

Energy Tidbits

March 17, 2024

Produced by: Dan Tsubouchi

321 Crack Spreads \$33.00 Provide Big Margins for Refiners to Buy & Process as much Oil as Possible

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. 321 crack spreads closed at \$33.00 on Friday, which is a huge incentive for refiners to buy and process as much oil as possible. [\[LINK\]](#)
2. Both OPEC MOMR and IEA OMR highlight global crude stocks were at very low levels at Jan 31 ie. OPEC cuts are working. [\[LINK\]](#)
3. IEA's blog "*A strong focus on oil security will be critical throughout the clean energy transition*" should have been posted seven years ago. [\[LINK\]](#)
4. Ukraine's drones are hitting critical parts of more Russian refineries so less finished products to export and more crude available for export. [\[LINK\]](#)
5. Norway expects to reach peak oil production in 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: -9 bcf draw from US gas storage; now +336 bcf YoY surplus

There was very small draw from gas storage in the US this week. For the week of March 8, the EIA reported a -9 bcf draw. Total storage is now 2.325 tcf, representing a surplus of +336 bcf YoY compared to a surplus of +280 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 +629 bcf above the 5-year average, up from the +551 bcf surplus last week. Below is the EIA's storage table from its Weekly Natural Gas Storage report [\[LINK\]](#).

-9 draw in US gas storage

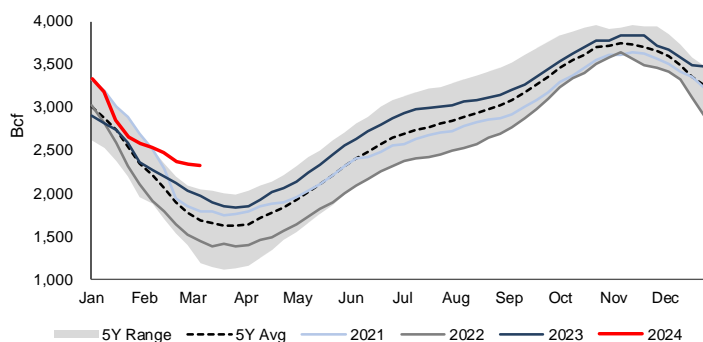
Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	03/08/24		03/01/24		Year ago (03/08/23)		5-year average (2019-23)	
			net change	implied flow	Bcf	% change	Bcf	% change
East	412	422	-10	-10	398	3.5	345	19.4
Midwest	561	575	-14	-14	497	12.9	418	34.2
Mountain	167	169	-2	-2	88	89.8	91	83.5
Pacific	213	219	-6	-6	75	184.0	147	44.9
South Central	972	949	23	23	931	4.4	695	39.9
Salt	294	285	9	9	265	10.9	195	50.8
Nonsalt	678	664	14	14	666	1.8	501	35.3
Total	2,325	2,334	-9	-9	1,989	16.9	1,696	37.1

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

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



Source: EIA, SAF

Natural Gas: NOAA sees >80% probability for La Nina conditions during Aug/Sep/Oct

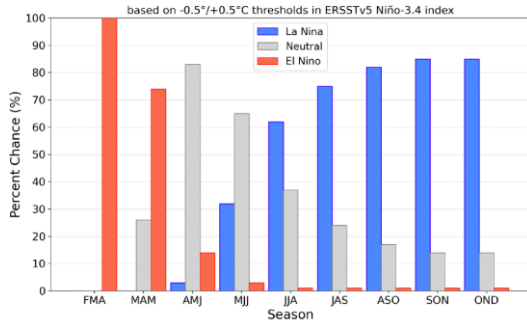
On Thursday, the NOAA posted the updated monthly El Nino/La Nina outlook, which is issued on the 2nd Thurs of every month [\[LINK\]](#). Winter 2023-2024 is essentially over and has turned out to be the warmest on record and will support the general, but not 100%, correlation that strong El Ninos lead to warm winters in the US. The El Nino/La Nina focus shifts to the summer and to hurricane season. The probability forecast is over 80% for La Nina conditions in the peak hurricane months of Aug/Sep/Oct. However, the qualifier is said by NOAA that forecasting El Nino/La Nina conditions for the summer is difficult ahead of the spring. NOAA writes “While different types of models suggest La Niña will develop, the

La Nina/El Nino focus to turn to summer

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forecast team favors the dynamical model guidance, which is slightly more accurate for forecasts made during this time of year. Even though forecasts made through the spring season tend to be less reliable, there is a historical tendency for La Niña to follow strong El Niño events. In summary, a transition from El Niño to ENSO-neutral is likely by April-June 2024 (83% chance), with the odds of La Niña developing by June-August 2024⁶. Again, weather is never 100% the same, but La Niña summers normally bring a better chance for normal hurricane activity whereas El Niño summers tend to have lesser hurricane activity. Below is the NOAA El Niño/La Niña Mar update.

