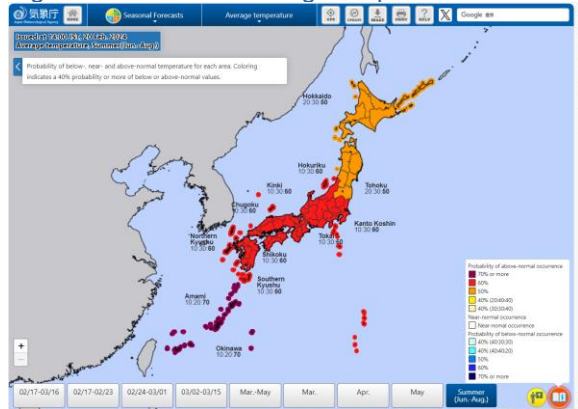
02/15/24: JMA forecasts a warm spring and hot summer in Japan

Here's what we wrote in our Feb 15, 2024 Energy Tidbits memo: "Japan is the #2 LNG importer just behind China. Feb is ending and there have been no worries this winter for any LNG shortage given it's been a warmer than normal winter that has taken Japan thru any major winter weather driven electricity and natural gas demand period. We have been warming for weeks that it is setting up a repeat of winter 2022/23 where the warm winter led to JKM LNG prices being held back for months. It's looking worse in 2024 as JKM prices have been much lower YoY since mid-Jan. Given it's the end of Feb, we have stopped for a month or two reporting on the temperatures over the next 30 days as it moving into shoulder season when there is normally not any major heating or air conditioning temperature driven natural gas demand. We call shoulder season the time of year that is normally leave the windows open as it's not too hot or too cold. However, the Japan Meteorological Agency updated its spring and summer outlooks [\[LINK\]](#). The February 20 update calls for a warm spring and an even warmer summer. The JMA spring forecast is for March to May, and their summer forecast is June through August. A warm spring is not normally a big temperature driver for big natural gas consumption, but a hot summer can be a boost to natural gas consumption. So far, the summer prediction would indicate increased natural gas demand as it will be hot. Below is the JMA's seasonal temperature probability forecasts for the spring (March-May) and summer (June-August)."

Japan's spring and summer temperature forecast

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Figure 10: JMA Jun – Aug Temperature Probability Forecast (issued Feb)



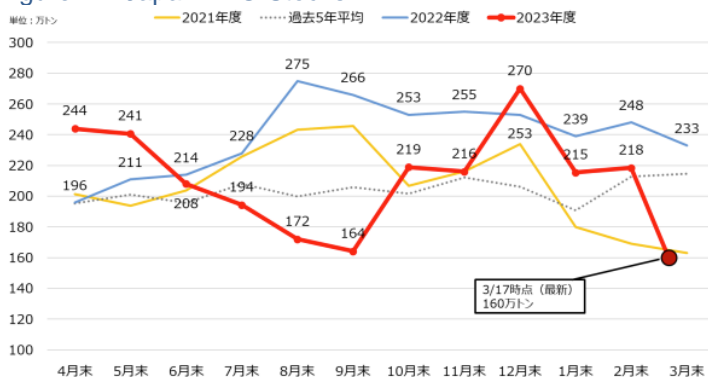
Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks down big WoW, YoY, lowest since September

Japan LNG stocks are below 2023 levels and well below the 5-year average. On Wednesdays, Japan’s METI releases its weekly LNG stocks data [\[LINK\]](#). LNG stocks on March 17 were 76.8 bcf, down -6.4% WoW from Mar 10 of 82.1 bcf, and are down -31.3% YoY from 111.9 bcf a year earlier. Stocks are below the 5-year average for the end of March of 102.8 bcf. We checked AccuWeather and it looks like Tokyo during the Mar 17 week lows saw some low nightly temperatures, so it would make sense people were cranking the heat at night. There’s also been storms in the Pacific that have stopped Russian tankers from loading; it’s possible that the storms have also delayed LNG shipments to Japan as well. METI did not comment on the WoW decrease. Below is the Japanese LNG stocks graph from the METI weekly report.

Japan LNG stocks down -6.4% WoW

Figure 11: Japan LNG Stocks



Source: METI

Natural Gas: Japan LNG imports down to post Fukushima Feb low

Japan LNG imports were in February at record low February levels since Fukushima and hitting new Feb lows ably a wide margin. It was a combination of warm winter and return of

Japan LNG imports in February

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some nuclear. On Thursday, Japan's Ministry of Finance posted its import data for February [LINK](#). The MOF reported Japan's February LNG imports were 9.97 bcf/d, which was 9.46 bcf/d, which is +5.4% MoM from 9.46 bcf/d in January 2024, and down -9.25% YoY from 10.98 bcf/d in February 2023. This is new record low for January since Fukushima with the previous February low being 10.98 bcf/d last year February 2023. Japan's thermal coal imports in February were -17.7% YoY and Petroleum Products imports were -17.5% YoY. Below is our table that tracks Japan LNG import data.

Figure 12: Japan Monthly LNG Imports

bcf/d	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	12.66	13.06	11.22	12.85	12.79	11.69	11.63	12.48	10.51	10.56	9.46	-10.5%
Feb	12.88	13.26	12.30	13.36	14.23	12.61	10.99	13.84	12.19	10.98	9.97	-9.2%
Mar	12.46	12.60	12.62	12.61	12.28	11.30	11.16	11.04	10.07	8.86		
Apr	11.54	10.56	10.21	10.52	8.97	9.00	8.31	7.96	8.92	7.25		
May	10.06	8.91	8.55	9.66	9.92	8.62	7.09	7.67	8.92	7.14		
June	10.91	10.61	10.02	9.90	8.88	8.32	8.42	9.13	9.29	7.25		
July	12.14	10.77	10.19	10.19	10.55	10.56	9.35	9.58	9.54	7.88		
Aug	10.92	10.93	11.96	11.24	11.73	9.45	9.04	9.75	9.71	8.78		
Sept	11.64	11.06	10.67	9.31	10.04	10.30	10.41	8.66	8.52	8.84		
Oct	10.75	9.38	9.73	9.50	10.12	9.75	9.20	7.17	7.88	8.38		
Nov	11.00	10.71	12.07	10.26	10.15	10.03	9.63	9.38	8.88	8.53		
Dec	12.79	12.51	11.69	12.31	11.23	10.54	11.96	10.89	9.39	10.06		

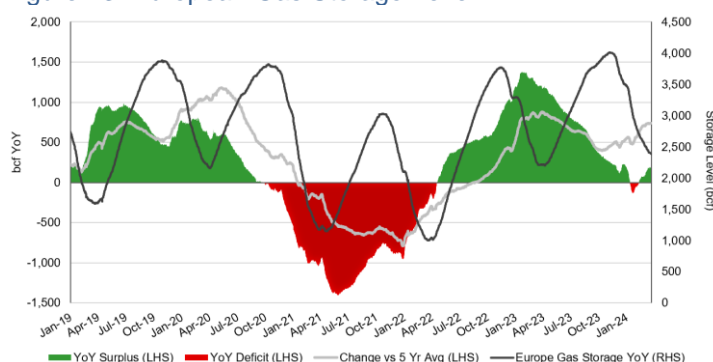
Source: Japan Ministry of Finance, SAF

Natural Gas: Europe storage decreases WoW to 59.23%, YoY surplus widens

Europe is seeing some draws on gas storage but shook off its YoY deficit last month. This week, Europe storage decreased by -0.63% WoW to 59.23% on March 21 vs 59.86% on March 14. Storage is now +3.65% higher than last year's levels of 55.58% on March 21, 2023. Even though the YoY surplus is modest, there are no fears for natural gas and LNG supply and the expectations seem mostly for storage to be full once again going into the winter. Below is our graph of Europe Gas Storage Level.

Europe gas storage

Figure 13: European Gas Storage Level



Source: Bloomberg, SAF

Oil: US oil rigs down -1 rig WoW to 509 rigs, US gas rigs down -4 WoW to 112 rigs

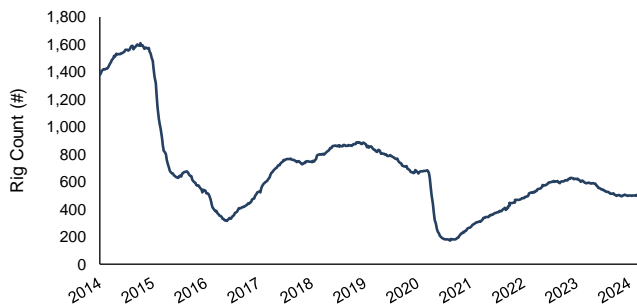
On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note, Baker Hughes has restored their old reporting format so we can break out the state data. (ii) Total US oil rigs were down -1 rig WoW to 509 oil rigs as of March 22. US oil rigs went below 520 rigs on Aug 25 and stayed there for 4 weeks and for the last has been around 490-510 rigs for the past few months. (iii) The removed oil rig came from the Permian basin. (iv) US gas

US oil rigs down WoW

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rigs were down -4 rigs WoW to 112 gas rigs. Note that most of the loss came from the Haynesville basin and this is expected based on the comments from natural gas producers a month ago as they announced they were cutting back programs and shutting in natural gas in response to low prices.

Figure 14: Baker Hughes Total US Oil Rigs



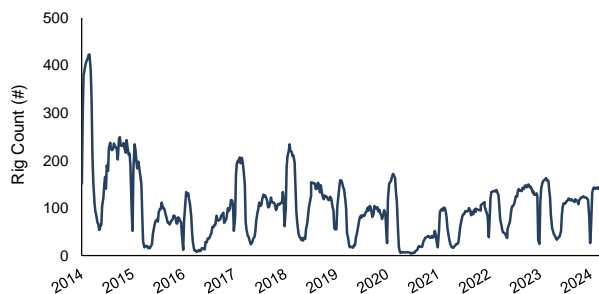
Source: Baker Hughes, SAF

Oil: Total Cdn rigs down -38 rigs WoW, drilling season wrapping up

Last week, we saw the first significant week of declining Cdn rigs marking the start of the end of winter drilling season. There was another big drop this week and we expect another big drop next week. For the week of March 1, as expected, total Cdn rigs were down big at -38 rigs WoW to 169 rigs. Cdn oil rigs were down -37 rigs WoW to 91 oil rigs and are up +5 rigs YoY. Cdn gas rigs were down -1 rig WoW to 78 rigs, which is -6 rigs YoY. By province, Alberta lost 25 rigs, Saskatchewan was down -11 rigs, Manitoba was down -3 rigs, and BC was up +1 rig.

Cdn total rigs down WoW

Figure 15: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

Oil: US weekly oil production estimates flat WoW at 13.100 mmb/d

It's worth noting that the EIA has benchmarking has led to a revision downward in weekly oil estimates instead of what have been upward revisions. Here's what the EIA wrote on their website last week: "When we release the Short-Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude oil production are reviewed to identify any differences

US oil production flat WoW

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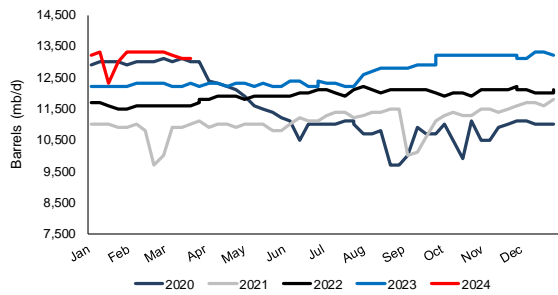
between recent trends in survey-based domestic production reported in the Petroleum Supply Monthly (PSM) and other current data. If we find a large difference between the two series, we may re-benchmark the weekly production estimate on weeks when we release STEO. This week's domestic crude oil production estimate incorporates a re-benchmarking that decreased estimated volumes by 177,000 barrels per day, which is about 1.3% of this week's estimated production total". Last Tuesday, the EIA released its Mar STEO and they'd revised down Q1/24 production estimates to 12.91 mmb/d from 13.03 mmb/d in Feb's STEO, so this message is consistent. The latest Form 914 (with December actuals) was +0.115 mmb/d higher than the weekly estimates of 13.200 mmb/d. This week, the EIA's production estimates were flat WoW at 13.100 mmb/d for the week ended March 15. Alaska was up +0.009 mmb/d WoW to 0.441 mmb/d. Below is a table of the EIA's weekly oil production estimates.

Figure 16: EIA's Estimated Weekly US Field Oil Production

Year_Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
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	04/28	12,300		
2023-May	05/05	12,300	05/12	12,200	05/19	12,300	05/26	12,200		
2023-Jun	06/02	12,400	06/09	12,400	06/16	12,200	06/23	12,200	06/30	12,400
2023-Jul	07/07	12,300	07/14	12,300	07/21	12,200	07/28	12,200		
2023-Aug	08/04	12,600	08/11	12,700	08/18	12,800	08/25	12,800		
2023-Sep	09/01	12,800	09/08	12,900	09/15	12,900	09/22	12,900	09/29	12,900
2023-Oct	10/06	13,200	10/13	13,200	10/20	13,200	10/27	13,200		
2023-Nov	11/03	13,200	11/10	13,200	11/17	13,200	11/24	13,200		
2023-Dec	12/01	13,100	12/08	13,100	12/15	13,300	12/22	13,300	12/29	13,200
2024-Jan	01/05	13,200	01/12	13,300	01/19	12,300	01/26	13,000		
2024-Feb	02/02	13,300	02/09	13,300	02/16	13,300	02/23	13,300		
2024-Mar	03/01	13,200	03/08	13,100	03/15	13,100				

Source: EIA

Figure 17: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

Oil: Exxon confirms its Permian plan is to hit 2 mmb/d by 2027

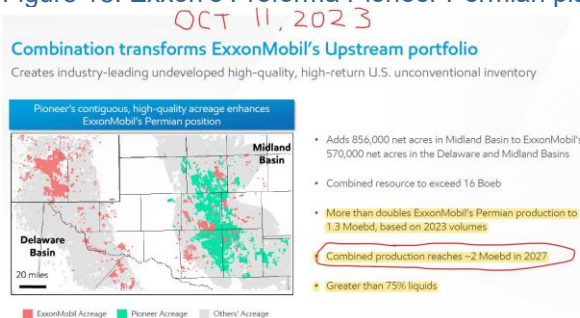
There was some excitement in the Permian when Reuters initially reported That Exxon was eyeing 2 mmb/d of oil out put from their Delaware Basin (Permian) lands by 2027. [\[LINK\]](#) But Reuters later made a correction "(This story has been corrected to say that Exxon Mobil eyes 2 million bpd output in the Permian basin, not the Delaware basin alone, in the headline and paragraph 1)." When we saw the reports, we tweeted [\[LINK\]](#) "Reports Exxon to bring Permian to 2 MBD by 2027 is not new. 10/11/23 "At [PXD] close, XOM's Permian production volume would more than double to 1.3 MOEBD, based on 2023 volumes, and is expected to increase

Exxon expects Permian to hit 2 mmb/d

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to approximately 2 MOEBD in 2027." #OOTT [\[LINK\]](#)." Our tweet included the Exxon slide from its Oct 11, 2023 slide deck on the Pioneer acquisition that "combined production reaches ~2 Moebd in 2027" from the Permian (both Delaware Basin and Midland Basin).

Figure 18: Exxon's Proforma Pioneer Permian plan per Oct 11, 2023



Source: Exxon

Oil: US shale/tight oil production in Apr 2024 slightly up from Mar estimates

On Monday, the EIA released its monthly Drilling Productivity Report for March 2024 [\[LINK\]](#), which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case March) and the next month (in this case April).

(i) Recall in January, there were notices posted on the EIA website about changes in methodology and the impact of cold weather on production estimates. In the Feb DPR's data, the shut-in was properly reflected by a January estimate of 9.279 mmb/d vs the estimate from January's DPR estimate which had the month at 9.681 mmb/d. Jan got further revised down with this Mar DPR at 9.350 mmb/d. (iii) US shale/tight oil in Apr continues the now 8-month trend (excluding the January shut-in effect) of being flat around 9.8 mmb/d. (iv) March's 9.759 mmb/d figure was revised upwards by +0.043 mmb/d compared to Feb's DPR, which had Mar at 9.716 mmb/d. (v) Permian shale/tight oil production is seeing a slight ramp-up in production, growing from 5.733 mmb/d in June to 6.112 mmb/d in Apr almost linearly. (vi) US shale/tight oil production is +0.351 mmb/d YoY to 9.768 mmb/d in Apr 2024. The major change areas are Permian +259,000 b/d YoY, Bakken at +64,000 b/d YoY, and Niobrara at +62,000. (vii) Note that shale/tight oil is approx. ~75% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production.

Shale/tight oil production

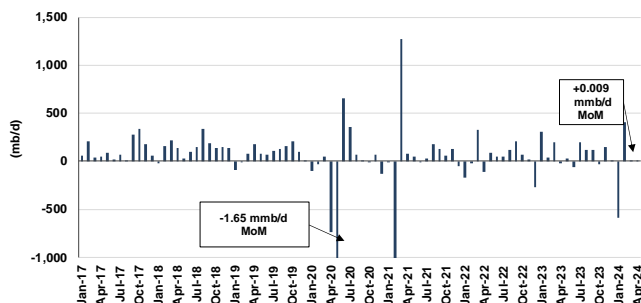
Figure 19: US Major Shale/Tight Oil Production

Thousand b/d	2024												Feb DPR			Mar DPR			Change	
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Apr YoY	Apr YoY%	Apr MoM	Apr MoM%	Mar		Mar
Anadarko	406	421	409	420	411	408	406	403	398	340	384	383	383	-23	-6%	0	0%	383	383	1
Appalachia	153	155	148	137	139	144	157	161	152	147	151	150	150	-3	-2%	0	0%	152	150	-2
Bakken	1,165	1,169	1,203	1,212	1,251	1,343	1,310	1,326	1,326	1,144	1,222	1,225	1,229	64	5%	4	0%	1,206	1,225	19
Eagle Ford	1,155	1,181	1,184	1,202	1,180	1,188	1,152	1,156	1,147	1,075	1,143	1,147	1,149	-7	-1%	2	0%	1,145	1,147	2
Haynesville	35	35	31	32	32	31	33	34	34	33	34	34	34	-1	-4%	0	0%	33	34	1
Niobrara	650	663	676	665	682	684	697	708	720	688	716	716	712	62	10%	-4	-1%	712	716	4
Permian	5,853	5,820	5,733	5,907	5,999	6,015	6,026	6,145	6,156	5,923	6,106	6,104	6,112	259	4%	8	0%	6,085	6,104	19
Total	9,417	9,443	9,384	9,577	9,695	9,812	9,603	9,934	9,934	9,350	9,755	9,759	9,768	351	4%	9	0%	9,716	9,759	43

Source: EIA, SAF

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Figure 20: MoM Changes in US Major Shale/Tight Oil Production



Source: EIA, Drilling Productivity Report

Source: EIA, SAF

Oil: EIA DUCs basically flat MoM in February, DUCs down -18% YoY, Jan revised up

DUCs flat in February

We have been warning that we see a key risk to how much US oil production can sustainably grow in 2024 and 2025 is the need to increase rig counts (not have less frac spreads) to replenish the inventory of Drilled Uncompleted wells at higher levels and the challenge for oilfield services to add capacity to increase frac spreads and completions. The biggest problem in the past with the EIA's Drilling Productivity Report [LINK](#) estimate of Drilled Uncompleted wells was that the data had been constantly revised and sometimes significantly. (i) The EIA estimates DUCs were essentially flat at down -3 MoM (-973 YoY) in February to 4,483 DUCs. Note that January's data had a net upwards revision of +100 DUCs to 4,486 DUCs. (ii) To put in perspective, there were 8,883 DUCs in the height of the Covid slowdown in June 2020, 7,322 DUCs in Feb 2021, 5,263 DUCs in Feb 2022, 5,456 in Feb 2023, and now 4,483 DUCs in Feb 2024. (iii) It looks like DUCs have steadily decreased over the past 12 months from the 5,456 in Feb 2023, diving below 5,000 DUCs by Aug with 4,937 DUCs, and now 4,483 DUCs in Feb. (iv) We still believe there is still the need for drilling rigs to pick up to replenish the DUC inventory if the US is to have sustained strong oil growth in 2024 and beyond. (v) The largest YoY Feb DUCs declines are the Eagle Ford (-268 YoY), Bakken (-265 YoY), and Niobrara (-233 YoY). (vi) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production.