Figure 3: NOAA El Niño/La Niña Outlook
Official NOAA CPC ENSO Probabilities (issued Mar. 2024)

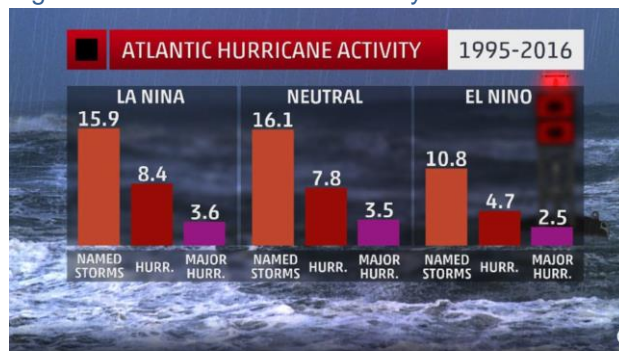


Source: NOAA CPC, IRI

La Niña summers tend to have normal to above normal hurricane seasons

The latest NOAA summer outlook for El Niño/La Niña conditions calls for La Niña conditions in the summer and the peak Aug/Sep/Oct hurricane season. Weather is never 100% accurate but, historically, Neutral and La Niña conditions tend to have normal to above normal hurricane activity, whereas El Niño years tend to have lower hurricane activity seasons. Our May 24, 2020 Energy Tidbits memo include The Weather Channel Aug 28, 2018 story that had the below graphic.

Figure 4: Atlantic Hurricane Activity El Niño vs Neutral vs La Niña



La Niña and ENSO-neutral years have generally seen more named storms and hurricanes in the Atlantic, based on data from 1995-2016.

(Data from NOAA/CPC)

Source: Weather Channel

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EIA US natural gas production forecast

Natural Gas: EIA lowers US gas production for 2024 and 2025, 2024 to see decline YoY

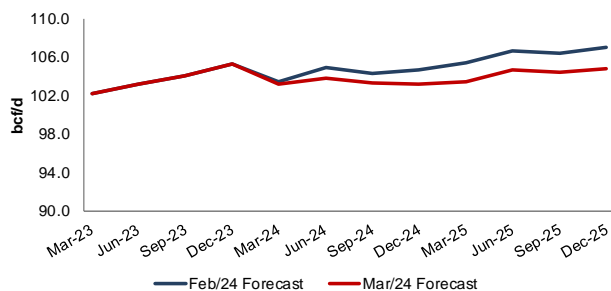
The EIA revised downwards its estimate of US natural gas production for 2024 and 2025, which makes sense given the EIA lowered its HH gas prices assumption and the announcements over the past month for US gas producers to either shut-in natural gas and/or cut back on fracking wells in light of low natural gas prices. (i) On Tuesday, the EIA released its monthly Short Term Energy Outlook for March 2024 [\[LINK\]](#). The EIA lowered its FY 2024 US natural gas production estimate by -1.00 bcf/d to 103.4 bcf/d, which, on a full year average basis, gives a YoY decline of 0.40 bcf/d from 2023. The quarterly changes are as follows: Q1/24 -0.3 bcf/d to 103.5 bcf/d, Q2/24 -1.2 bcf/d to 103.8 bcf/d, Q3/24 -1.10 bcf/d to 103.3 bcf/d, and Q4/24 -1.5 bcf/d to 103.2 bcf/d. (ii) The EIA lowered its FY 2025 forecast -2.10 bcf/d to 104.4 bcf/d, which, on a full year average basis, would be up +1.00 bcf/d YoY. The quarterly changes to 2025 are as follows: Q1/25 -2.0 bcf/d to 103.5 bcf/d, Q2/25 -2.0 bcf/d to 104.7 bcf/d, Q3/25 -2.00 bcf/d to 104.5 bcf/d, and Q4/25 down -2.3 bcf/d to 104.9 bcf/d. The EIA did not comment on the changes in their natural gas consumption forecast. (iii) The EIA lowered its 2024 HH price forecast -\$0.40/mcf to \$2.36/mcf (was \$2.76/mcf), but kept their 2025 forecast at \$3.06/mcf. The EIA did not comment on the change in HH gas prices. (iv) Our Supplemental Documents package includes excerpts from the STEO.