Figure 21: Estimated Drilled Uncomplete Wells in 2023/24

Drilled Uncompleted Wells	2024										Feb DPR		Mar DPR		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Feb YoY	Feb YoY%	Feb MoM	Feb MoM%	Jan	Jan	Change
Anadarko	745	738	728	718	709	702	701	701	-76	-10%	0	0%	698	701	3
Appalachia	830	820	797	787	783	783	794	805	-70	-8%	11	1%	780	794	14
Bakken	449	406	375	362	336	317	320	325	-265	-45%	5	2%	321	320	-1
Eagle Ford	457	425	399	379	359	350	352	349	-268	-43%	-3	-1%	350	352	2
Haynesville	754	757	755	751	747	748	758	764	58	8%	6	1%	745	758	13
Niobrara	828	814	770	743	714	686	673	656	-233	-26%	-17	-3%	653	673	20
Permian	979	977	968	909	898	891	888	883	-119	-12%	-5	-1%	839	888	49
Total	5,042	4,937	4,792	4,649	4,546	4,477	4,486	4,483	-973	-18%	-3	0%	4,386	4,486	100

Source: EIA, SAF

Lower North Dakota oil growth ahead as DUCs are gone and lower rig count

Here is what we wrote in last week's (Mar 17, 2024) Energy Tidbits memo on North Dakota's comments that Bakken DUCs are basically gone. "Absent a step change

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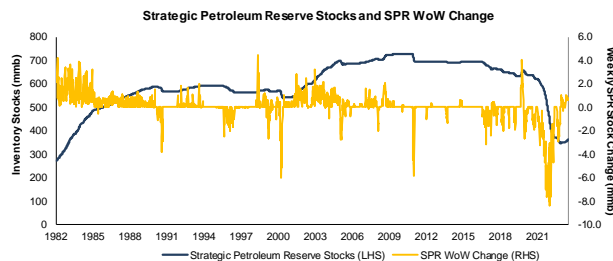
up or down in individual well rates, the direction and general pace of change in US shale/tight oil production growth or decline shouldn't have any major surprises. It's a function of wells drilled and wells completed. It was a good 2023 for North Dakota in terms of growth in oil production. As noted in the above table, oil production averaged 1.275 mmb/d in Dec, which was up approx. 0.2 mmb/d YoY. But that growth in 2023 was driven by higher Bakken rig counts and a one-time production add from grinding down the inventory of DUCs. So therefore the reason why the math suggests lower oil growth ahead is less rigs and no excess DUCs to draw down in 2024. Yesterday, we tweeted [\[LINK\]](#) " Bakken fits 📌 03/07 post, cranked up rigs/completions for higher 2023 production ahead of sale processes so lower growth in 2024. "we just really have essentially no DUC well inventory at all" North Dakota's Helms. DUCs now 284, vs 487 02/28/23. Rigs now 38-40, vs 46 02/23. Production +~0.2 mmb/d in 2023. #OOTT." We didn't get a chance to review the North Dakota monthly webcast on the Directors Cut until Saturday. In the webcast, North Dakota's Helms highlighted how the excess DUCs inventory has been depleted to the lowest he can remember seeing. Our tweet included the transcript we made of comments by the North Dakota Director of Mineral Resources, Lynn Helms, Ph.D., and Justin J. Kringstad, Director North Dakota Pipeline Authority on the monthly Directors Cut webcast on March 14, 2024. [\[LINK\]](#). Items in "italics" are SAF Group created transcript. At 5:35 min mark, Helms "On the completion numbers, still 92 wells completed in February. 13 frack crews running today so just about optimized for 38 to 40 rigs. That's just pretty much optimum. And that really shows in the DUC well count. You see we're below 300 for the time in as long as I can remember at 284 wells. Sowe just really have essentially no DUC well inventory at all."

Oil: US SPR less commercial reserve deficit narrows, now -82.736 mmb

US SPR reserves

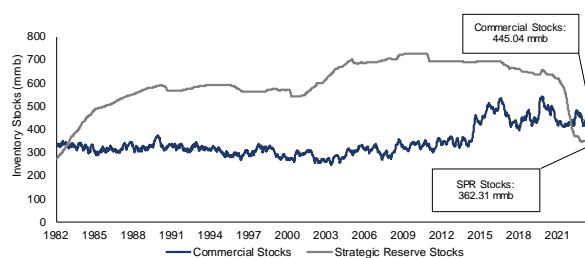
We were surprised by the Granholm comments this week on the Biden Administration plans to add back big amount of oil to SPR. Although, it seems like she was leaving a big out to them in that they would only do so at much lower oil prices. However, at a minimum, she is strongly signaling they aren't planning to sell any SPR in 2024 or agt least that is what she wants the market to think. SPR reserves are still down 276 million barrels since Biden was inaugurated. The US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sep 16, 2022 week. This week, there was a build on the SPR side, and the commercial side saw a draw. The EIA's weekly oil data for March 15 [\[LINK\]](#) saw the SPR reserves increase +0.750 mmb WoW to 362.306 mmb, while commercial crude oil reserves decreased -1.952 mmb to 445.042 mmb. There is now a -82.736 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles, along with the weekly changes to SPR stockpiles.

Figure 22: Strategic Petroleum Reserve Stocks and SPR WoW Change



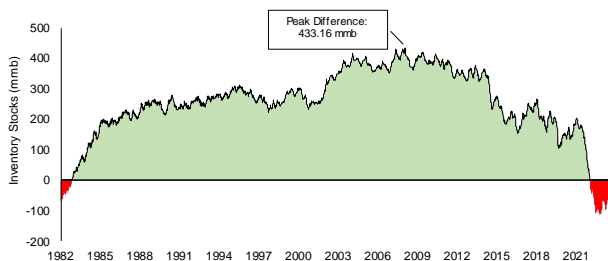
Source: EIA

Figure 23: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 24: US Oil Inventories: SPR Less Commercial



Source: EIA

Oil: US national average gasolines prices +\$0.07 this week to \$3.53

Yesterday, AAA reported that US national average prices were \$3.53, which was +\$0.07 WoW, up \$0.26 MoM and up \$0.09 YoY. The 435,000 b/d BP Whiting (Indiana) refinery restarted and that showed in Indiana’s gasoline prices which were down \$0.01 WoW to \$3.51. As of yesterday, the California average gasoline prices were +\$0.08 WoW to \$4.98, which is a \$1.45 premium to the national average gasoline price of \$3.53.

US gasoline prices

Oil: US gasoline prices normally start seasonal ramp up in March

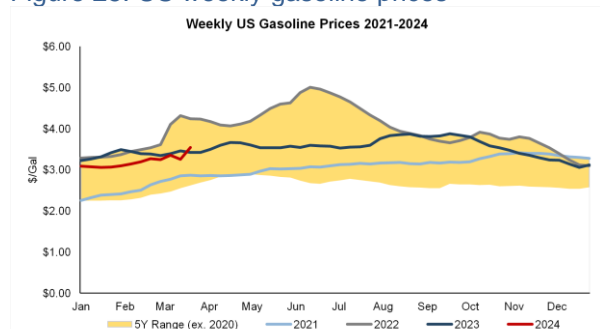
Here is what we wrote in last week’s (Mar 17, 2024) Energy Tidbits memo on the normal seasonal increase in US gasoline prices. “Yesterday, we tweeted [LINK](#) “Reminder March is normally when US #Gasoline prices start to seasonally ramp up. Like air travel, Presidents’

Seasonal increase in US gasoline prices

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Day marks start of increasing driving thru Labor Day. Plus May 1 is when the switch to more expensive summer blend gasolines to minimize evaporation. #OOTT.” Gasoline prices are impacted by more than seasonal trends, in particular, refinery outages as seen in the recent gasoline price increases from the unplanned outage of BP Whiting. However, there are seasonal reasons why US gasoline prices normally increase from March thru at least Memorial Day. Key reason is that this is the normal seasonal pickup in driving. It’s like the Delta Airlines CEO said last month, the recent Presidents Day weekend marks the start of their increase travel that goes right thru Labor Day. The second reason is that the switch to summer blend gasoline blend starts on May 1. Summer blend gasoline is more expensive to make and is higher quality to minimize emissions that evaporate into the air. Hot temperatures lead to more evaporation. And szCalifornia Gov Newsom allowed an early switch to winter blend to lower the price of gasoline and it worked. NACS (see following item) estimates summer blend gasoline can cost up to 15 cents per gallon to cost to produce.” Below is our updated US weekly gasoline price graph as of Friday close.

Figure 25: US weekly gasoline prices



Source: EIA

Oil: Switch to summer blend gasoline can add 15¢/gallon to cost

Here is what we wrote in our Mar 10, 2024 Energy Tidbits memo on the reminder on why summer blend gasoline costs more than winter blend gasoline – it costs more to make. Here is what we wrote last week. “Yesterday, we tweeted [\[LINK\]](#) “Summer blend #Gasoline is more expensive as production process takes longer & overall yield of gasoline per barrel of oil is lower. 02/28/24, 📌 @NACSONline “these complexities add as much as 15 cents per gallon to the cost to produce these higher-grade fuels.” #OOTT.” Our tweet included the NACS (Association for Convenience & Fuel Retailing, originally founded as National Association of Convenience Stores) Feb 28, 2024 “Seasonal Gas Prices Explained. From refinery maintenance to consumer demand, seasonal fuel production affects gasolines prices at the dispenser.” [\[LINK\]](#). NACS led off “Traditionally, gasoline prices are at their lowest during the first week of February and then begin to climb, often peaking right before Memorial Day. Seasonal increases in demand plus a transition to unique fuel blends put pressure on gas prices each spring.” And they highlighted how the switch to summer blend can add 15 cents a gallon to cost. NACS wrote “Summer-blend fuel is also more expensive to make than winter-blend fuel. First, the production process takes longer and, second, the overall yield of gasoline per barrel of oil is lower. These complexities add as much as 15 cents per gallon to

Summer blend gasoline is more costly

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the cost to produce these higher-grade fuels.” Our Supplemental Documents package includes the NACS report.”

Oil: Crack spreads narrowed \$0.80 WoW to \$32.20

On Friday, we tweeted [\[LINK\]](#) “Blinken’s ceasefire comments led to oil down \$0.41 Wow to WTI close at \$80.63. BUT continuing positive for WTI over coming weeks. 321 crack spreads at \$32.20 are very big margins for refineries ie, huge incentive to maximize runs & buying crude. #OOTT Thx @business.” Later in the memo, we note the Blinken Thurs/Fri comments that led to oil being down. That aside, crack spreads continue to be at high levels and certainly high enough to incentivize refineries to run as much crude as possible. Crack spreads closed at \$32.20 on Mar 22, which was a narrowing of \$0.80 WoW from \$33.00 on Mar 15. \$32.20 crack spreads are big and a huge incentive for refiners to maximize crude runs. We remind that oil demand is driven by refiners and their ability to make money by processing oil and selling petroleum products. So crack spreads are a good indicator if refiners will be looking to buy more or less oil. And when crack spreads are at or over \$30, it’s a very big incentive to refiners to want more crude and produce more product. This week, crack spreads narrowed \$0.80 WoW to Mar 22, which followed \$33.00 on Mar 15, \$29.61 on Mar 8, \$31.11 on Mar 1, \$30.61 on Feb 23, \$25.23 on Feb 16, \$30.03 on Feb 9, \$25.07 on Feb 2, \$26.65 on Jan 26, and \$24.47 on Jan 19. Crack spreads at \$32.20 are well above the high end of the more normal pre-Covid that was more like \$15-\$20, which is why we believe refineries continue to be incentivized to take more oil. And if refiners are incentivized to take more oil, it should provide positive near term support for WTI.

Crack spreads closed at \$32.20

Crack spreads point to near term oil price moves, explaining 321 crack spread

People often just say “cracks”, which refers to the 321 crack spread. This is the spread or margin that refiners make from buying crude at a certain price and then selling the finished petroleum products at their respective prices. The 321 crack spread is meant to represent what a typical US refinery produces. It assumes that for every three barrels of crude oil, the refinery will produce two barrels of gasoline and one barrel of distillates. So the crack spread is based on that formula and worked back to a crack spread per barrel. Below is the current 321 crack spread vs WTI that we put in our tweet where we marked the gaps where the crack spread normally drags up oil prices. The crack spread was \$32.20 as of the Friday March 22, 2024 close.

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Figure 26: Cushing Oil 321 Crack Spread & WTI Mar 22, 2014 to Mar 22, 2024



Source: Bloomberg

Oil: Mgmt “feeling better & better everyday about the [TMX] startup” in Q2

Absent some negative surprise, it keeps looking like Trans Mountain’s 590,000 b/d TMX expansion should start commercial shipments in Q2, likely June. (i) On Wednesday, we tweeted [\[LINK\]](#) “Big positive to Cdn #Oil about to kick-in with 590,000 b/d TMX expected start by end of Q2. China’s Sinochem takes 1st cargo from Suncor in May/June reports

@business. Recall 📢 @JavierBlas 02/14 column, expected to give \$7/b lift to Cdn crude.

#OOTT.” (ii) Sinochem has purchased TMX cargos for May/June loading. Our tweet included Bloomberg’s Wed report “China’s Sinochem Group has purchased one of the first crude cargoes shipped through a new pipeline in Canada, which is designed to move oil from landlocked Alberta to the Pacific Coast for export. Sinochem bought a 550,000-barrel cargo from Suncor Energy Inc., which will load from the Trans Mountain Expansion pipeline in May-June, said traders who asked not to be identified. The oil is a heavy crude quality, they added.” (iii) Trans Mountain mgmt feeling better every day about Q2 TMX startup. On

Thursday, we tweeted [\[LINK\]](#) “We are feeling better and better every day about the startup” Trans Mountain’s Mark Maki about 590,000 b/d TMX entering service in Q2 Report @lkassai @Devikakrishnak. Big positive for Cdn #Oil with expected narrowing of differentials ie. less of a discount to Cdn oil. #OOTT.” Bloomberg reported on comments by Trans Mountain mgmt on the expected Q2 startup. “The startup date for Canada’s mega oil pipeline should be known within weeks as Trans Mountain drills through hard rock in British Columbia’s rugged Fraser Valley for the final stretch of the 715-mile conduit. “The next few weeks will be very important in terms of being able to enter service in the second quarter,” Trans Mountain’s Chief Financial and Strategy Officer Mark Maki said in a interview during the CERAWEEK by S&P Global conference on Wednesday. “We are feeling better and better every day about the startup.” The startup date for Canada’s mega oil pipeline should be known within weeks as Trans Mountain drills through hard rock in British Columbia’s rugged Fraser Valley for the final stretch of the 715-mile conduit. “The next few weeks will be very important in terms of being able to enter service in the second quarter,” Trans Mountain’s Chief Financial and Strategy Officer Mark Maki said in a interview during the CERAWEEK by S&P Global conference on Wednesday. “We are feeling better and better every day about the startup.” Our Supplemental Documents package includes the Bloomberg Trans Mountain mgmt comments.

TMX 590,000 b/d expansion

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Bloomberg's Javier Blas on TMX narrowing Cdn WCS less WTI differential

No one knows exactly how much less of a discount for Cdn oil once TMX starts up but our prior memos have noted estimates that seem to be about +/- \$10 less discount. Our Thursday tweet linked to a Feb tweet where Bloomberg's Javier Blas weekly opinion piece brought this benefit to Cdn oil to his global follows. Here is what we wrote in our Feb 18, 2024 Energy Tidbits memo. "On Monday, we tweeted [\[LINK\]](#) "Positive to CDN #Oil stocks. @JavierBlas weekly opinion piece brings his 300k global followers to note TMX start up should narrow discount of Cdn oil prices to WTI from -\$17 (2010-24 ave) to ~\$10 ie. a \$7/b uplift To Cdn oil prices! [\[LINK\]](#) #OOTT." Bloomberg's Javier Blas is one of the most know oil reporters and his weekly opinion piece is read around the world. So it was great to see his opinion piece that will bring a global audience to how Cdn oil differentials should have a big near term win with the start up of the 590,000 b/d Trans Mountain TMX expansion. We have always been big believers that Cdn-based analysts just don' have a global following so it's always a positive when someone like Blas, with his global audience, bring attention to a big near-term positive in the Cdn oil patch. Blas's opinion piece was titled "A \$10 Billion Mistake That Will Revive Canadian Oil: Javier Blas", "If all goes as planned, the first barrels [on TMX] could be moving before June. With it, the discount of Canadian oil should narrow", and "Despite its colossal cost, TMX had two advantages that may compensate for the financial folly. One is that it's likely to narrow the differential between Canadian and US crude, leading to higher revenue for everyone involved in the petroleum industry — and that includes provincial governments which take royalties. How much the discount would narrow is hotly debated. On average, it has averaged minus \$17 a barrel between 2010 and 2024. The consensus is, that's going to trend now toward minus \$10 a barrel. Crucially, TMX probably means that the differential will no longer suffer from its perennial blowouts, when it has widened to as much as minus \$40 and even minus \$50 a barrel." We write every week on WCS less WTI differentials and many, many times on the upcoming impact of the TMX start up. And it is an overlooked big near-term win to Cdn oil. Our Supplemental Documents package includes the Bloomberg Javier Blas opinion piece."

03/01/24: Trans Mountain 590,000 b/d TMX expansion looks to start up in June

We titled our Mar 3, 2024 Energy Tidbits memo "Trans Mountain Calls for Line-Fill in Apr/May Points to June Start for 590,000 b/d TMX Expansion." Here is what we wrote in our Mar 3, 2024 Energy Tidbits memo. "There was good news, albeit expected, from the MEG Energy Q4 call on Friday morning on the start up of Trans Mountain's 590,000 b/d TMX expansion. We tweeted [\[LINK\]](#) "Looks like Trans Mountain 590,000 b/d TMX expansion is on track to start in June. @business headlines out of MEG Q4 call right now. "Trans Mountain seeks 2.1M bbl in April, 2.1M bbl in May: MEG". So calling for line-fill of 70,000 b/d in Apr & May. #OOTT." We weren't on the call but was seeing headlines rolling across Bloomberg reporting on the call. The key headline was "Trans Mountain seeks 2.1M bbl in April, 2.1M bbl in May: MEG." As soon as we saw it, we thought it pointed to TMX starting up in June. There would be no reason for why Trans Mountain would call for line-fil if they weren't planning to start up full operations right away. It points to a June start up

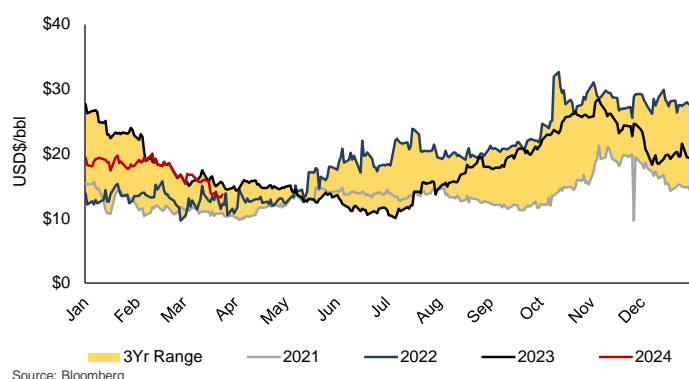
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Oil: Cdn heavy oil differentials continue to narrow, now down to \$13.64

Early in the year, every year, we start to remind that that Cdn WCS less WTI differentials normally narrow in late Feb thru May as US refiners maximize production of asphalt for annual paving season. Refineries have, for the most part, finished planned winter turnarounds and are moving to maximize production of summer grade fuels as well as asphalt ahead of the annual summer driving and 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. The seasonal narrowing is in motion. The WCS less WTI differential closed on March 22 at \$13.64, which was -\$2.08 WoW vs \$15.72 on March 15. These are both well below the Feb peak of \$19.75. The other upcoming factor is the startup of the 590,000 b/d TMX expansion, which is expected to provide additional support for narrowing WCS less WTI differentials.

WCS differentials narrows

Figure 27: WCS less WTI oil differentials to March 22 close



Source: Bloomberg

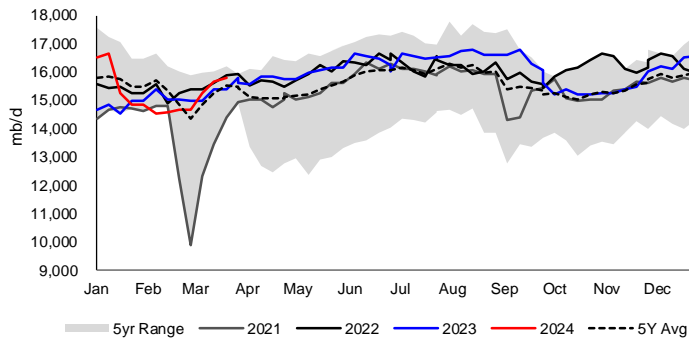
Oil: Refinery Inputs up +0.127 mmb/d WoW to 15.785 mmb/d, Whiting back online

There are always unplanned refinery items that impact crude oil inputs into refineries such as the 435,000 b/d BP Whiting (Indiana), which came back online this week. At the same time, a For the most part, this is the normal seasonal ramp up in refinery runs following winter maintenance. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended March 15 [\[LINK\]](#). The EIA reported crude inputs to refineries were up +0.127 mmb/d this week to 15.785 mmb/d and are up +0.409 mmb/d YoY. Refinery utilization was up +100 bps WoW to 87.8%, which is -80 bps YoY.

Refinery inputs +0.127 mmb/d WoW

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Figure 28: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports -0.947 mmb/d WoW as oil exports up +1.734 mmb/d WoW

The EIA reported US “NET” imports were down -0.947 mmb/d to 1.397 mmb/d for the March 15 week. US imports were up +0.787 mmb/d to 6.278 mmb/d against exports which were +1.734 mmb/d WoW to 4.881 mmb/d. (i) Venezuela weekly imports. We know why the EIA doesn’t have any data in the row for Venezuela weekly oil imports but we still don’t know if the weekly oil imports are off or if Venezuela is included in the weekly oil imports in the Others number. But we do know that Chevron continues to import >100,000 b/d from Venezuela into the Gulf Coast. Give the EIA credit for putting out weekly oil import estimates, but it’s a reminder that we have to be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. (ii) Top 10 was up +0.510 mmb/d. Some items to note on the country data: (i) Canada was up +0.277 mmb/d to 3.735 mmb/d. Note imports from Canada jumped this week in sync with BP’s 435,000 b/d Whiting refinery in Indiana coming back online. (ii) Saudi Arabia was down -0.011 mmb/d to 0.254 mmb/d. (iii) Mexico was up +0.050 mmb/d to 0.353 mmb/d. (iv) Colombia was up +0.289 mmb/d to 0.289 mmb/d. (v) Iraq was up +0.159 mmb/d to 0.252 mmb/d. (vi) Ecuador was up +0.045 mmb/d to 0.147 mmb/d. (vii) Nigeria was down -0.075 mmb/d to 0.057 mmb/d.

US net oil imports

Figure 29: US Weekly Preliminary Imports by Major Country

	Dec 15/23	Dec 22/23	Dec 29/23	Jan 5/24	Jan 12/24	Jan 19/24	Jan 26/24	Feb 2/24	Feb 9/24	Feb 16/24	Feb 23/24	Mar 1/24	Mar 8/24	Mar 15/24	WoW
Canada	3,686	3,428	3,796	3,557	4,188	3,270	3,573	3,539	3,999	3,669	3,766	3,632	3,458	3,735	277
Saudi Arabia	406	75	139	474	413	81	150	353	390	224	139	366	265	254	-11
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	851	380	952	522	756	356	427	661	294	784	569	640	303	353	50
Colombia	215	157	129	220	212	72	79	415	150	286	71	351	0	289	289
Iraq	22	380	239	192	64	206	205	0	43	226	240	176	93	252	159
Ecuador	49	142	83	30	150	3	103	72	201	158	0	218	102	147	45
Nigeria	162	80	95	165	147	199	190	81	137	159	165	222	132	57	-75
Brazil	197	238	305	249	264	266	213	338	148	44	234	178	272	114	-158
Libya	86	0	171	0	7	37	0	0	63	92	65	0	66	0	-66
Top 10	5,674	4,880	5,909	5,409	6,201	4,490	4,940	5,459	5,425	5,642	5,249	5,783	4,691	5,201	510
Others	1,076	1,396	986	832	1,219	1,090	665	1,448	1,045	1,012	1,136	1,439	800	1,077	277
Total US	6,750	6,276	6,895	6,241	7,420	5,580	5,605	6,907	6,470	6,654	6,385	7,222	5,491	6,278	787

Source: EIA, SAF

Oil: Norway February oil production of 1.832 mmb/d, flat MoM and up YoY

On Wednesday, the Norwegian Offshore Directorate released its February production figures [\[LINK\]](#). It reported oil production of 1.832 mmb/d, flat from 1.826 mmb/d in January but up

Norway February oil production

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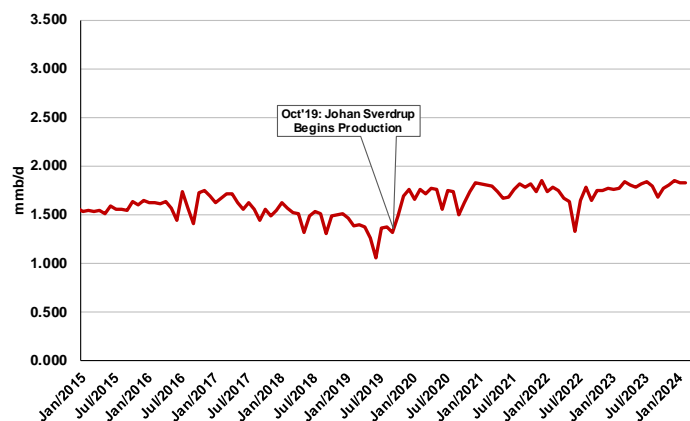
+3.3% YoY from 1.774 mmb/d in February 2023. February’s production actuals came in +3.0% (+0.054 mmb/d) over the forecast volumes of 1.778 mmb/d. The NOD does not provide any explanation for any MoM changes. The watch on Norway oil production will intensify We have been watching Norway’s oil production as the NOD noted they expect their major field, Johan Sverdrup, to mature this decade and peak oil production is expected to be reached in 2025. Note that, prior to 2024, the Norwegian Offshore Directorate was called the Norwegian Petroleum Directorate.

Figure 30: Norway February 2024 Production

		Oil mill bbl/day	Sum liquid mill bbl/day	Gas MSm ³ /day	Total MSm ³ o.e./day
Production	February 2024	1.832	2.064	357.7	0.686
Forecast for	February 2024	1.778	2.024	367.3	0.689
Deviation from forecast		0.054	0.040	-9.6	-0.003
Deviation from forecast in %		3 %	2 %	-2.6 %	-0.4 %
Production	January 2024	1.826	2.071	379.3	0.709
Deviation from	January 2024	0.006	-0.007	-21.6	-0.023
Deviation in % from	January 2024	0.3 %	-0.3 %	-5.7 %	-3.2 %
Production	February 2023	1.774	2.003	356.1	0.675
Deviation from	February 2023	0.058	0.061	1.6	0.011
Deviation in % from	February 2023	3.3 %	3 %	0.4 %	1.6 %

Source: Norwegian Offshore Directorate

Figure 31: Norway Monthly Oil Production 2015-2024



Source: Norwegian Offshore Directorate

Source: Norwegian Offshore Directorate

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Norway forecasts Norway reaching peak oil production in 2025, then to decline

As noted above, the watch on Norway production should escalate moving into Q4/24 because that is when the giant oilfield, Johan Sverdrup is expected to start to decline. Here is what we wrote in last week's (Mar 17, 2024) Energy Tidbits memo. *"No one should be surprised to see Norway forecast that Norway will hit peak oil production in 2025 and then begin to decline. That conclusion was obvious on Feb 8 when Aker BP, a partner in the giant Johan Sverdrup oilfield, told investors that Johan Sverdrup was going to reach peak production level around year-end 2024 and then begin to decline. Our thesis on Norway oil production has been that we expect Norway oil production to peak around end of 2024 or early 2025 based on the recent Aker BP comments that Norway's giant Johan Sverdrup oil field will start to decline in late 2024, which we believe would likely lead to Norway hitting peak oil production and then begin to decline. It looks like that these is supported by Norway's energy agency (the Norwegian Offshore Directorate) blog on Monday. On Tuesday we tweeted [LINK](#) "ICYMI. Norway forecasts it will hit peak #Oil production in 2025 & then decline therefrom. Jan 2024 was 1.8 mmb/d. See 📌 Feb 8 tweet. Giant oil field Johan Sverdrup to hit peak & begin decline ~yr-end 2024. Start of decline in giant oilfield = decline in oil for Norway. #OOTT." On Monday, we tweeted [LINK](#) "Norway #Oil production peak in 2025 and in decline says @sokkeldir. Makes sense, see 📌 Feb 8 tweet. massive Johan Sverdrup oil field led to a return to Norway oil growth. But it starts to decline in late 2024/early 2025. Positive for #Oil post 2024. #OOTT." Norway's Mar 11 blog was "High price to pay for halting exploration for oil and gas" [LINK](#) Their blog was a big picture warning that Norway shouldn't stop further exploration, production development activity as it will be a big hit to Norway. It's worth a read as it sounds like the Norway Climate committee is saying they want to stop all new exploration but also production, installation and operation. So that means an ever earlier end of life for oil and gas production and facilities. Ie. no more tie-in of smaller satellite fields to an existing platform. But included in the blog is a sente3nce that fits our Feb thesis – Norway oil production will peak in 2025 and then start to decline. They write "Production is declining on its own. The Committee presumes that activity in the oil and gas industry on the Norwegian shelf is too high leading up to 2050, which means that measures must be implemented to cut production. On the other hand, the Norwegian Offshore Directorate expects activity in the industry to naturally decline following a production peak in 2025. The production decline towards 2050 is within what the Intergovernmental Panel on Climate Change and the IEA have projected is in line with successfully following up the Paris Agreement." Norway is forecasting reaching peak oil production in 2025 and then beginning a decline therefrom. Our Supplemental Documents package includes the Norwegian Offshore Directorate blog."*

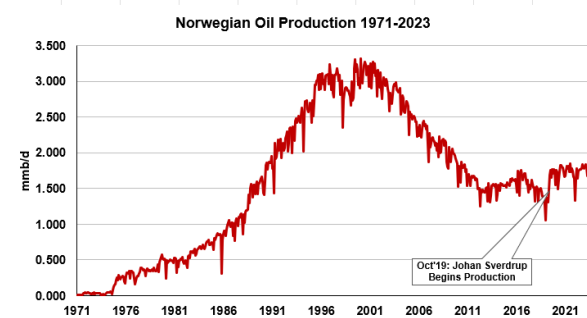
Has Norway oil production peaked w/ Johan Sverdrup field moving to decline?

As noted above, Aker BP provided the key disclosure on Feb 8 as to why oil watchers should be expecting Norway to reach peak oil production in 2025 and then begin to decline. Here is what we wrote in our Feb 11, 2024 Energy Tidbits memo on why Norway would be hitting peak oil production. *"We have to believe Norway will be in a "show me" phase over the next 12 months. There was big news on Thursday, when Aker BP said Norway's biggest oil field, the 755,000 b/d Johan Sverdrup, is*

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moving from plateau to decline in late 2024 or early 2025. There was no disclosure of how much it will decline in 2025 or if the decline can be offset, but it will raise the question what does it mean to Norway's oil production base. (i) On Thursday, we tweeted [\[LINK\]](#) "#Oil bulls will like this. Johan Sverdrup 0 to 0.75 mmbd led to Norway 1.31 mmbd in 09/19 to 1.85 mmbd today. BUT Aker BP says JS moving from plateau to decline in late 24/early 25. Water now hitting some wells. Can they arrest decline with H2O handling, more wells, etc? Are there other fields to offset? Or is Norway #Oil about to start to decline? #OOTT." (ii) Our tweet included the below graphs that reminded Johan Sverdrup started production in Oct 2019 and is now 755,000 b/d. And Norway oil production was 1.31 mmb/d in Sept 2019 and is now 1.85 mmb/d in Dec 2023. Johan Sverdrup is currently 40% of total Norway oil production. (iii) There was a great Q&A exchange on the Aker BP Q4 call on Thursday that led to the CEO noting a few key points. Aker BP has 31.6% in Johan Sverdrup but is not the operator. Equinor is the operator. CEO noted that water is hitting some undisclosed number of wells. And everyone knows water in conventional oil wells is a negative. And the more water, the more water handling capacity is required. The CEO said there is sufficient water handling capacity, didn't specify how much more longer that would be the case and that water handling capacity will impact some operations. The CEO noted that plateau is ending and declines should start in late 2024 or early 2025. This is earlier than expected. But he would not say what decline rate going forward and if their development options (adding more water handling, drilling more wells, etc) can offset or more than offset the start of declines. There is more in the Q&A and we recommend reading the excerpt. (iv) The key items to come out in 2024 is what will the declines look like at Johan Sverdrup in 2025, can they offset the declines at Johan Sverdrup and for how long, are there other Norway projects that can more than offset any declines at Johan Sverdrup. (v) Until these questions are answered, we have to take the Aker CEO comments at face value and that Johan Sverdrup plateau oil production is ending in late 2024/early 2025 and declines are about to start. Our Supplemental Documents package includes excerpts from Aker BP call transcript."

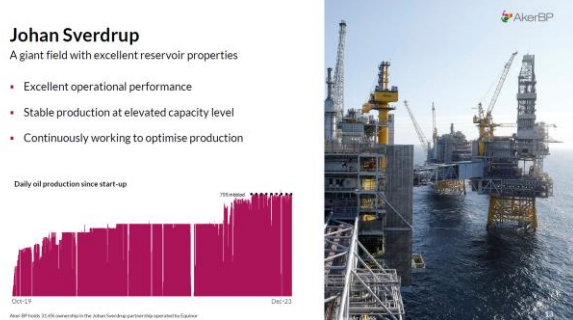
Figure 32: Norway oil production



Source: Norwegian Offshore Directorate

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Figure 33: Johan Sverdrup production plateau 755,000 b/d



Oil: Sudan declares Force Majeure on South Sudan oil deliveries after pipeline rupture

On Wednesday, Bloomberg reported that Sudan had declared a force majeure following a ruptured pipeline pumping crude from their oil fields straddling the border with South Sudan. Sudan has been engulfed in civil war since April of last year, and the ability to conduct proper maintenance and deliver fuel to pump stations and generators have been difficult. The approximate location of the pipeline rupture is in an area controlled by the “Rapid Support Forces” (RSF). Sudan normally exports approximately 150,000 b/d and is home to Africa’s third-largest oil reserves. The fuel is exported from the Sudanese coast on the Red Sea, which should be noted is very close to the Yemen (and Houthi militants). Below is a map of the pipeline and the approximate break location.

Sudan pipeline rupture

Figure 34: Sudan oil infrastructure



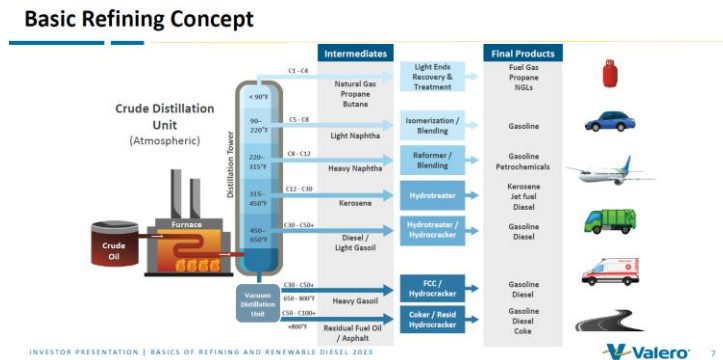
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Oil: Ukrainian drones are hitting critical parts of Russian refineries

We just see the escalation of the Russia/Ukraine war as a major wildcard to the world and markets. Clearly there is an oil impact as Ukraine continues to hit more Russian refineries with the latest being the Kuibyshevsky oil refinery that was hit last night. We don't have the detail on exactly how many refinery barrels are off line but the estimates seem to be between 0.6 to 1.0 mmb/d, but that is before last night. What isn't clear is the confirmation of how serious the damage is and how long the refineries will be down. But one thing that seems clear is that Ukrainian drones have been hitting critical parts of Russian oil refineries. Whether its by precise guided drones or luck, it seems the Ukrainians are being increasingly able to hit critical parts of the refinery and not just oil/products tank. A good example was last week's drone attack on the Lukoil Nizhny Novgorod refinery that said the drone attack was on the main distillation unit, we tweeted [LINK](#) "Refining 101. Lukoil drone reportedly hitting a distillation unit. it's a critical part of refining process. See 📌 @ValeroEnergy refining basics. So it's hit by a drone, it means can't distill oil to send intermediate products to crackers to make finished product. #OOTT." Our tweet included some refinery basic charts from Valero's 2022 presentation "Basics of Refining and Renewable Diesel" that reminded of the critical nature of distillation units and crackers in the refining process. The distillation tower is the first major step in the process to distill the oil into intermediate products that can be sent to crackers to produce the finished petroleum products. So not distillation unit means no intermediate products to produce final products. It is the critical first process in refining oil into petroleum products. Below is one of the Valero graphics included with our tweet.

Russian refineries hit by drones

Figure 35: Valero's Basic Refining Concept



Source: Valero

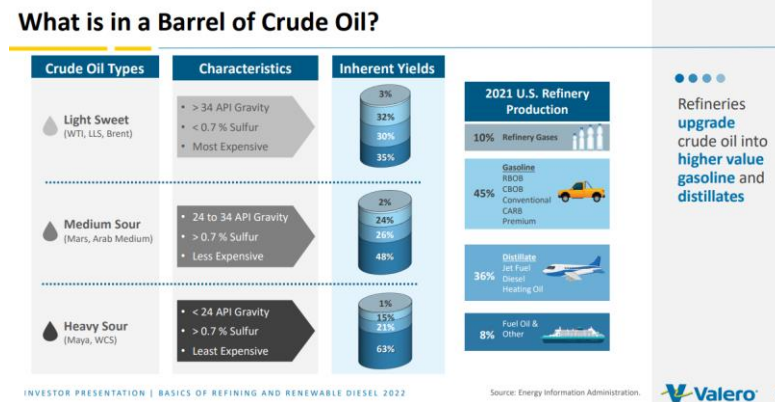
10/30/22: Valero Basics of Refinery & Renewable Diesel is must add to libraries

Here is what we wrote in our Oct 30, 2022 Energy Tidbits memo. "We always like having good reference material that provide the answers to basic questions on oil and gas. One such report is Valero's "Basics of Refinery and Renewable Diesel" [LINK](#), which we recommend adding to reference libraries. It is as the title suggests, a step through the basics of refineries from crude oil quality, light sweet vs medium sour vs heavy sour, basics refinery concept, coking, etc. and then a step thru renewable diesel refining. It is an excellent reference report. Below are a couple of the slides. We recommend adding the entire 30+ slide presentation to reference

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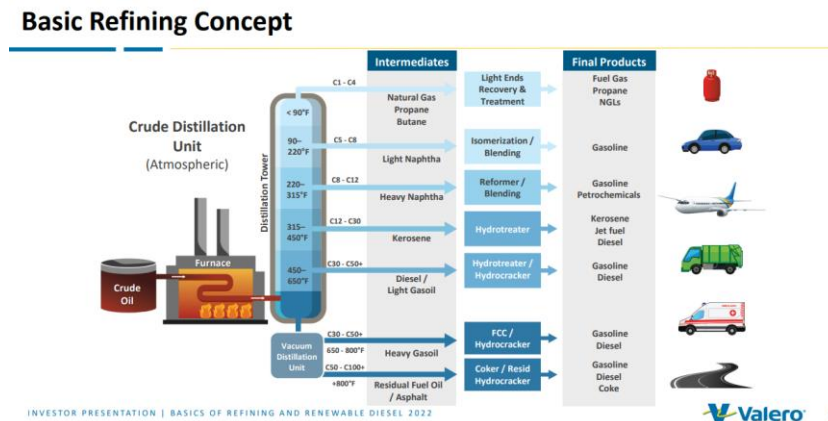
libraries. Our Supplemental Documents includes a small portion of the slide deck.” We checked the link for this memo and it still works.

Figure 36: What is in a Barrel of Crude Oil?



Source: Valero

Figure 37: Basic Refining Concept



Source: Valero

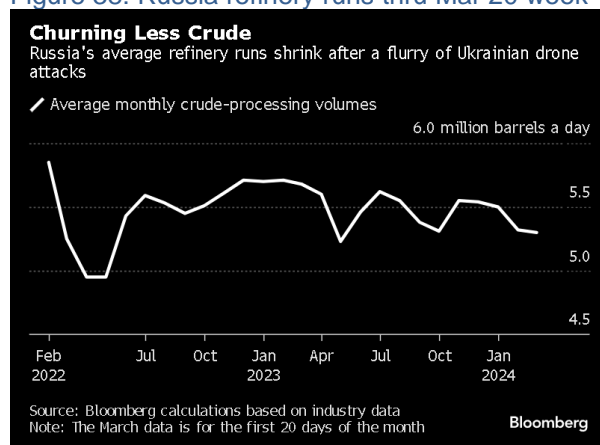
Oil: Russian refineries oil processing drop to 10-mth lows from drone strikes

Ukraine drone attacks have already had an impact on Russian refineries even before this week’s drone attacks. But now the question is how much Russian refinery capacity is off line and then the next phase will be how much of the crude oil that normally flows to these disrupted refineries can be moved to other refineries or to export terminals. On Friday, Bloomberg reported “Russia’s average daily oil refining rate fell to the lowest weekly level in ten months after a flurry of Ukrainian drone attacks hit several major facilities. Refiners processed 5.03 million barrels a day of crude from March 14 to 20, according to a person with knowledge of industry data. That’s down more than 400,000 barrels a day from the average for the first 13 days of the month, according to Bloomberg calculations based on historical data.” Our Supplemental documents package includes the Bloomberg report.

Russia oil refinery runs

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Figure 38: Russia refinery runs thru Mar 20 week



Source: Bloomberg

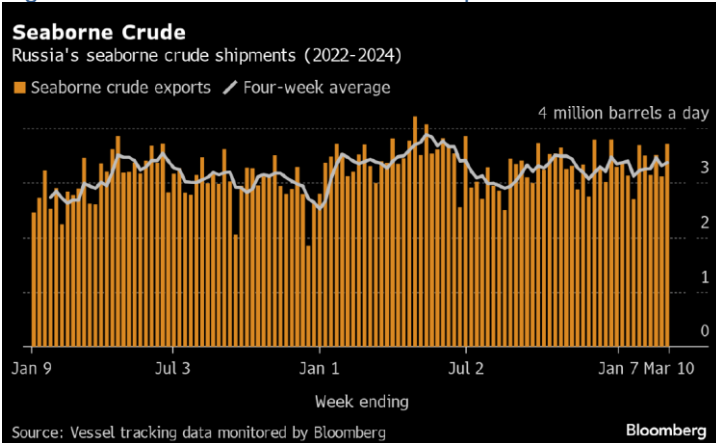
Oil: Russia's crude oil shipments for Mar 17 down after maintenance, storms

Russia's crude exports by sea are down after Kozmino got hit by another storm and Baltic ports undergo maintenance. Bloomberg reported "Russia's seaborne crude exports gave up all of the previous week's gains as maintenance work at the Baltic port of Primorsk and strong winds around Kozmino on the Pacific Coast hit shipments from the two most important oil ports. A three-day gap in the loading program for Primorsk indicates that the work there was planned, but it still cut flows to the lowest since September. To the east, high winds limited loadings from Kozmino again last week, after similar disruption earlier this month. Gusts reached more than 40 miles an hour in the second half of the week. The maintenance and adverse weather combined to leave weekly crude exports comfortably below the level that Moscow pledged to OPEC+ partners as part of a wider drive to curb output and support prices. Shipments were in line with that target on the more stable four-week measure". The March 17 figures are down -730,000 b/d WoW to 2.97 mmb/d, and 320,000 b/d below Russia's renewed Q1/24 export cap. The Kozmino port saw 7 ships get loaded this week, down from 11 last week. Recall last week set a YTD record for oil shipments so far in 2024. China got ~1.35mmb/d of crude from Russia in the Mar 17 period, along with ~800,000 b/d of Russian oil via pipeline. Recall Russia just announced a 500,000 b/d production cut as well as a renewed export limit, so their shipments going forward should be dampened, although the recent drone strikes on Russian refineries have reduced refining throughput capacity by about 600,000 b/d, which means more crude for export, all else equal. Our Supplemental Documents package includes the Bloomberg report.

Russia oil shipments meet commitment

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Figure 39: Russia's seaborne crude shipments thru Mar 17 week



Source: Bloomberg

Figure 40: Russian Crude Shipments by Terminal

Tankers Loading Crude at Russian Terminals
27 tankers loaded Russian crude in the week to March 17

Week ending	March 17	March 10	March 3
Primorsk (Baltic)	5	8	8
Ust-Luga (Baltic)	7	5	5
Novorossiysk (Black Sea)	3	5	3
Murmansk (Arctic)	2	2	2
Kozmino (Pacific)	7	11	6
De Kastri (Pacific)	2	2	2
Prigorodnoye (Pacific)	1	1	1
Total	27	34	27

Source: Vessel tracking data monitored by Bloomberg
Note: Based on date of completion of cargo loading. Excludes ships loading cargoes identified as Kazakhstan's KEBCO grade.

Bloomberg

Source: Bloomberg

Oil: Saudi use of oil for electricity flat in Jan, temperatures were mild

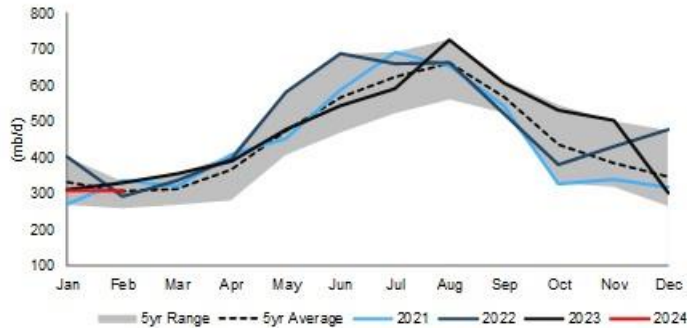
Saudi use of oil for electricity was basically flat MoM as Riyadh saw mild temperatures that didn't get too cold at night, nor too hot in the daytime. The key seasonal theme for Saudi oil exports is that, all things being equal, Saudi can export more oil in winter months as it uses less oil for electricity and, conversely, it would have less oil for export in summer months as it uses more oil for electricity ie. air conditioning. Note that a normal peak to trough decline is ~400,000 b/d. If there is less oil used for electricity, then there is more oil for export and vice versa. The JODI data for Saudi Arabia oil supply and demand for January [\[LINK\]](#) was updated on Monday. Saudi used about the same amount of oil for electricity in January as it did in December. We checked AccuWeather's monthly data for Riyadh, and we saw daytime highs during January were only the mid-twenties, and nights in the mid-teens which we'd consider as "leave your windows open" weather as opposed to needing air conditioning or heating. Oil used for electricity generation (direct use) in January was 308,000 b/d (vs January 2023 of 312,000 b/d) and December was 303,000 b/d (vs December 2022 of

Saudi oil use for electricity flat in Jan

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477,000 b/d). Direct use in January 2024 is below the 5-year average and lower than the January 2023 low of 312,000 b/d. Also note that this year fits the normal trough-to-peak swing of 400,000 b/d. Remember, we saw as much as 726,000 b/d in August. Below are the AccuWeather Temp maps for Riyadh for January and December.

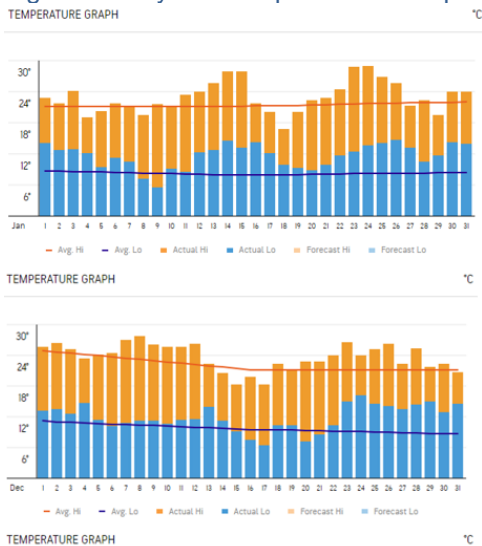
Figure 41: Saudi Arabia Direct Use of Crude Oil for Electricity Generation



Source: JODI

Source: JODI, SAF

Figure 42: Riyadh Temperature Recaps for January (top) and December (bottom)



Source: AccuWeather

Oil: Saudi net oil exports down -107,000 b/d to 6.138 mmb/d in January

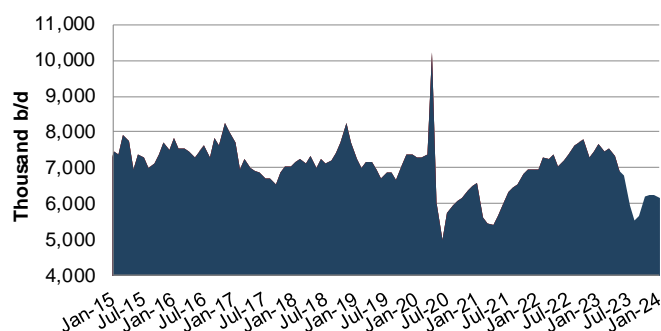
Note, until recently, JODI did not have access to Saudi import data. We realized only recently it began being disclosed in the fall, so this should explain at least some of the gaps in

Saudi net oil exports down -107,000 b/d MoM

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inventory draws/builds we have been pointing out. In January, the JODI data showed Saudi net oil exports were down -107,000 b/d MoM to 6.138 mmb/d. This comes after imports were up +96,000 b/d and exports are down -11,000 b/d. January is winter and, as noted above, it means less oil is used for electricity and this normally frees up more oil for export especially when production was +12,000 b/d MoM to 8.956 mmb/d in Jan. Below is our graph of Saudi Arabia monthly net oil exports.

Figure 43: Saudi Arabia Net Oil Exports (mb/d)



Source: JODI

Source: JODI, SAF

11/10/23 Saudi reminds oil exports are seasonal, less in summer/more in winter

Here is what we wrote in the Nov 12, 2023 Energy Tidbits memo. *“We probably should have called it Saudi Oil 101, but we were a little surprised that Saudi Energy Minister felt the need to explain how there is seasonality to Saudi’s oil exports because Saudi domestic consumption of oil has a seasonal pattern. So seasonally, there is more Saudi oil available for export in the fall than in the summer. On Friday, we tweeted [LINK](#) “Agreed, he is explaining Saudi Oil 101. Summer heat = more #Oil used to generate electricity for A/C ie. less for export. Aug 2023 was 726,000 b/d, +414,000 b/d vs Jan 2023. See 📌 SAF 10/22/23 Energy Tidbits graph. Thx @SVakhshouri for flagging. #OOTT.” Well known oil strategist Dr. Sara Vakhshouri tweeted “Saudi Energy Minister on #oil price drop: demand is healthy & speculators are to blame for the recent drop. OPEC exports don’t indicate increased production. Shipments are seasonal, dipping in summer & rebounding in Sep & Oct; not a sign of output changes.” This is the theme we highlight every month when we report on the monthly Saudi oil data for oil to refineries, production, exports, oil for electricity and oil into inventories. Our tweet showed our Oct 22, 2023 Energy Tidbits graph on how Saudi used 414,000 b/d more oil for electricity in Aug than it did in Jan because of the weather. The hot summers always drive up Saudi use of oil for electricity.”*

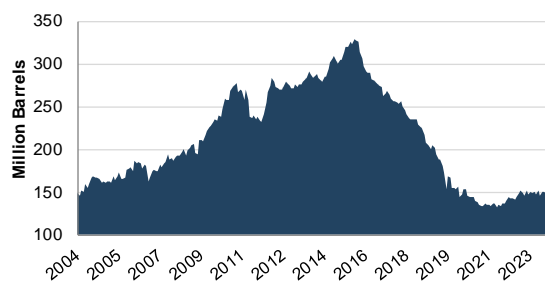
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Oil: Saudi oil inventories up +2.614 mmb MoM in January, math suggests bigger build

Saudi oil inventory data

We have seen this in the past, when there were unexplained builds or draws in inventories than what the basic math from production, refinery intake, and exports would suggest. We guessed the culprit was unreported Russian imports or exports. Remember the October data where there was a huge drop in production, a big hike in exports, minor drops in direct use and refinery intake, but a huge build in inventories. We chalked that up to being potentially unreported Russian imports because the math suggested there should have been a draw on inventory. For January, JODI data shows inventories were up +2.614 mmb MoM, or +84,000 b/d. Looking at the basic components for January, we would have expected a build in inventory closer to +104,000 mb/d MoM or up +3.224 mmb MoM. On the supply side, production was up +12,000 b/d and imports were up +96,000 b/d, while on the draw side refinery intake was up +10,000 b/d, Direct Use +5,000 b/d, but exports -11,000 b/d. So, all together, that should have worked out to +104,000 b/d or 3.224 mb over the month. This suggests there are 0.610 mmb (0.019 mmb/d of unexplained items). There is always some minor unexplained variance, and this was a lot smaller than October's variance. We aren't sure what was the holdback to what should have been a bigger build.

Figure 44: Saudi Arabia Oil Inventories (million barrels)



Source: JODI

Source: JODI, SAF

Oil: No end in sight for Houthis attacking ships and US/UK hitting the Houthis

No end in sight for Houthis

We think the takeaway is a little different this week as the Houthis look to be acting on the Houthi leader promise to expand the attacks with the long range missile landing in Israel. And the actions by both the Houthis and US in the Red Sea is the same as there is no indication for any change in the Houthis attacking and hitting some ships and US navy, and the US (and sometimes the UK) missile attacks at Houthi sites on land. We are surprised that despite all the US missile attacks on the Houthis that the Houthis still seem to have reasonable capabilities. Rather the Houthis keep escalating and threatening more escalation and broadening of their attacks. And the US is not giving any indication they will stop their return attacks.

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Houthis Leader update on total attacks

The Houthis Leader Friday speech included his update, as of Friday, for the total attacks by both sides. We don't know if these numbers are accurate but they are certainly indicative of the increasing numbers of drone/missile attacks on both sides. Saba reported on the Houthis Leader comments. *"He explained that 479 missiles and drones had been launched since the beginning of the operations against the Zionist enemy, indicating that the American enemy, within the framework of its support for the Israeli entity, launched 31 raids and naval bombardments on Yemen this week. He said, "The total number of raids and naval bombardments carried out by the American-British in support of the Israeli enemy against our country reached 407, and despite the American's use of its capabilities and advanced weapons, it is a failure and is recognized for its failure to deter and prevent our country's operations in support of Palestine."*

Oil: 1st time a Houthi missile made it thru Israeli missile defense system to hit Israel

It didn't get much attention when it happened so, on Thursday, we tweeted [LINK](#) "ICYMI. 1st time a Houthi missile wasn't shot down by IDF missile defense systems and hit near Eilat in southern Israel. IDF says no damage/injuries. Reminds if Houthis can hit Israel, their missiles can reach all of Saudi Arabia and UAE. Thx Calcmaps, @manniefabian #OOTT." This was based on the Times of Israel report and not from Saba (Yemen, Houthis news). The Times of Israel reported that a Houthi missile got thru Israeli missile defense system and hit Israel near Eilat in South Israel. They wrote *"The Israel Defense Forces confirmed on Tuesday evening that a "suspicious aerial target" that struck an open area near Eilat early Monday morning was a cruise missile. Yemen's Houthis claimed responsibility for the missile, which crossed into Israeli airspace from the direction of the Red Sea. No damage or injuries were caused, and according to the IDF, the missile was tracked by the Air Force throughout the incident. It marks the first time a Houthi projectile hit Israeli territory. In previous attacks, missiles and drones launched from Yemen struck neighboring countries or were intercepted by air defenses."* We haven't seen any formal reports that confirm or deny the Israeli comment that this cruise missile hit an "open area" near Eilat. Note that the Port of Eliat is being hugely impacted by Red Sea attacks. U.S. News and others similarly reported on Wednesday the port management announced half of the port workers were being let go due to the crash in activity. Our Supplemental Documents package includes the Times of Israel report.

Houthi missile hits Israel

All of Saudi Arabia & UAE are in range if Houthis can hit Eilat, Israel

Our tweet on the Houthi missile getting thru the Israeli defense system also included the reminder that if the Houthis can hit Eilat in Southern Israel, aoo fo Saudi Arabia and the UAE are in range of Houthi missiles. That shouldn't surprise as Houthis, in prior years, did hit long distance in Saudi Arabia and UAE. Our tweet included the below radius map for the long distance Houthi missile at Eilat assuming that the missile was launched a little north of Sana'a.

Figure 45: Approx radius assuming Houthi cruise missile was a little north of Sana'a



Source: Calcmaps

Houthi leader expands target to Indian Ocean & towards Cape of Good Hope

Here is what we wrote in last week's (Mar 17, 2024) Energy Tidbits memo. *"If there is one thing that is clear from the US/UK attacks on the Houthis, it's that the Houthis aren't going away. Rather, they keep warning the US that they are expanding their attack areas. On Friday morning, we tweeted [\[LINK\]](#) 'Houthi leader expanding missile/drone attack region from Red & Arabian Seas to 'even across the Indian Ocean and from South Africa towards the Good Hope Road'. Also stepping up criticism of Arab regimes not stepping up to help Gaza. #OOTT.'" The Houthis leaders made his normal Thursday night speech and the new disclosure this week was how he said the Houthis were expanding their targets to the Indian Ocean and down to the Cape of Good Hope. Saba reported on the Houthi leader's speech and wrote "He revealed the serious intention to continue expanding the scope of military operations to areas and locations that the enemy never expected. Al-Sayeed added, "We are moving, with Allah grace to prevent the crossing of ships linked to the Israeli enemy, even across the Indian Ocean and from South Africa towards the Good Hope Road." Our Supplemental Documents package includes the Saba report."*

01/28/24: Houthis reminded can hit Red, Arabian & Mediterranean Seas

When we think about the Houthi leader warning on a surprise for the last couple weeks, we couldn't help remember the Houthi warning from 7 weeks ago that they can hit the Red, Arabian and Mediterranean Seas. Here is what we wrote in our Jan 28, 2024 Energy Tidbits memo. *"As of our 7am MT news cut off, we look back at the week in the ongoing Red Sea crisis and highlight three of the weekly events in the back and forth US/UK missile attacks and Houthi drone/missile attacks. (i) Houthis hit a UK products tanker. On Friday, the Houthis hit a UK registered products tanker, Marlin Luanda, with a missile offshore southern Yemen. The tanker was reportedly carrying products for Trafigura. The tanker caught fire and it took about a day to get the fire out. This was the first successful missile attack and fire on an oil or petroleum products tanker. (ii) Maersk tried again but this time specifically in a fleet of 20 US-flagged ships accompanied by USS Gravely. But the Houthis launched >3 missiles at two of the Maersk container ships around the Bab el Mandeb. And it forced the*

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Houthis to stop the transit. (iii) Houthis say they “are still keen on peace”. No one knows exactly why now but one of the big unknowns has been how much the Houthis attack and defense capability has been hit by the US/UK missile attacks. But it jumped out at us that this was what we have seen is the first mention of the Houthis saying they are keen for peace. Rather, the Houthis have been saying that the Israel has to stop the attacks on Gaza for them to consider stopping their attacks on Israel linked ships. It just seemed like a different offer from the Houthis. And any time we see something different, it catches our eye. We don’t know if anyone knows the Houthi mindset but we highlight this because a patch to peace would reverse avoiding Red Sea and risk to another oil tanker being hit. Earlier this morning, we tweeted [\[LINK\]](#) ““We are still keen on peace with the least amount of escalation possible” Houthis FM after reminding “we can sink ships & battleships [from any point on the Yemeni mainland to any point in the Red, Arabian, & Mediterranean Seas],” Houthis haven’t gone away but being hurt by US. #OOTT.” Yemen media reported [\[LINK\]](#) “Yemen: Deputy Foreign Minister, Hussein Al-Ezzi, affirmed that Sana’a is capable of sinking enemy ships at any point across the Red, Arabian, and Mediterranean Seas. “By the power of God, we can sink ships and battleships [from any point on the Yemeni mainland to any point in the Red, Arabian, and Mediterranean Seas],” Al-Ezzi wrote in a post on X on Saturday. “But we leave that for another time,” he, however, added, noting, “We are still keen on peace with the least amount of escalation possible.”

Oil: Maersk to continue avoiding Red Sea, to keep sailing via Cape of Good Hope

No one should have been surprised to see the Maersk Friday announcement that it would continue avoid the Red Sea. On Friday night, we tweeted [\[LINK\]](#) “*Maersk to continue to avoid Red Sea & sail via the Cape of Good Hope.* 📌 03/22 update also reminds “*Network changes are complex and take time to implement and we believe we should only implement such changes when they can be sustained over a longer period of time*”. #OOTT.” Our tweet included the Maersk Mar 22 advisory [\[LINK\]](#). The key sentences from the release were straightforward but we also highlighted their reminder it takes time to implement any changes. The key sentences in the advisory were “*Regretfully, both our internal analysis, as well as insight we received from external sources, still indicates that the risk level in the region remains elevated. We have seen attacks on commercial vessels increase in numbers, including the tragic attack on the vessel True Confidence, which resulted in the death of three crew members, and the sinking of the vessel Rubymar, which is posing a serious environmental risk. These incidents unfortunately highlight the lethal effectiveness of missiles currently used by Houthi attackers and are one of the reasons for the elevated security risk we have in place at the moment. At Maersk, we are aware that some other shipping lines have continued sailing through the Red Sea despite security risks or have announced their plans to resume sailing. We respect the right of each carrier to make such decisions individually. At the same time, we continue with our own assessment that current situation does not allow us to make a similar decision and with thus still believe that sailing via the Cape of Good Hope and around Africa is the most reasonable solution at the moment and the one that currently allows the best supply chain stability. Network changes are complex and take time to implement and we believe we should only implement such changes when they can be sustained over a longer period of time. We continue to believe it is the only way*

Maersk to keep avoiding Red Sea

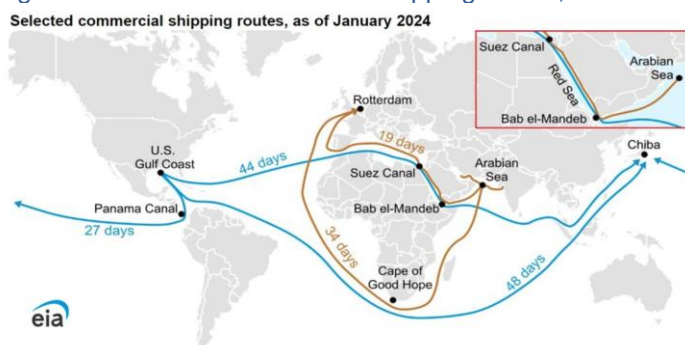
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to avoid further disruption under the current circumstances.” Our Supplemental Documents package includes the full Maersk advisory.

Added oil tanker days from avoiding Suez Canal and Panama Canal

Our Maersk tweet highlighted Maersk’s warning that “network changes are complex and take time to implement and we believe we should only implement such changes when they can be sustained over a longer period of time.” No one knows how much longer shipping will avoid the Red Sea but it is hard to see logistics allowing a return for at least a few months. Here is what we wrote in our Feb 4, 2024 Energy Tidbits memo. “We always love a good map. On Friday, we tweeted [\[LINK\]](#) “Great map courtesy of @EIAgov Josh Eiermann. Shows relative tanker travel times from US Gulf Coast to China. Via Panama Canal (27 days) Suez Canal (44 days) Cape of Good Hope (48 days) #OOTT.” We included the below EIA map, which shows a lot more than just tanker times from US Gulf Coast to China. It also shows the comparative times Rotterdam, Gulf Coast, Arabian Sea and China. For example, it notes the time from the Arabian Sea to Rotterdam is 19 days via the Suez Canal but 34 days via the Cape of Good Hope. On Wednesday, the EIA posted its blog “Red Sea attacks increase shipping times and freight rates” [\[LINK\]](#). Our tweet included the below EIA map. Note the EIA “voyage time is calculated for laden Suezmax tankers traveling at 14 knots without extended chokepoint delays”. Our Supplemental Documents package includes the EIA blog.”

Figure 46: Selected commercial shipping routes, as of January 2024



Source: EIA

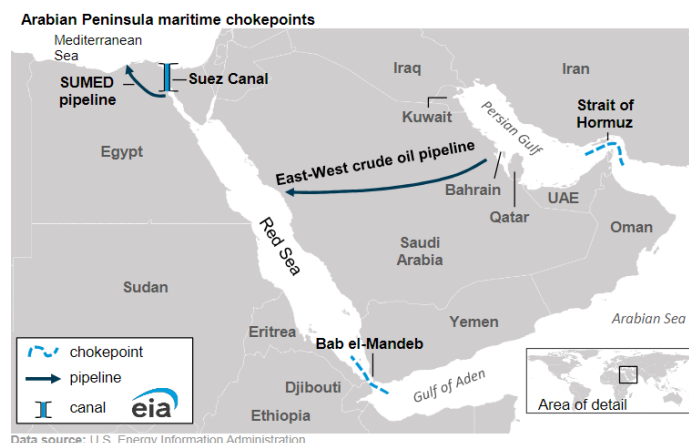
EIA estimates 8.8 mmb/d & 4.1 bcf/d thru Bab el Mandeb/Red Sea chokepoint

Here is what we wrote in our Dec 10, 2023 Energy Tidbits memo. “For the past few years and over the past couple months in particular, we have referenced the EIA’s Aug 27, 2019 brief “The Bab el-Mandeb Strait is a strategic route for oil and natural gas shipments”, which highlighted the volume of oil, petroleum products and LNG that goes thru the Red Sea and Bab el Mandeb every day. The EIA then wrote “In 2018, an estimated 6.2 million barrels per day (b/d) of crude oil, condensate, and refined petroleum products flowed through the Bab el-Mandeb Strait toward Europe, the United States, and Asia, an increase from 5.1 million b/d in 2014.” On Monday, the EIA updated the same data in a blog titled “Red Sea chokepoints are critical for

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international oil and natural gas flows” [\[LINK\]](#). The volumes thru the Bab el Mandeb and Red Sea are a lot higher. The EIA’s updated data for H1/23 estimates the volume was now up to 8.8 mmb/d and 4.1 bcf/d of LNG. Our Supplemental Documents package includes the EIA blog.”

Figure 47: Bab el-Mandeb Strait, a world oil chokepoint



Data source: U.S. Energy Information Administration
Source: EIA

Figure 48: Bab el-Mandeb Strait, a world oil chokepoint

Volume of crude oil, condensate, and petroleum products transported through the Suez Canal, SUMED pipeline, and Bab el-Mandeb Strait (2018–1H23)

	2018	2019	2020	2021	2022	1H23
Total oil flows through Suez Canal and SUMED pipeline	6.4	6.2	5.3	5.1	7.2	9.2
crude oil and condensate	3.4	3.1	2.6	2.2	3.6	4.9
petroleum products	3.0	3.1	2.6	2.9	3.6	4.3
LNG flows through Suez Canal (billion cubic feet per day)	3.3	4.1	3.7	4.5	4.5	4.1
Total oil flows through Bab el-Mandeb Strait	6.1	5.9	5.0	4.9	7.1	8.8
crude oil and condensate	3.0	2.7	2.2	1.9	3.3	4.5
petroleum products	3.1	3.2	2.8	3.1	3.8	4.4
LNG flows through Bab el-Mandeb Strait (billion cubic feet per day)	3.1	3.9	3.7	4.5	4.5	4.1

Data source: U.S. Energy Information Administration analysis based on Vortexa tanker tracking
Note: 1 NG=liquefied natural gas. 1H23=first half of 2023

Source: EIA

Oil: Looks like Iran oil to China continues to be rebranded as Malaysia oil

It looks like Iran oil continues to be rebranded as Malaysia oil and exported to China. On Wednesday, we tweeted [\[LINK\]](#) “China #Oil imports for Feb. 89 kbd from VEN, 1st imports since Sept 2019. 2,300 kbd from RUS vs 2,180 kbd in Jan. Zero imports from Iran. BUT likely rebranded as Malaysia as 1,190 kbd in Feb vs Malaysia total prod of 600 kbd. Thx @business John Liu, @sarahchen #OOTT.” Bloomberg reported on China oil imports by country. China oil imports from Russia were 2.30 mmb/d in Feb up MoM vs 2.18 mmb/d in Jan. China data said China had zero oil imports from Iran were zero in Feb but 1.190 b/d imports from Malaysia. Our tweet included OPEC Monthly Oil Market Report March 2024 table that notes Malaysia oil production is 0.6 mmb/d. This isn’t the first time this has

Iran barrels being rebranded

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happened and our comments are the same – it looks like Iran oil is being rebranded as Malaysia oil. Our Supplemental Documents package includes the Bloomberg report.

Oil: Iraq says will reduce oil exports to compensate for Jan/Feb over production

On Monday, we tweeted [\[LINK\]](#) “Iraq to reduced #Oil exports to 3.3 mmb/d “during the coming months to compensate for any increase recorded in January and February.” thx @DLKhraiche #OOTT #OPEC.” Iraq had previously indicated it exported an average of 4.43 mmb/d in Feb, which means this would be a cut of 130,000 b/d from Feb exports levels.

Iraq to cut 130,000 b/d from exports

Oil: Kurdistan oil pipeline exports via Turkey have now been shut in for 1 year

Earlier this morning, we tweeted [\[LINK\]](#) “Still no sign Iraq govt is showing any real desire to resume Kurdistan #Oil that was shut in 03/25/23. @apikur_oil “To date, neither APIKUR nor its members have seen any proposal from the Gol or KRG that would lead to a resumption of exports.” #OOTT.” Tomorrow marks the 1-year anniversary for the halting of Kurdistan oil pipeline exports via Turkey. Yesterday, AKIPUR (the industry oil industry) posted an update on the anniversary [\[LINK\]](#) and the update is unchanged – there is no visibility to a deal. AKIPUR wrote “The Iraq-Türkiye pipeline (ITP) has now been closed for one year • The ITP closure impacts International Oil Companies (IOCs) in the Kurdistan Region of Iraq (KRI), blocking 450,000 barrels per day of crude oil exports.” Note the 450,000 bpd includes probably 70,000 b/d of Iraq oil. “To date, neither APIKUR nor its members have seen any proposal from the Gol or KRG that would lead to a resumption of exports. All eight APIKUR member companies remain committed to their contracts with the KRG and have been repeatedly assured by the KRG that the KRG, for its part, is fully committed to these contracts as well.” “APIKUR’s Assessment: The Gol has not taken the required actions to reopen the ITP and enable oil exports from the Kurdistan Region of Iraq, despite Türkiye’s announcement in October 2023 that the pipeline is operational and ready to export oil. APIKUR notes that meetings were held in Baghdad on January 7-9, 2024, between representatives of the Gol, KRG, and IOCs — including representatives of several APIKUR member companies. Despite those meetings and the subsequent press on positive discussions between Gol and KRG, there has been no real progress to reopen the ITP.” Our Supplemental Documents package includes the AKIPUR report.

1 year since Kurdistan oil exports stopped

Oil: Libya oil production stable at ~1.2 mmb/d

On Thursday, the National Oil Corporation of Libya tweeted [\[LINK\]](#) “Crude oil production reached 1,241,000 barrels per day, and condensate production reached 46,000 barrels per day during the past 24 hours.” Other than the recent January protest impact, Libya oil production has been stable at ~1.2 mmb/d for the last several months.

Libya oil stable at 1.2 mmb/d

Oil – Libya NOC sees 1.5 mmb/d by end of 2025, 2 mmb/d in 3 years

We were surprised to see the bullish oil production growth forecasts by the Libya National Oil Corporation Chair Farhat Bengdara, especially his forecast for Libya to reach 2 mmb/d in three years. This seems optimistic especially considerin the NOC’s track record of forecasts. We didn’t see any disclosure on the Libya National Oil Corporation website, Twitter/X, or Facebook on the NOC’s forecast for oi production in 2025 or 2027 so only have the brief Libya Observer report “PM urges transparency, vigilance over oil production increase plan” [\[LINK\]](#). TH brief comment in the Libya Observer was “Prime Minister Abdul Hamid Dbeibah has emphasized the importance of monitoring the plan to increase oil production to achieve

Libya NOC oil growth

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the target of two million barrels within the established timelines.” And For his part, the Chairman of the National Oil Corporation, Farhat Bengdara, confirmed that the production will exceed 1.5 million barrels by the end of 2025 and reach two million within three years. However, he highlighted that ongoing projects require continuous financial flows to achieve the necessary productivity.” Our Supplemental Documents package includes the Libya Observer report. [\[LINK\]](#)

05/19/23: Libya NOC Chair sees production about 1.3 mmb/d by yr-end

Libya oil production didn't get close to 1.3 mmb/d in 2023. Here is what we wrote in our May 21, 2023 Energy Tidbits memo. *“For the past few months, we have been expecting to see some indication from the Libya National Oil Corporation of where they see oil production growth in 2023, especially since we are almost at the end of May. Libya oil production has been steady right around 1.2 mmb/d. On Friday, Bloomberg reported that Libya NOC Chair Farhat Bengdara expects production to reach ~1.3 mmb/d by yr-end 2023 and, with \$17b, could reach 2 mmb/d within five years. We have been expecting a higher 2023 exit production rate given the Feb comments from one of the Libya NOC operating companies (see following item) that production to reach 1.5 mmb/d by yr-end 2023. Bloomberg wrote “Libya is aiming to boost oil production by about 8% by December, a level that would catapult it to the highest in a over a decade. North Africa’s biggest producer should be able to pump about 1.3 million barrels a day by the end of the year, Farhat Bengdara, chairman of the National Oil Company, said in an interview. Avoiding field closures and steps like improving oil workers’ pay already helped boost output by nearly a quarter since January 2022 to 1.2 million barrels a day now, he said. Libya has been dogged by political turmoil ever since the overthrow and killing of leader Moammar Al Qaddafi in 2011, with a political stalemate pitting rival governments and factions against each other.” And “Bengdara said that \$17 billion of investment across 45 projects would allow the National Oil Corp. to raise production to 2 million barrels a day within five years. If sustained, that would far exceed anything achieved during Qaddafi’s rule.”*

02/14/23, Libya’s AGOCO Chair forecast production to hit 1.5 mmb/d in 2023

Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. *“Libya sees low-risk development to go from 1.2 to 1.5 mmb/d in 2023. 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*

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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."

Oil: Does strong China new year mean oil demand growth is going to be strong overall

There was a great food for thought comment from Jamie Ingram (Senior Editor, Middle East Economic Survey) on Monday's Gulf Intelligence daily energy podcast on the strong start to oil demand growth in China in 2024. It's true that basically everybody is looking thru any strong oil demand growth in China during Jan/Feb as being temporary blip. Ingram simply said maybe it isn't a blip but its indicative of the fact that China oil demand growth is going to be strong overall. On Monday, we tweeted [LINK](#) *"Well, hang on, maybe the Lunar New Year being strong is actually indicative of the fact that oil demand growth in China is going to be strong overall."* @Jamie_Ingram on IEA being relatively bearish on China despite strong signals from Lunar New Year. #OOTT @gulf_intel." We made a transcript of Ingram's comments and he said *"look at China. The IEA has been talking, interestingly, about how they still are relatively bearish on the outlook for demand growth in China despite strong signals coming out of the Lunar New Year. Well hang on, maybe the Lunar New Year being strong is actually indicative of the fact that oil demand growth in China is going to be strong overall."*

Will China oil demand be strong overall?

Strong China Jan/Feb apparent oil demand & record oil processing

Our Jamie Ingram tweet was the first tweet and there was a 2nd linked tweet [LINK](#) *"Positive Jan/Feb China #Oil indicators posted today. "China's Jan-Feb. Apparent Oil Demand Rises 6.07% Y/y" "China Starts Year With Record Oil Processing on Holiday Demand". thx @business John Liu, @sarahchen Kevin Varley #OOTT"* that included two short Bloomberg reports that reinforced Ingram's comment that China oil demand has been strong in Jan/Feb. (i) Apparent oil demand +6.07% YoY. Bloomberg reported *"China's apparent oil demand rose 6.07% in January-February from a year earlier, to 14.357m b/d according to data compiled by Bloomberg."* (ii) Record oil processing. Bloomberg reported *"China processed a record amount of crude at the start of the year as refiners ramped up operations to meet holiday demand. The volume of oil processed in January and February was 118.76 million tons, an all time high and 3% more than the same period last year, government data released on Monday show. That's equivalent to 14.51 million barrels a day, according to Bloomberg calculations."*

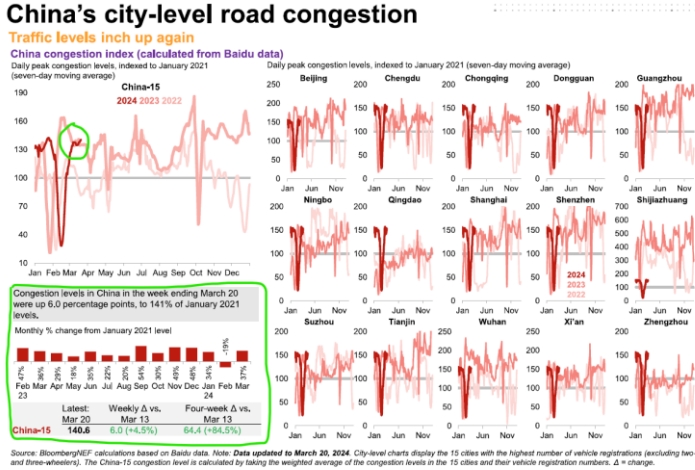
Oil: Baidu China city-level road congestion up WoW

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly March 21 report, which includes the Baidu city-level road congestion for the week ended March 20. Traffic levels normalized a couple of weeks ago from Chinese new year, and this week there was a +4.5% WoW increase in congestion levels across select Chinese cities. Baidu city-level road congestion was +60bps WoW to 140.6% of Jan 2021 levels. Below is the BloombergNEF key graph.

China city-level traffic congestion

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Figure 49: China city-level road congestion for the week ended Mar 20



Source: BloombergNEF

Oil: Long-haul business/high-end travel to China only seeing gradual pickup

There was a good clear commentary from Clement Kwok (The Hong Kong & Shanghai Hotels CEO) that long-haul business and high-end travel was still not yet back. Kwok was on BloombergTV and was referring to long-haul visitors to their Peninsula hotels in Beijing, Hong Kong and Shanghai. Peninsula hotels are luxury hotels. On Tuesday night, we tweeted [\[LINK\]](#) "we need more" long-haul travelers to Peninsula hotels in Beijing, Hong Kong & Shanghai says @HSH_HongKong CEO Kwok to @DavidInglesTV. "We are seeing a gradual pickup and, as I said, we are seeing a bit more long-haul business coming back. But we need more. We need more." #OOTT." Our tweet included the transcript we made of Kwok's comments with Bloomberg's David Ingles. Items in *italics* are SAF Group created transcript. Ingles "what are future bookings looking like for the Hong Kong property?" Kwok "We are seeing a gradual pickup and, as I said, we are seeing a bit more long-haul business coming back. But we need more. We need more." Ingles "How much growth do you see, Beijing and Shanghai, those two specific properties moving forward, this year?" Kwok "Well, I think in terms of long-haul travel, the same comment applies to Hong Kong, Beijing, and Shanghai. Beijing and Shanghai however, as you would expect, we are seeing the development of a more affluent domestic market as well. You will see that, in the US, a lot of the customers come from the US. And in China you are seeing, with the growth of affluence in China, that more customers come from within China as well. So we are seeing growth in all of those places. Difficult to put a percentage on it David because it is difficult to predict business a few months out." Ingles "When are you able to reach pre-Covid levels if all things go to plan? Let's put it that way. What are your assumptions?" Kwok "Well, I think for the group as a whole, I'm really hoping to exceed pre-Covid by the end of the coming year. But, of course we are always ambitious and we work very hard to try to achieve that". Note Kwok was careful to say should be back to pre-Covid at the end of this year "for the group as a whole" ie. he did not say he expects long-haul visitors to the Peninsula hotels in Beijing, Hong Kong and Shanghai would be back to pre-Covid.

Peninsula Hotels

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Oil: Chinese high income but not wealthy consumers pull back on Gucci purchases

It's far from a perfect indicator, but we thought Gucci's disappointing sales in China were a good indicator that China's higher income, but not necessarily wealthy consumers are feeling the pinch. On Tuesday, Bloomberg and others reported on Kering (owner of Gucci and other brands) warned that Q1/24 sales are expected down 10% driven by lower Gucci sales, and they highlighted the steeper sales drop in Gucci in the Asia-Pacific region expected to be down almost 20% YoY. So a big miss at Gucci. We say not wealthy to refer to higher income that may not have any significant accumulated wealth. Gucci is a luxury brand but we don't think people consider the premium luxury brand like Brunello Cuchinelli, Chanel and Hermes. And the other factor that Bloomberg's Jonathan Ferro also drew the distinction between Gucci being "*Loud Luxury*" vs Brunello being "*Quiet Luxury*". Putting the loud vs quiet aside, we look at the price differential as being the key factor. As Ferro put "people who can afford Brunello" know that Brunello's prices are probably close to twice as expensive. So people who buy Brunello have to be those with more than just a higher income, which is why we look at the Gucci sales as being representative of a higher income, but not necessarily wealthy, China consumers still feeling the pinch. On Wed we tweeted [LINK](#) "*China consumer. Great line on Gucci China sales drop from @FerroTV @lisaabramowicz1. JF "They're [Gucci] trying to move from Loud Luxury to Quiet Luxury. Good Luck". LA "Are they really going to migrate to what someone else might wear" JF "Brunello. Something like that. People who can afford Brunello". But reinforces China economy picture. Higher income but not wealthy China consumer is still on the sidelines. #OOTT."*

Gucci sales hit in China**Brunello Cuchinelli says sales performing well in China**

The reason for our tweet is that in a complete opposite to Gucci, Brunello Cuchinelli reinforced that sales in China were performing very well. As Bloomberg's Jonathan Ferro said for people who can afford Brunello as it is pricey relative to other luxury brands, which means that the wealthy in China, at least the Brunello buyers, aren't slowing down. Our Gucci tweet also had a part 2 tweet [LINK](#) "*Wealthy China consumer not feeling the pinch, still stepping up for very high price Brunello. Brunello Q4/23 call on 03/14/24. "Asia is performing very well across its geographies, from China to Korea to Japan, very consistently over time". #OOTT."* Brunello Cuchinelli had its Q4 call on Mar 14 and our tweet included excerpts from the Q4 call transcript Brunello said. "*Let's look at them individually. Asia is performing very well across its geographies, from China to Korea to Japan, very consistently over time."* There was more, all along the line that China is going well. Our Supplemental Documents package includes excerpts from the Brunello Q4 call.

Bad start to China declaring 2024 as the "year of promoting consumption"

The Gucci sales is another reminder that the Chinese consumer is not yet back. As a reminder China's priority in 2024 is on the consumer. Here is what we wrote in our Jan 28, 2024 Energy Tidbits memo. "*The Chinese consumer continues to sit on the sidelines. This is the lunar "Year of the Dragon" but, two weeks ago, China's commerce ministry tried to rally Chinese to spend more in 2024. Our Energy Tidbits memos regularly highlight how Chinese households continue to increase savings as opposed to starting to accelerate spending. On Monday, we tweeted [LINK](#) "Will Chinese get back to spending instead of just saving? 01/26/24, China commerce ministry "declared 2024 the "year of promoting consumption" as it stressed the need*

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to revitalize demand .. report @JDMayger @yujingliu_ @EngleTV. If so, should add support to #Oil in 2024. #OOTT.” Bloomberg wrote “China’s Ministry of Commerce declared 2024 the “year of promoting consumption” as it stressed the need to revitalize demand and attract more investment in the world’s second-largest economy.’ Our tweet included the below Bloomberg chart from Jan 29 night on China increasing household savings.”

Figure 50: China Households add \$1.7 trillion 2023



Source: Bloomberg

China 2 sessions highlighted need to improve consumption

Here is what we wrote in our Mar 10, 2024 Energy Tidbits memo. “Another of the first headlines being reported by Xinhua (China state media) on the start of the 2 sessions was on need to improve consumption. That should not have surprised anyone considering, as noted above, China’s commerce department had declared 2024 as the “year of promoting consumption”. On Monday night, we tweeted [LINK](#) “When will Chinese start to start spending their 🍀 big savings? Today “to improve the consumption environment, China will launch a year-long program to stimulate consumption” Xinhua 01/26: Commerce ministry declared 2024 “year of promoting consumption”. #OOTT.” Xinhua’s report “China to expand domestic demand” [LINK](#) wrote “China will promote steady growth in consumption spending, and launch policies to promote digital, environmentally-friendly, and health-related consumption. The country will also boost spending on intelligent connected new-energy vehicles, electronic products, and other big-ticket items, it said. To improve the consumption environment, China will launch a year-long program to stimulate consumption, it said.”

Oil: Vitol, not building global oil stocks in key pricing centers = more backwardation

There was a straightforward comment from Vitol’s Kieran Gallagher (Managing Director for Vitol Bahrain E.C.) on how global oil stocks in key pricing centers aren’t really building and that means more backwardated oil prices. Gallagher was speaking on the tightening oil market and highlighted how onshore inventories aren’t increasing in key oil pricing regions. Gallagher was speaking on the Gulf Intelligence Daily Energy Markets podcast on Thurs [LINK](#) hosted by Sean Evers (Founder and Managing Partner). On Thursday, we tweeted [LINK](#) “OPEC+ cuts are working. “means we’re not really building [Oil stocks} in the pricing centers. And when we’re not really building anything in the pricing centers, the market become more backwardated” @vitolnews Kieran Gallagher to @sean_evers #OOTT.” Our tweet included a transcript we made of his comments. Items in “*italics*” are SAF Group

Not building
global oil stocks

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created. At 5:10 min mark, Gallagher *“What I would say is that the fundamentals have a got a touch tighter. We’re seeing continuing attacks on Russian refineries. We’re seeing the latest on the local refinery took out another 150 kbd. We’re seeing supportive transport fuels market. We’re seeing a lot more oil on water being rerouted around the Cape. All of these things taken together, along with the geopolitical risk, means we’re not really building in the pricing centers. And when we’re not really building anything in the pricing centers, the market becomes more backwardated”*. Evers *“What does that mean for clarification, building in the pricing centers for the non-initiated”*. Gallagher *“We’re not building any stocks really. And that’s being a factor. We are seeing a growth in oil on water but on land stocks, we’re not really seeing that growth.”*

Oil: Vortexa crude oil floating storage est 66.24 mmb at Mar 22, -4.93 mmb WoW

We are referencing the Vortexa 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 Mar 16 at 9am MT. (i) Yesterday, we tweeted [\[LINK\]](#) *“#Oil floating storage 66.24 mmb Mar 22. Last 7 wks ave 71 mmb. Floating normalizing at much lower level. Refiners/tankers have worked in longer tanker trips = lower floating storage as OPEC keeps cuts thru Q2. Thx @vortexa @business #OOTT.”* (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Mar 22 at 66.24 mmb, which is -4.93 mmb WoW vs revised up Mar 15 of 71.17 mmb. Note Mar 15 was revised +1.89 mmb vs 69.28 mmb originally posted at 9am on Mar 16. (iii) It seems like oil floating storage/longer tanker travel has mostly sorted out to a new normal. It’s been two months for refineries and tankers to work thru the longer tanker trips into deliveries/schedules, which seemed to return oil to storage that was used to fill in as deliveries took longer. If the oil delivery system has now adapted to the longer tanker travel, it makes sense that a world of longer tanker travel is likely to have floating storage at lower (ie. <80 mmb) levels. (iv) Revisions. The Mar 15 and 8 weeks were revised up ~2 mmb/d but then all other weeks were revised down >2 mmb/d. We believe the return of revisions to smaller ranges is likely due to likely due to the normalization of the forced longer than originally expected tanker travel voyages. Prior to the normalization, floating storage was needed to fill the gap for the longer tanker voyages. Now, it looks like we are seeing the longer tanker travel times increasingly worked into refinery delivery planning and schedules. Here are the revisions compared to the estimates originally posted on Bloomberg at 9am MT on Mar 16. Mar 15 revised +1.89 mmb. Mar 8 revised +2.42 mmb. Mar 1 revised -2.13 mmb. Feb 23 revised -3.80 mmb. Feb 16 revised -2.42 mmb. Feb 9 revised -2.09 mmb. Feb 2 revised -3.608 mmb mmb. (v) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 71.04 mmb vs last week’s then seven-week average of 73.28 mmb. The big decrease is due to the mostly downward revisions. (vi) Also remember Vortexa revises these weekly storage estimates on a regular basis. For example, when most report on the Vortexa data on Monday morning, they will be reporting on different estimates. 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. Normally we download the Vortexa data as of Saturday mornings around 9am MT. (vii) Note the below graph goes back to Jan 1, 2020 to show the run up to Covid and then how Covid started to impact Covid in March/April 2020. (viii) Mar 22 estimate of 66.24 mmb is -63.56 mmb vs the recent June 23,

Vortexa floating storage

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2023 high of 129.80 mmb. Recall Saudi Arabia stepped in on July 1, 2023 for additional cuts. (ix) Mar 22 estimate of 66.24 mmb is -38.93 mmb YoY vs Mar 24, 2023 of 105.17 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Mar 23, 9am MT Mar 16, and 9am MT Mar 9.

Figure 51: Vortexa Floating Storage Jan 1, 2000 – Mar 22, 2024, posted Mar 23 at 9am MT



Source: Bloomberg, Vortexa

Figure 52: Vortexa Estimates Posted 9am MT on Mar 23, Mar 16, and Mar 9

Posted Mar 23, 9am MT		Mar 16, 9am MT		Mar 9, 9am MT	
FZWWFST	VTXA Inde	FZWWFST	VTXA Inde	FZWWFST	VTXA Inde
01/01/2020	03/22/2024	03/15/2023	03/15/2024	01/01/2020	03/08/2024
ID 3D 1M 6M YTD 1Y 5Y	ID 3D 1M 6M YTD 1Y 5Y	ID 3D 1M 6M YTD 1Y 5Y	ID 3D 1M 6M YTD 1Y 5Y	ID 3D 1M 6M YTD 1Y 5Y	ID 3D 1M 6M YTD 1Y 5Y
Date	Last Px	Date	Last Px	Date	Last Px
Fr 03/22/2024	66242	Fr 03/15/2024	69277	Fr 03/08/2024	70085
Fr 03/15/2024	71169	Fr 03/08/2024	75507	Fr 03/01/2024	75346
Fr 03/08/2024	77934	Fr 03/01/2024	75289	Fr 02/23/2024	65352
Fr 03/01/2024	73160	Fr 02/23/2024	65448	Fr 02/16/2024	70467
Fr 02/23/2024	61646	Fr 02/16/2024	68291	Fr 02/09/2024	85938
Fr 02/16/2024	65869	Fr 02/09/2024	83379	Fr 02/02/2024	78165
Fr 02/09/2024	81294	Fr 02/02/2024	75792	Fr 01/26/2024	73122
Fr 02/02/2024	72191	Fr 01/26/2024	70094	Fr 01/19/2024	84875
Fr 01/26/2024	70168	Fr 01/19/2024	80951	Fr 01/12/2024	74553
Fr 01/19/2024	80331	Fr 01/12/2024	72848	Fr 01/05/2024	80273
Fr 01/12/2024	74127	Fr 01/05/2024	76419	Fr 12/29/2023	80319

Source: Bloomberg, Vortexa

Oil: Vortexa’s Oct 20, 2023 still below 60 mmb a 58.75 mmb, a post Covid low

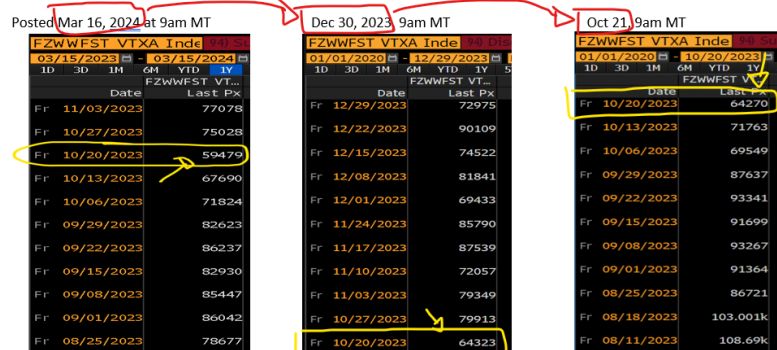
Last week’s (Mar 17, 2024) Energy Tidbits memo reminded on how Vortexa will make revisions going back months to their floating storage. We noted how sometime over the prior last three weeks, Vortexa revised Oct 20, 2023 down to 59.48 mmb (as of Mar 16), which was the only week floating storage was below 60 mmb. Below is the table we included in last week’s (Mar 17, 2024) Energy Tidbits memo showing this revision down to 59.48 mmb. It’s too bad Oct 20, 2023 didn’t get revised below 60 mmb until four months later as it would have attracted some headlines. Vortexa’s update made a small downward revision to Oct 20, 2023 to 58.75 mmb. With Mar 22 at 66.24 mmb, that bring the total number of weeks below 70 mmb to nine weeks since Covid. Mar 22 at 66.24 mmb. Feb 23 at 66.65 mmb. Feb 16 at 65.87 mmb. Dec 1/23 at 69.91 mmb. Nov 10/23 at 69.18 mmb. Oct 20/23 at 58.75 mmb. Oct 13/23 at 68.41 mmb. Oct 6/23 at 69.41 mmb. Jan14/22 at 68.,34 mmb.

Vortexa Oct 20/23 at 58.75 mmb

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Figure 53: Vortexa crude oil floating storage as posted Mar 16/24, Dec 30/23 and Oct 21/23

Vortexa Crude Oil Floating Storage Estimate for Oct 20, 2023: Posted Mar 16, 2024 vs Dec 30, 2023 vs Oct 21, 2023



Source: Bloomberg, Vortexa
 Prepared by SAF Group: <https://safgroup.ca/news-insights/>
 Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Bloomberg also posts the Vortexa crude oil floating storage in 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. (i) As noted above, last week’s Mar 15, in total, was revised +1.89 mmb. Asia was revised -2.77 mmb and Other was revised -2.22 mmb vs the estimates posted as of 9am Mar 16 for Mar 15. (ii) As noted above, Mar 22 of 66.24 mmb was -4.93 mmb WoW vs revised up Mar 15 of 71.17 mmb. The major WoW changes by region were Other -4.16 mmb WoW and Asia -2.97 mmb WoW. (iii) Mar 22 at 66.24 mmb is -63.56 mmb vs the summer June 23, 2023 peak of 129.80 mmb. Recall Saudi Arabia started its voluntary 1 mmb/d production cuts on July 1, 2023. The major changes by region vs the summer June 23 peak are Asia -43.42 mmb and Other -24.58 mmb. (iv) 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 for Mar 15 that was posted on Bloomberg at 9am MT on Mar 16.

Vortexa floating storage by region

Figure 54: Vortexa crude oil floating by region

Vortexa Crude Oil Floating Storage by Region (mmb)			Original Posted		Recent Peak	
Region	Mar 22/24	Mar 15/24	WoW	Mar 15/24	Jun 23/23	Mar 22 vs Jun 23
Asia	28.67	31.64	-2.97	34.41	72.09	-43.42
Europe	6.47	7.17	-0.70	6.20	6.21	0.26
Middle East	10.08	9.07	1.01	8.00	6.76	3.32
West Africa	7.41	6.12	1.29	6.07	7.62	-0.21
US Gulf Coast	2.07	1.47	0.60	1.12	1.00	1.07
Other	11.54	15.70	-4.16	13.48	36.12	-24.58
Global Total	66.24	71.17	-4.93	69.28	129.80	-63.56

Vortexa crude oil floating storage posted on Bloomberg 9am MT on Mar 23
 Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

Oil: Vitol says global jet fuel consumption reached pre-Covid level, going higher in Q2

On Thursday, we tweeted “Bullish for near term #Oil. “we’re seeing jet fuel now back to averaging around 6.9 million barrels per day over the last 4-weeks, which is back to 2019 levels” “we see growth in Q2, which brings it up to record highs” @vitolnews Kieran Gallagher to @sean_evers #OOTT.” Gallagher is Managing Director for Vitol Bahrain E.C.

Global jet fuel back to pre-Covid

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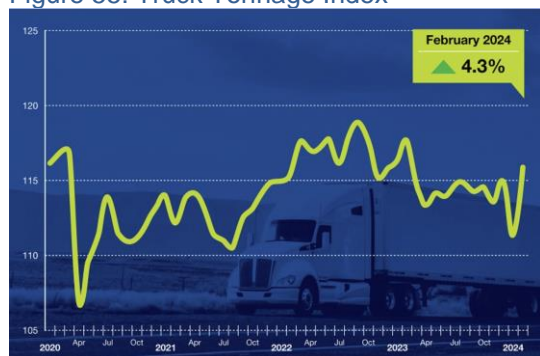
and was speaking on the Gulf Intelligence Daily Energy Markets podcast on Thurs [\[LINK\]](#) hosted . His comments on jet fuel were straightforward – global jet fuel consumption is back to pre-Covid levels and will be hitting new record levels in Q2. Our tweet included a transcript we made of his comments. Items in *“italics”* are SAF Group created transcript. At 17:00 min mark, Gallagher *“We’re seeing jet fuel now back to, averaging around 6.9 million barrels per day over the last 4-weeks, which is back at 2019 levels”*. Evers *“which of course is a global number”*. Gallagher *“It’s a global number. And at 6.9, you know we see growth in Q2 which*

Oil: ATA Truck tonnage index in Jan up 4.3% MoM, -1.4% YoY

We look to items like truck tonnage for indicators on the US economy, and the January truck tonnage is indicative of a slowing US economy. Truck tonnage increased 4.3% MoM, but fell -1.4% YoY from February 2023. The American Trucking Association released its seasonally adjusted Truck Tonnage Index for December on Tuesday [\[LINK\]](#). Chief Economist Bob Costello noted *“After a very soft January, due in part to winter storms, truck tonnage snapped back in February...February’s level was the highest in a year, yet the index still contracted from a year earlier, suggesting truck freight remains in a recession.”* Recall the index dropped -3.5% MoM in January last month. Trucking serves as a barometer of the U.S. economy, representing 72.6% of tonnage carried by all modes of domestic freight transportation, including manufactured and retail goods. Trucks hauled 11.46 billion tons of freight in 2022. Motor carriers collected \$940.8 billion, or 80.7% of total revenue earned by all transport modes.

February Truck Tonnage +4.3% MoM

Figure 55: Truck Tonnage Index



Source: ATA

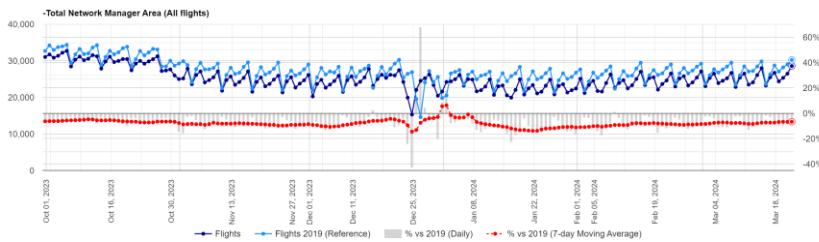
Oil: Europe airports daily traffic 7-day average is -6.7% below pre-Covid levels

Other than over Christmas, European daily traffic at airports continues to be stuck below pre-Covid levels. As of our 7am MT news cut off, the latest Eurocontrol daily traffic at Europe airports shows the 7-day rolling average to the end of Mar 21 is up WoW at -6.7% (was -7.5%) below pre-Covid 2019 levels. Eurocontrol updates this data daily and it is found at [\[LINK\]](#)

Europe airports daily traffic

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Figure 56: Europe Air Traffic: Daily Traffic Variation to end of Mar 21



Source: Eurocontrol

Oil & Natural Gas: Alberta had some much needed snow this week

We have been highlighting the huge lack of precipitation (snowfall) in Alberta this winter. Our concern is that the lack of snowfall is setting up bad wildfire and crops, and also cause water restrictions for the oil and gas sector in regions. One week can't make up for four months of low snowfall, but this week there was a good dump of snow in Alberta and very bit helps. On Tuesday, we tweeted [LINK](#) "Needed snowfall this week in Alberta, especially in key agricultural areas. @weathernetwork See 🗨️ 03/08 tweet, hugely less snow this winter even vs last year lows so every bit of snow helps. #OOTT."

Snow this week in Alberta

Figure 57: Forecast snowfall accumulation Tues night -Thurs [Mar 19-21]



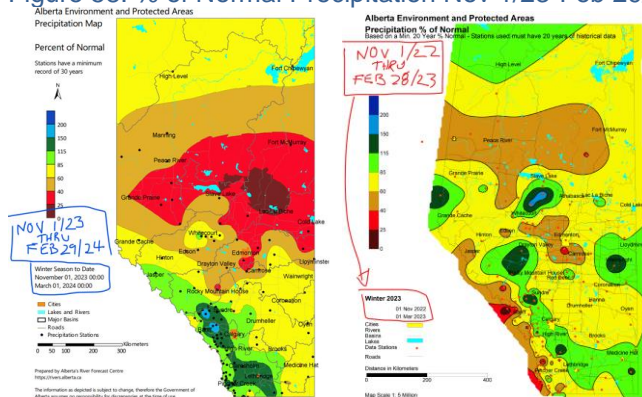
Source: The Weather Network

Way less snowfall this winter than last winter in Alberta

Here was what we wrote in our Mar 10, 2024 Energy Tidbits memo on the winter snowfall. "Our big concern is that there has been significantly less snowfall this winter vs last winter. On Thursday, we tweeted [LINK](#) "ICYMI. Good levels snow/precipitation in southern Alberta in Feb. But Nov 1-Feb 29 is stil well below normal for almost all of Alberta except for along the Foothills. So terrible set up for 2024 wildfire season and agriculture. Need more snow/rain in March! #OOTT." Then on Friday, we tweeted [LINK](#) "Here's why there is increased risk to wildfire season & crops this summer vs last summer. % of normal precipitation is significantly lower this winter vs last winter. Huge amount of red (<40% of normal) and brown (60% of normal) this winter. #OOTT." Our big concern for the very low snowfall across Alberta this winter is that it is even worse than last year and that means an increased risk for wildfire season and also for this year's crops. Below is the comparison of snowfall % of normal this winter vs last winter."

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Figure 58: % of Normal Precipitation Nov 1/23-Feb 29/24 vs Nov 1/22-Feb 28/23



Source: Alberta River Forecast Centre

Energy Transition: “we should abandon the fantasy of phasing out oil & gas” Aramco Saudi Aramco CEO Nasser gave some blunt comments on the fantasy of phasing out oil and natural gas on Monday at CERAWeek. (i) On Monday, we tweeted [LINK](#) ““We should abandon the fantasy of phasing out #Oil & #NatGas and instead invest in them adequately reflecting realistic demand assumptions” @aramco CEO Nasser. See 📌 03/11 tweet, IEA finally admitting world dependence on oil “remains deep rooted” Thx @spencekimball #OOTT.” (ii) We have been highlighting how the key success factors for the energy transition haven’t been working anywhere near aspirations\plans ie. EVs , green hydrogen, sustainable aviation fuel, carbon capture, etc. Nasser didn’t go into details but CNBC wrote ““In the real world, the current transition strategy is visibly failing on most fronts as it collides with five hard realities,” Nasser said during a panel interview at the CERAWeek by S&P Global energy conference in Houston, Texas.” (iii) Nasser also highlighted the simple reality that alternative energy sources haven’t been able to displace fossil fuels. CNBC reported “Nasser said alternative energy sources have been unable to displace hydrocarbons at scale, despite the world investing more than \$9.5 trillion over the past two decades. Wind and solar currently supply less than 4% of the world’s energy, while total electric vehicle penetration is less than 3%, he said. Meanwhile, the share hydrocarbons in the global energy mix has barely fallen in 21st century from 83% to 80%.” (iv) Need realistic demand assumptions for phasing out fossil fuels. This is the point that we have been highlighting for years and especially over the past year for EVs. CNBC wrote “We should abandon the fantasy of phasing out oil and gas and instead invest in them adequately reflecting realistic demand assumptions,” the CEO said to applause from the audience,” (v) Need to know the new technologies are ready and competitive. CNBC wrote “We should abandon the fantasy of phasing out oil and gas and instead invest in them adequately reflecting realistic demand assumptions,” the CEO said to applause from the audience.” (vi) Nasser’s full speech was subsequently posted by Aramco. On Tuesday, we tweeted [LINK](#) “Yes @aramco CEO Nasser is talking his book BUT hard for anyone to argue he is wrong, when he says “the current energy transition strategy is visibly failing on most fronts as it collides with five hard realities”. A great short and sweet speech. See 📌 transcript #OOTT. Our Supplemental Documents package includes the CNBC reporting [LINK](#) and the transcript we made of Nasser’s speech.

Aramco CEO on energy transition

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05/16/21: Kerry, 50% of emissions cuts to come from tech not yet developed

We suspect Aramco CEO Nasser could go on with many other reasons why the energy transition was likely to fail and one of those would be one of our big concerns once Biden and Kerry started their push on implementing the Paris agreement – the “plans” were based on the assumption that new technologies would be discovered to take care of 50% of the emissions reductions in an economic manner. Here is what we wrote in our May 16, 2021 Energy Tidbits memo. *“We recognize that the Energy Transition is going to happen, but we just wish that the politicians would at least warn people that its going to take longer, be bumpy and be more expensive for energy. People have to understand the Energy Transition is not a plan, its an aspiration and governments do not know how it will be accomplished. No one expects them to have a 100% plan, but the reality is that, at best, they have a 50% plan. Could you imagine committing to any project delivery not know how 50% of the project will be accomplished? We say 50% at best because the reality is that politicians tend to overestimate the positive. This is what US Special Presidential Envoy for Climate said a month ago at the Biden global leaders climate summit – 50% of the planned emissions cuts will have to come from technologies not yet developed. Earlier this morning the Guardian reported [\[LINK\]](#) on Kerry’s comments in the UK. After seeing the Guardian report, we tweeted [\[LINK\]](#) “#JohnKerry “I am told by scientists that 50% of the reductions we have to make to get to net zero are going to come from technologies that we don’t yet have. That’s just a reality”. This means other reality is will need #NatGas #Oil for longer. #OTTT” His comments on the reality check and that governments are setting real targets without knowing how it will accomplish is a reality check that the demise of natural gas and oil won’t be as fast as the Energy Transition aspirations.”*

Energy Transition: IEA “journey to net zero emissions is likely to be a bumpy one”

We believe the IEA started a backtrack or a reality check on their energy transition aspirations on Mar 11 and continued that this morning with the IEA Executive Director Fatih Birol posting an op-ed on his LinkedIn and also on the FT. (i) Most will see it as a bit of an indirect rebuttal to the Republicans letter to him this week (see following item) BUT we think it is more of what appears to be an IEA backtracking on their bullish energy transition views like we saw in their blog last week. (ii) It is carefully or craftily drafted blog for what they say and also what they don’t say. We thought the facts in his op-ed were real but they were only half truths. (iii) Early this morning, we tweeted [\[LINK\]](#) *“Good read @fbirol op-ed today. Birol admits “ample evidence that the journey to net zero emissions is likely to be a bumpy one”. Crafty drafting to only tell half the story. “cheaper to build onshore wind and solar power projects than new fossil fuel plants”. Yes but that is capacity and not cost to replace 24/7 MW for MW #NatGas. “as electric cars and heat pumps, that reduce consumers’ exposure to volatile fossil fuel prices” BUT isn’t saying cheaper to own/drive. Also excl offshore wind as cheaper. More in op-ed. Note it’s the 2nd backtrack on energy transition aspirations, follows 📌 03/17 tweet admitting deep-rooted #Oil dependency. No one disagrees the fundamental direction of travel is energy transition. But will take way longer, cost way more and be a bumpy/rocky road. #Oil #NatGas will be needed for longer. #OOTT.”* (iv) Can’t see anyone disagreeing with Birol’s closing statement that govt changes may affect the pace of energy transitions, *“they won’t alter the fundamental direction of travel”*. We don’t see how anyone can disagree with the concept of energy transition to move to cleaner energy and reduce

IEA Birol op-ed today

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emissions and that the world is moving that direction. (v) Birol is saying directly and also by omission what we have said for several years that the energy transition will take way longer, cost way more and be a bumpy/rocky road. He says specifically *“We already have ample evidence that the journey to net zero emissions is likely to be a bumpy one. But the events of recent years — including the turmoil caused by the global energy crisis, the sharp spikes in fossil fuel prices and the impacts of extreme weather — are all reminders of why we need to press ahead. And while changes in governments may well affect the pace of energy transitions — accelerating them in some cases, slowing them in others — they won’t alter the fundamental direction of travel.”* He didn’t say cost more or take longer but a bumpy road would imply that is another unsaid key point. (vi) *“Nowhere is this clearer than in clean energy, where technologies like solar, wind and electric cars are increasingly replacing the need for fossil fuels and reining in emissions”.* Reigning in admissions from solar, wind and EVs suggests he realizes that they won’t have the aspired impact. It’s just not clear by how much. (vii) *“It’s now cheaper to build onshore wind and solar power projects than new fossil fuel plants almost everywhere worldwide.”* Note he specifically excludes offshore wind. And he doesn’t say the concern of many that the solar farm or wind generators capacity are only part of the total cost of incorporating intermittent wind and solar and don’t take into account that the full cycle economics of replacing 24/7 natural gas or coal power and include items like having battery storage, fill in power generation (natural gas) for when the sun doesn’t shine or wind doesn’t blow, transmission, grid upgrades, etc. (viii) *“as electric cars and heat pumps, that reduce consumers’ exposure to volatile fossil fuel prices.”* Obviously EVs reduce the EV owner exposure fossil fuel prices but he isn’t saying EVs are cheaper to own and run. (ix) There are other items in the op-ed. Our Supplemental Documents package includes the Fatih Birol op-ed.

IEA Mar 11 blog on oil security started the backtrack on energy transition

As note above, we see today’s Birol op-ed as the second IEA backtrack on their energy transition aspirations. Last week’s (Mar 17, 2024) Energy Tidbits memo highlighted the IEA’s Mar 11, 2024 blog, a blog that surprised us for its focus on oil security. This blog was overlooked by most people. Here is what we wrote last week. *“It feels like closing the barn door aft the horse bolted. The western governments rely upon the IEA analysis and views to set policies and the IEA’s energy transition views were the key to western leaders putting the world on an irreversible course to Net Zero. We have to believe most people don’t see anything wrong with being on a course to Net Zero. We don’t. Rather our concern has been that the IEA’s overly optimistic view on the energy transition led to unrealistic timing to get there and a set up for decade of energy risk. Back to the barn door, the IEA posted a blog this week that should have been posted seven years ago. And they are setting the stage for changing their view on peak oil demand, which we still believe one of the big oil calls this year as they and others push back their forecasts for how much oil and how quickly EVs will displace oil consumption. On Monday, the IEA posted a blog “A strong focus on oil security will be critical throughout the clean energy transition” [\[LINK\]](#). The IEA has been at the lead on the lead to not worry about oil and natural gas. Rather their concern has been been that there were going to be stranded oil and gas assets because they weren’t needed. So when we see the IEA write this type of blog, it is likely a set up trade for something that is to come in the near term. This is actually a decent blog and should have been written seven years ago before*

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the IEA went all-in on the energy transition without really thinking thru the reality of whether the energy transition could actually work as per aspirations. Or even if it was as easy as everyone was led to believe for oil demand to be decline. Rather this blog at least raises some doubt on the speed of decline in oil consumption by the IEA writing "However, while the world's dependence on oil is lessening, it remains deep-rooted." Imagine if they started with this as an assumption that world dependence on oil remains deep-rooted. So it's a decent blog, just about 7 years too late. Imagine if they had raised the issue of oil security and deep-rooted dependence on oil under the energy transition. Since last April, we have highlighted our view that the IEA's EV displacement of oil was way too optimistic and that was before what we have seen in the past few months on broader pull back in EV sales expectations. But we didn't look at this blog, in its entirety, as being the set up trade. Rather the blog is the carrier for a few words of warning or reminder of the caveats for their bearish call for peak oil demand to happen in the next five years. The key few words are at the end of these sentences "The shift to a clean energy economy is gathering pace, with electric vehicle sales soaring, energy efficiency improving, and other clean energy technologies advancing rapidly. Consequently, a peak in global oil demand is in sight before the end of this decade, based on today's policy settings." Based on today's policy settings will be a key reason why they can pull back on key assumptions such as the speed of EV adoption. Don't forget policy settings isn't just the official policy rules in place, it will also include declared policy intentions. This is a good blog to read even if it is seven years too late. And anyone who reads it will come away with the view that the IEA is worried about oil security. Why would they be worried about oil security based on their oil forecasts? It can only be because they are planning to change their oil forecasts in their upcoming June report Oil 2024 that is their look to oil supply and demand to 2029. It's too bad the IEA had to put in some CYA statements on how they have never lost focus on oil security. The IEA said "However, throughout its existence, the IEA has remained focused on oil security and emergency preparedness. And "The IEA will maintain an unwavering focus on oil security throughout the energy transition." When they have just said, here is the blog that we somehow missed posting seven years ago. Our Supplemental Documents package includes the IEA blog."

IEA is due to update its forecast that EVs to displace ~5.5 mmb/d of oil by 2030

We don't believe the IEA's blogs have anything to do with political pressure. Rather we continue to believe the reason for items like the IEA's Mar 11 blog and the Fatih Birol op-ed today is that the IEA is due to revise its key assumption for peak oil demand – how quickly and how much oil demand is displaced by EVs. Here is what we wrote in our Feb 25, 2024 Energy Tidbits memo. "Macron's timing couldn't be worse for the IEA considering they are to update their amajor assumption for their peak oil demand by 2030 – their call for EVs to displace ~5.5 mmb/d of oil by 2030. On Tuesday, we tweeted [\[LINK\]](#) "Bad timing for Macro to say out loud IEA is "our armed wing of implementing the Paris Agreement". IEA's peak #Oil demand by 2030 depends on its annual Global EVs outlook 📌 says EVs will displace ~5.5 mmb/d of oil by 2030. Will IEA double down or push peak demand back? IEA's global EVs outlook is in April #OOTT." The IEA normally updates its annual Global EVs outlook in April. Last year's outlook included the key conclusion that EVs are to displace

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approx. 5.5 mmb/d by 2030. We believe the IEA will have to make some bold new assumptions to not reduce the amount of oil EVs are to displace by 2030. There is nowhere of significance that isn't pointing to a lesser EVs penetration than assumed a year ago. Plus we have highlighted several times our view of the unrealistic key assumption that every EV sold effectively displaces the miles driven by an ICE ie. it's like every time an EV is bought, it means an ICE doesn't get driven ever again. Absent some bold new assumptions, the IEA has to reduce its forecast for oil displaced by EVs and, if so, it should also push back when the IEA calls peak oil demand. When we say its bad timing for the IEA, it's because of the logical cut to its oil displacement call and Macron's call should see more scrutiny on the IEA's assumptions."

Energy Transition: Finally, Republicans call out IEA credibility & bias

We are a little surprised that it has taken so long for the Republicans to call out the IEA on its bias, its forecast, its purpose, etc. But, on Wednesday, Republicans John Barrasso (Ranking Member, US Senate Committee on Energy and Natural Resources) and Cathy McMorris Rodgers (Chair, U.S. House Committee on Energy and Commerce) made public their Mar 20 letter to IEA Executive Director, Fatih Birol. They raise multiple concerns with the IEA in what they are doing, why they are doing it and how they are doing it. We don't expect the IEA to respond but it is certainly a warning what might be ahead for the IEA if the Republicans can win in Nov. Our concern is that the many will just discount it as a political document and ignore some good questions/relevant points. There are too many items to go thru in detail, but a few of the key headline items were on: (i) The headlines were all on the IEA shifting to a providing information/forecasts that support the push to Net Zero and not an objective view to help energy security decision making. Such as the *"IEA has been undermining energy security by discouraging sufficient investment in energy supplies-specifically, oil, natural gas, and coal"*, *"it has become an "energy transition" cheerleader."* *"By its own admission, the IEA has placed greater emphasis on "build[ing] net-zero emission energy systems to comply with internationally agreed climate goals."* *"Sadly, French President Macron's recent observation that IEA has become the "armed wing for implementing the Paris Agreement" is true".* And many more. (ii) Republicans remind that any bias in forecasts/analysis is used by policymakers for decision making. (iii) Republicans remind that the IEA scenarios are used as base line forecasts. And that the IEA stopped in in the last three years to have a "neutral Current Policies Scenario (CPS), or reference case". *"These developments also call into question your decision to stop issuing a neutral Current Policies Scenario (CPS), or reference case, which is common practice for modeling groups, including EIA and its Annual Energy Outlook. To our knowledge, you have never publicly explained the decision to abandon the CPS. Reference cases are a valuable tool for evaluating energy related policies. The lack of a CPS makes such assessments significantly more difficult."* (iv) And back then, the IEA used to say don't rely on its STEPS scenario as a baseline or reference case but now it says it a reference case. *"Your 2020 WEO specifically warned against taking STEPS "as a baseline or reference case." In 2024, however, the IEA apparently backtracked this position: "STEPS for us is the baseline."* (v) There is much more in the short letter. Our Supplemental Documents package includes the Republicans letter.

Republicans call out IEA

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Macron, IEA is “our armed wing of implementing” Paris agreement

When we saw the Republicans letter, we tweeted [\[LINK\]](#) ““The IEA has become, so to speak, our armed wing of implementing the Paris agreement” Macron. See

👉 02/19/24 tweet. Looks topical in light of @SenJohnBarrasso @cathymcmorris letter to @IEA @fbiorol. [\[LINK\]](#) #OOTT.” The Republicans also referred to Macron’s Feb comments, which is what we put in our tweet. Our Feb 25, 2024 Energy Tidbits memo was titled “Macron Hurts IEA Analysis Credibility “The IEA has become, so to speak, our armed wing of implementing the Paris agreement”. Here is what we wrote in our Feb 25, 2024 Energy Tidbits memo. “Macron, IEA is “our armed wing of implementing” the Paris agreement. We were shocked by France President Macron’s comment on the IEA. On Monday, we tweeted [\[LINK\]](#) “The IEA has become, so to speak, our armed wing of implementing the Paris agreement” Macron. The IEA has no guns, is Macron saying analysis/fcasts are their weapons to implement Paris as opposed to analyzing energy! Saudi Energy Minister Abdulaziz will say I told you so! #OOTT.” Macron made the keynote speech at the IEA Ministerial Meeting in Paris that also celebrated the IEA’s 50th anniversary. We were surprised that Macron made such a direct comment that made it clear the IEA’s focus is on implementing the Paris Agreement on behalf of the western governments that fund the IEA. This was not an accident, rather it looked like a prepared speech Macron read from a teleprompter. So, for some reason, Macron wanted the world to know the IEA is there to the “armed wing” for their western country funders to implement the Paris agreement. And not an agency that provides analysis for their western governments to make the right policy decisions. But, if we take Macron at his words, the IEA’s analysis is there to support policy or provide the impetus for their western government funders to make policy to support the conclusions of the analysis. And to provide the western governments with the rationale for why they make policies for Paris Agreement. It was a major hit to the IEA credibility and we just don’t understand why Macron did it unless he wanted to hurt the IEA’s credibility. Here is the transcript we made of Macron’s comments that was attached to our tweet. Note that we made the transcript from the IEA’s posting of Macron’s speech. The IEA just didn’t include the full Macron quote. At 0:52 min mark, Macron “We are also very proud that since its creation, the Agency has been able to profoundly shift its mandate. From an agency dedicated to managing strategic oil reserves, it has now become a global hub for debate, collective action to meet the challenge of the energy transition. The IEA has become, so to speak, our armed wing of implementing the Paris agreement, given that energy accounts for more than 75% of global greenhouse gas emissions.”

IEA’s prior view on their “analysis”

Here is another item from our Feb 25, 2024 Energy Tidbits memo on another item that no longer is included in the IEA’s annual 5-year oil outlook. “Every fall, the IEA posts their major report Oil and the year ie. Oil 2023, which is their analysis and forecast for the next five years. The last time they included a foreword by Executive Director Birol was in their Oil 2019 report. Here is the last paragraph of his foreword “The IEA’s core mandate has always been energy security. Our mission has expanded over the years and the definition of energy security has also evolved beyond oil to include natural gas and electricity. But oil market analysis remains a central focus of the IEA, which we demonstrate through our vigilant analysis of

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market developments and their consequences. We hope this report contributes to a better understanding of the sector and helps develop policies supporting the longer term transition to a more secure but also a more sustainable energy future.”

Canada uses IEA scenarios as if they are data- based

A number of the Republican concerns on analysis have been included in our prior Energy Tidbits memo. A good example was the Republicans saying “*Press and policymakers routinely draw conclusions from IEA's products, which recommend that investment in new oil and natural gas projects must stop immediately.*” What the IEA didn't say in this paragraph is that this includes using any scenario as a forecast. Here is what we wrote in last week's (Feb 18, 2024) Energy Tidbits memo on how countries like Canada use the IEA works as if it an unbiased analysis and forecast. Last week, we wrote “*We continue to see one of our concerns play out – western leaders use the IEA scenarios as if they are forecasts. And despite these being scenarios of what if's, the western leaders want use these scenarios to support their policies, in this case the push to net zero. And that is why we have warned for several years that the Energy Transition will take way longer, cost way more and be a bumpy/rocky road. The question is do they not read the IEA work or just choose to use it as something it isn't. Either way, the Energy Transition plans aren't based on data but based on what if's. Canada's Energy & Natural Resources Minister, Jonathan Wilkinson, gave a good reminder of this in his interview with Bloomberg on Wednesday morning. Its like the western leaders are using scenarios based on what they are saying is policy to set policy. We tweeted [\[LINK\]](#) “Unfortunately, a big difference between data driven forecast vs a scenario based on stated policies! ca Energy Minister, “when the IEA SAYS that #Oil #NatGas #Coal utilization is gong to peak this decade, that is based on the data that show actually much of this is becoming uneconomic” IEA WEO 2023 peak demand was based on a “Stated Energy Policies Scenario” #OOTT @ManusCranny @daniburgz.” Wilkinson gave the perfect example and it seems like his staff never read the assumptions when IEA Fatih Birol came out in Sept in his call for peak oil, natural gas and coal demand by 2030 that he said would be detailed in IEA big World Energy Outlook 2023 in Oct. Wilkinson said that the IEA call for peak oil, natural gas and coal demand is NOT based on policy. We made a transcript of his comments. At 3:23 am MT, Wilkinson “But I would say that a lot of this is just being driven by straight economics and by the financial markets. Like when the IEA says that oil, gas and coal utilization is going to peak this decade, that is based on the data that shows that actually much of this is becoming uneconomic for a whole range of different reasons”. His staff didn't read the IEA executive director Birol FT op-ed or IEA world energy outlook key findings. Our tweet included the FT Fatih Birol op-ed and the excerpt from IEA World Energy Outlook Oct 2023 that both indicate the call for peak oil, natural gas and coal this decade is based on policy statements coming true. The IEA WEO wrote “The analysis does not present a single view of the future but instead explores different scenarios that reflect current real-world conditions and starting points. The Stated Policies Scenario (STEPS) provides an outlook based on the latest policy settings, including energy, climate and related industrial policies.” And “We are on track to see all fossil fuels peak before 2030. A legacy of the global energy crisis may be to usher in the beginning of the end of the fossil fuel era: the momentum behind clean energy*

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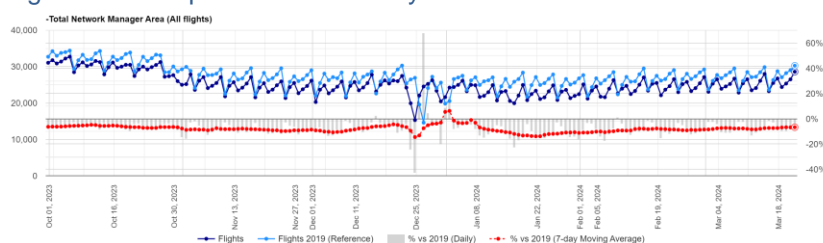
transitions is now sufficient for global demand for coal, oil and natural gas to all reach a high point before 2030 in the STEPS. The share of coal, oil and natural gas in global energy supply – stuck for decades around 80% – starts to edge downwards and reaches 73% in the STEPS by 2030. This is an important shift. However, if demand for these fossil fuels remains at a high level, as has been the case for coal in recent years, and as is the case in the STEPS projections for oil and gas, it is far from enough to reach global climate goals.”

Energy Transition: Industry warns \$1T for infrastructure for heavy/medium E-trucks

The challenge being faced by the energy transition is how to have the aspired growth rates as the range of key success factors moves beyond early adoption and to hard to transition sectors. One hard to transition area is heavy/medium E-trucks. We were reminded of the challenge by the industry sponsored report “Forecasting a Realistic Electricity Infrastructure Buildout for Medium & Heavy-Duty Battery Electric Vehicles.” On Tuesday, we tweeted [\[LINK\]](#) “Here’s why it will take a very long time for US medium & heavy duty E-trucks. ~\$1 trillion just for the required infrastructure including US utilities will need to invest \$370b AHEAD of MDHD adoption to avoid bottlenecks and delays. Diesel trucks are here for longer! #OOTT Thx Roland Berger.” Our tweet included the key points that \$1 trillion for the infrastructure to support e-trucks and that would include \$370 billion that would need to be invested by utilities ahead of the MDHD adoption. We recommend adding the report to reference libraries because the analysis takes you through all the parts of the infrastructure needed to support e-trucks. Our Supplemental Documents package includes the report.

\$1 trillion infrastructure to support e-trucks

Figure 59: Europe Air Traffic: Daily Traffic Variation to end of Mar 21



Source: Roland Berger

Energy Transition: UK plan for heat pumps replacing natural gas boilers is not working

No one should have been surprised to how far behind the UK’s push for heat pumps to replace natural gas boilers for homes is vs target in the UK National Audit Office report “Decarbonising home heating: review of the gov’t’s big push on home heat pumps. [\[LINK\]](#). This heat pump push is nowhere near target and there are no indications it will or can catch up given the costs of heat pumps and electricity. It’s another example of why natural gas consumption not getting replaced anywhere near as quickly or by as much per the Net Zero aspirations. (i) On Monday, we tweeted [\[LINK\]](#) “Optimistic to Realistic - UK heat pumps. @NAOorguk progress report on replacing #NatGas boilers. 18,900 installs vs 50,000 target. Costs to replace still around 4x higher to replace gas boiler. "Potentially more expensive to run.." #NatGas will be needed for longer. #OOTT”. (ii) Heat pumps installed are at 38% of target. “The Boiler Upgrade Scheme funded the installation of nearly 18,900 heat pumps in England and Wales from May 2022 to December 2023. The original business case budgeted

UK heat pumps lack of progress

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for up to 50,000 installations by this point". This is despite the UK increasing the grants to install in Oct. "The increase uptake, in October 2023 DESNZ increased the grant value available through the scheme to £7,500 per household, up from £5,000 for an air source heat pump and £6,000 for a ground or water source heat pump". (iii) Install costs to replace a natural gas boiler with a heat pump are still around 4 times higher and only down 6% vs 2021 so not dropping anywhere near as fast as assumed. "DESNZ considers installation cost a key factor affecting demand for heat pumps. As at December 2023, the average market rate for replacing a gas boiler with a heat pump was around four times higher than replacing like-for-like. In 2021, DESNZ set an ambition for industry to reduce the costs of installing a heat pump by at least 25–50% by 2025 and to ensure heat pumps are no more expensive to buy and run than gas boilers by 2030. Data from MCS (Microgeneration Certification Scheme), a quality insurance scheme, indicate the average cost of installing a heat pump in 2023 reduced by up to 6% in real terms compared with 2021, to £11,287 (in 2021 prices). Installation costs will need to fall around three times faster over the next two years if they are to reach the minimum 25% reduction ambition." (iv) Running costs still look more for heat pumps vs gas boilers. "Running costs: Electricity remains more expensive per unit than gas, making heat pumps potentially more expensive to run than a gas boiler." (v) UK is relying on optimistic assumptions about consumer demand. This is the same thing as seen in EVs moving to mass/broad adoption. "DESNZ is relying on optimistic assumptions about consumer demand and manufacturer supply of heat pumps increasing substantially to achieve 600,000 installations per year by 2028 Heat Pump Association data indicates that 55,000 heat pumps were sold in the UK in 2022. Achieving the target of 600,000 annual installations by 2028 requires an elevenfold increase from 2022 to 2028, using sales as a proxy for installations." Our Supplemental Documents package includes excerpts from the report.

Energy Transition: Toyota's precious metals in 1 EV can make 6 PHEVs or 90 HEVs

We were watching Bloomberg Surveillance on Tuesday morning when the Bank of America analysts came on to discuss EVs, Hybrids, etc. We tweeted [\[LINK\]](#) "Hmmm! Toyota 1:6:90 rule "for all the precious metals & everything are put in a battery in an EV, they can make 6 PHEV or 90 HEV. With those 90 hybrids, they save 37 times the CO2 as you do with 1 EV" BofA Murphy to @lisaabramowicz1 @FerroTV. Is this why 📌 02/18 Guilbeault said EV not a panacea? Will western govt shift to slow down EVs and embrace HEVs? #OOTT." We had not heard this before and it is nothing the energy transition side would publicize. And the 1:6:90 rule was first reported last May and was a reported leaked Toyota memo that was their estimate for how EVs vs PHEVs vs HEVs consume precious metals. Toyota reportedly estimates that the precious metals used in the manufacture of 1 EV would be enough for 6 PHEVs and 90 HEVs. The other part of the leaked memo is that Toyota believes the overall carbon reduction of 90 hybrids over the life cycle of the hybrids is 37 times better than a single EV. Below is the Toyota 1:6:90 Rule that Jalopnik posted on May 23, 2023. [\[LINK\]](#)

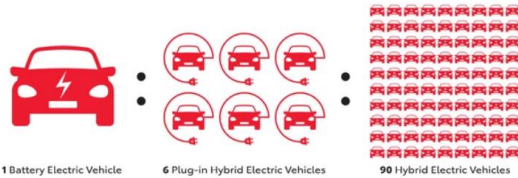
Toyota's 1:6:90 rule

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Figure 60: Toyota 1:6:90 Rule

The 1:6:90 Rule

The amount of raw materials in one long-range battery electric vehicle could instead be used to make 6 plug-in hybrid electric vehicles or 90 hybrid electric vehicles. For the same limited resources, instead of replacing one internal combustion engine vehicle, you can replace 90. **The overall carbon reduction of those 90 hybrids over their lifetimes is 37 times as much as a single battery electric vehicle.**



Source: Jalopnik

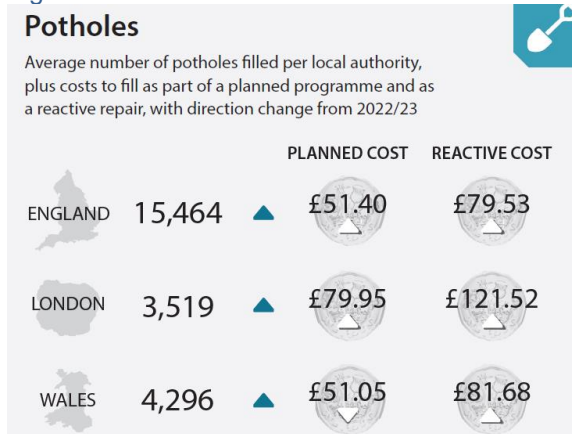
Energy Transition: Blame EVs and SUVs for UK's growing potholes problem

Deteriorating roads are going to be a problem everywhere and we believe that the problem on how to fund road maintenance will only keep increasing every year. On Tuesday, we tweeted [\[LINK\]](#) "*Blame EVs & SUVs for UK potholes. reasons for unforeseen UK highway maintenance costs incl ".. effects of extreme weather events, rising traffic volumes and increased average vehicle weights on a deteriorating network..." @AIA_Aspphalt #OOTT.*" Our tweet included excerpts from the just issued *Asphalt Industry Alliance's "Annual Local Authority Road Maintenance Survey Report 2024"*. The major conclusions were "*Continued decline Almost 95% of ALARM respondents in England and Wales stated that the structural condition of their network has actually declined or, at best, remained in a steady state over the last 12 months. This was mirrored by data highlighting that more than 107,000 miles – equivalent to 53 per cent of the network – has been classified as having less than 15 years' structural life remaining. The continued decline in structural conditions is also reflected by the cost of tackling the backlog of carriageway repairs which has increased to a new record high of £16.3 billion.*" The AIA did not name EVs or SUVs for the pothole problems, but our tweet highlighted that unforeseen costs includes increasing average vehicle weights. We don't know how they can call unforeseen costs from increasing average vehicle weights. AIA wrote "*Unforeseen costs. A sizeable number of respondents have reported having to cope with unforeseen highway maintenance costs over the year. The reasons identified for this include dealing with the effects of extreme weather events, rising traffic volumes and increased average vehicle weights on a deteriorating network, as well as the impact of inflation which has had a noticeable impact on costs.*" One other simple reminder is that "*Our maintenance backlog is more than 10 times our annual budget, so we have to be very selective about what we pick and don't pick to maintain.*" Our Supplemental Documents package includes the data AIA report.

UK potholes

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Figure 61: UK Potholes



Source: Asphalt Industry Alliance

Capital Markets – Gold hits all time record \$2,200

We were watching Bloomberg’s Asia shows on Wednesday night (Mountain Time) when gold traded at \$2,200 for the first time. When we pulled up the gold price graph and saw the recent move up since September, we decided to add Costco on the graph. We tweeted [\[LINK\]](#) “Fun facts about Gold. #Gold just hit \$2,200 for 1st time ever around 6:15pm Et. Gold +16% since Sept 26, 2023 when Costco confirmed it was selling gold to members.” The timing is almost perfect to the recent low so we added in that, on Sept 23, 2023, Costco confirmed that it had started selling gold to its members. We called it a fun fact about gold We called it a fun fact as there is no way it would fit a real question “causation or correlation”. Gold pulled back to close at \$2,181 on Friday.

Gold hits \$2,200

Figure 62: Gold broke \$2,200 on Wed night



Source: Bloomberg

Capital Markets: IFIC, first net mutual fund sales in 12 months, net \$671m of buying

We have been highlighting the big change to Cdn mutual funds that started in Q2/22 – when there started a shift from net sales to massive net redemptions in balanced and equity funds. What started in H2/22 played out even bigger in 2023 and is continuing to start 2024. On Thursday, we tweeted [\[LINK\]](#) “Still no stopping continued monthly net redemptions from

IFIC Cdn mutual fund data

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balanced & equity mutual funds in Canada. Flipped from net sales to net redemptions in Q2/22 & hasn't stopped. @ific net redemptions balanced/equity funds \$5.7b in Jan 2024, which followed \$82.5b in 2023 & \$38.4b in 2022 #OOTT." On Thursday, IFIC (Investment Funds Institute of Canada) reported [\[LINK\]](#) mutual funds and ETF sales for February. IFIC reported net sales (buying) for balanced mutual funds were \$0.671b in February vs net redemptions of -\$5.533b in January and -\$4.584b in December. This brings the YTD figure for Equity net sales to +\$490m, but -\$4.862b when you include balanced funds. This was the first net mutual fund sale in 12 months, with the last positive net sale being February 2023, and it has been brutal since. Recall in January we learned that in 2023 there were \$82.5b of net redemptions in balanced and equity mutual funds! This is more than double the net redemptions of 2022. 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. Note that Q2/22 was when it flipped from net sales into the massive net redemptions to end 2022. Our Supplemental Documents package includes the IFIC release.

Figure 63: Cdn Mutual Fund Net Sales/Net Redemptions (\$ Millions)

Mutual fund net sales/net redemptions (\$ millions)*

Asset class	Feb 2024	Jan 2024	Feb 2023	YTD 2024
Long-term funds				
Balanced	(877)	(4,475)	(945)	(5,352)
Equity	1,548	(1,058)	425	490
Bond	1,815	3,797	2,365	5,612
Specialty	775	747	87	1,522
Total long-term funds	3,261	(988)	1,932	2,272
Total money market funds	(40)	487	1,261	447
Total	3,221	(501)	3,193	2,720

Source: IFIC

There were massive redemptions in Cdn active equity/balanced funds in 2023

2023 was a brutal year for net redemptions for Cdn balanced and equity funds and even more than in 2022. Here is what we wrote in our Jan 28, 2024 Energy Tidbits memo. *On Friday, we tweeted [\[LINK\]](#) "Brutal year for net redemptions in balanced and equity mutual funds in Canada. @ific reflects \$82.5 billion net redemptions including \$56.9b from balanced mutual funds and \$25.6b from equity mutual funds. #OOTT." One of the big Cdn equity stories in 2022 continued to play out in an even bigger way in 2023 – the continued net redemptions from active managed Cdn equity and balanced mutual funds. This flipped in Q2/22 from massive net sales into balanced and equity mutual funds to massive net redemptions in equity and balanced mutual funds. This year, the 2023 net redemption total dwarfed those in 2022. On Wednesday, IFIC (Investment Funds Institute of Canada) reported [\[LINK\]](#) mutual funds and ETF sales for November. IFIC reported net redemptions for balanced mutual funds were \$4.612b in December vs \$6.510b in November and \$8.569b in October. IFIC also reported net redemptions for equity mutual funds were \$2.514b vs net redemptions of \$3.178b in November and \$4.142b in October. This means, barring any major revisions, that in 2023 there were \$82.5b of net redemptions in*

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balanced and equity mutual funds! This is more than double the net redemptions of 2022.

Figure 64: Cdn Mutual Fund Net Sales/Net Redemptions (\$ Millions)

Mutual fund net sales/net redemptions (\$ millions)*

Asset class	Dec 2023	Nov 2023	Dec 2022	2023	2022
Long-term funds					
Balanced	(4,612)	(6,510)	(4,935)	(56,866)	(29,959)
Equity	(2,514)	(3,178)	(3,069)	(25,568)	(8,461)
Bond	845	(435)	(2,187)	6,986	(13,811)
Specialty	176	391	102	3,538	1,306
Total long-term funds	(6,105)	(9,732)	(10,088)	(71,909)	(50,925)
Total money market funds	790	1,227	1,802	14,825	7,196
Total	(5,315)	(8,506)	(8,286)	(57,084)	(43,729)

Source: IFIC

Capital Markets: Digitization & AI already hitting lower income white collar jobs

There was a good reminder from Bank of America CEO Moynihan that digitization and AI are already hitting non-producer, non-revenue generator white collar jobs. On Tuesday morning, Bloomberg Surveillance was broadcasting from BofA office and CEO Moynihan highlighted how BofA have been able to grow its business with significantly less people. On Tuesday, we tweeted [LINK](#) "Digitization/AI wiping out non-producer, non-revenue generator white collar jobs. "300,000 people, we have 212,000 today" "It's going to have less labor content. Are those people paid more, a lot more because the way the labor content shifts" "it will have less labor content because that is the expensive part but it will have more value added from labor because that's the way the mathematics will work" BofA CEO Moynihan to @FerroTV @lisaabramowicz1 #OOTT."

Digitization and AI hitting jobs

Demographics: Canada down to 15th place in World Happiness report, was #5 in 2015

We can't help but still be a bit disappointed to see the results of the 12th anniversary report of the World Happiness Report 2024 [LINK](#). Canada is a great country to live in but it is not great to see how the Canadians in these results have led to large drop in Canada's ranking of the world's happiest places to live over recent years. Canada is back down to 15th overall (13th last year) and is still far below its rank of 5th overall in 2015. This is the 12th report so there is the ability to see trends. It was interesting to note the disparaging gap in happiness levels based on age. For Canada, they wrote "For the United States, Canada, Australia and New Zealand, happiness has decreased in all age groups, but especially for the young, so much so that the young are now, in 2021-2023, the least happy age group. This is a big change from 2006-2010, when the young were happier than those in the midlife groups, and about as happy as those aged 60 and over. For the young, the happiness drop was about three-quarters of a point, and greater for females than males". We believe that a significant part of the drop in happiness stems from the affordability crisis, lack of confidence in being able to afford a home, and the social isolation resulting from the pandemic.

Canada drops to 15th world happiness ranking

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Figure 65: Ranking of happiness based on 3yr average score

Rank	Top 10 Most Happy	Life score	Rank	Top 10 Least Happy	Life Score
1	Finland	7.741	143	Afghanistan	1.721
2	Denmark	7.583	142	Lebanon	2.707
3	Iceland	7.525	141	Lesotho	3.186
4	Sweden	7.344	140	Sierra Leone	3.245
5	Israel	7.341	139	Congo (Kinshasa)	3.295
6	Netherlands	7.319	138	Zimbabwe	3.341
7	Norway	7.302	137	Malawi	3.421
8	Luxembourg	7.122	136	Eswatini	3.502
9	Switzerland	7.06	135	Zambia	3.502
10	Australia	7.057	134	Yeme	3.561
12	Costa Rica	6.955	105	Ukraine	4.873
13	Kuwait	6.951	103	Palestine	4.879
15	Canada	6.900	86	Hong Kong	5.316
16	Belgium	6.894	72	Russia	5.785

Source: SAF, World Happiness Report

Twitter: Thank you for getting me to 10,000 followers

In January, I went over 10,000 followers on Twitter/X. I really appreciate the support and, more importantly, some excellent insights and items to look at from Twitter followers. It helps me do a better job. For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [\[LINK\]](#). We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

@Energy_Tidbits
on Twitter

LinkedIn: Look for quick energy items from me on LinkedIn

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

Look for energy
items on LinkedIn

Misc Facts and Figures.

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

Cdn PGA starts Hughes, Svensson and Hadwin in the hunt today

It will be golf watch this afternoon for the final round of the Valspar Championship with Canadian PGA stars in the hunt. Mackenzie Hughes is T2 at -8 and two behind the leader. Adam Svensson and Adam Hadwin are T8 at -6 and four strokes off the lead. Hadwin has good memories here as the 2017 Valspar winner.

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