Figure 5: EIA STEO Natural Gas Production Forecasts

bcf/d	Q1/23	Q2/23	Q3/23	Q4/23	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	Q1/25	Q2/25	Q3/25	Q4/25	2025
Mar-24	102.3	103.2	104.1	105.6	103.8	103.2	103.8	103.3	103.2	103.4	103.5	104.7	104.5	104.9	104.4
Feb-24	102.3	103.2	104.1	105.4	103.8	103.5	105.0	104.4	104.7	104.4	105.5	106.7	106.5	107.2	106.5
Jan-24	102.3	103.2	104.2	104.6	103.6	105.1	105.0	104.6	105.5	105.0	106.6	106.7	106.1	106.2	106.4
Dec-23	102.3	103.2	104.0	105.1	103.7	104.8	104.8	104.7	105.3	104.9					
Nov-23	102.3	103.2	104.1	105.1	103.7	105.1	104.8	104.7	105.9	105.1					
Oct-23	102.4	103.2	104.4	104.9	103.7	104.7	104.8	104.8	106.1	105.1					
Sep-23	102.1	102.8	102.7	103.1	102.7	104.3	104.7	104.9	105.9	104.9					
Aug-23	102.1	102.8	103.4	103.6	103.0	104.0	103.9	104.0	104.6	104.1					
July-23	102.0	102.2	103.0	102.2	102.4	101.8	101.5	102.5	103.7	102.4					
June-23	102.0	103.7	103.4	101.9	102.7	102.8	102.8	103.0	103.6	103.0					
May-23	102.1	101.9	99.9	100.4	101.1	100.7	101.1	101.4	101.8	101.2					
Apr-23	101.6	100.5	100.5	100.9	100.9	101.2	101.5	101.8	101.8	101.6					
Mar-23	101.0	100.2	100.6	101.0	100.7	101.4	101.4	102.0	102.0	101.7					
Feb-23	99.9	100.0	100.3	100.9	100.3	101.2	101.6	102.0	101.9	101.7					
Jan-23	100.8	99.9	100.1	100.6	100.3	101.1	101.8	102.7	103.6	102.3					

Source: EIA, STEO

Figure 6: EIA STEO Natural Gas Production Forecasts by Month



Source: EIA, STEO

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EIA March STEO storage forecast

Natural Gas: EIA STEO forecasts Apr 1/24 storage 2.269 tcf, +0.364 tcf vs Feb STEO

There was a short cold snap in Jan but last week's (Mar 10, 2024) Energy Tidbits memo highlighted that Dec/Jan/Feb was record warm temperatures in the US. No surprise, the EIA has increased their forecast for gas storage in the March STEO to 2.269 tcf to end winter 2023/24 at April 1 (up +0.364 tcf MoM). (i) The EIA forecasts US Gas Storage out to the end of 2025. Gas storage started the summer 2023 refill season at 1.850 tcf on April 1, 2023, which was +0.448 tcf YoY. For the winter 2023 draw season, the EIA forecasted storage on Nov 1, 2023 at 3.809 tcf, which is +0.240 tcf YoY. (ii) The EIA forecasts gas storage to end this winter at 2.269 tcf, which would be +0.419 tcf YoY and up vs Feb STEO of 1.905 tcf., so a material build revision to estimates. (iii) The EIA forecasts the 2024/2025 winter ending with 2.175 tcf, up +0.013 tcf from the Feb STEO, and a start to the 2025/2026 winter at 4.089 tcf, down slightly from 4.112 tcf in the Feb STEO and would be the highest level since 2016. Below is a table tracking the working gas inventory forecasts and actuals since 2016.

Figure 7: EIA STEO US Natural Gas in Storage (2016-2025)

Storage	US Working Natural Gas in Storage (billion cubic feet)					
	Level	2016-2025				
	Low	High	Range	Average	Deviation	
Mar 2016	2,486.3	1,184.9	2,486.3	1,301.4	1,835.6	35.4%
Oct 2016	4,012.7	3,236.3	4,117.1	880.8	3,676.7	9.1%
Mar 2017	2,062.5	1,184.9	2,486.3	1,301.4	1,835.6	12.4%
Oct 2017	3,816.5	3,236.3	4,117.1	880.8	3,676.7	3.8%
Mar 2018	1,390.3	1,184.9	2,486.3	1,301.4	1,835.6	-24.3%
Oct 2018	3,236.3	3,236.3	4,117.1	880.8	3,676.7	-12.0%
Mar 2019	1,184.9	1,184.9	2,486.3	1,301.4	1,835.6	-35.4%
Oct 2019	3,762.0	3,236.3	4,117.1	880.8	3,676.7	2.3%
Mar 2020	2,029.4	1,184.9	2,486.3	1,301.4	1,835.6	10.6%
Oct 2020	3,928.5	3,236.3	4,117.1	880.8	3,676.7	6.8%
Mar 2021	1,801.2	1,184.9	2,486.3	1,301.4	1,835.6	-1.9%
Oct 2021	3,665.4	3,236.3	4,117.1	880.8	3,676.7	-0.3%
Mar 2022	1,401.5	1,184.9	2,486.3	1,301.4	1,835.6	-23.7%
Oct 2022	3,569.4	3,236.3	4,117.1	880.8	3,676.7	-2.9%
Mar 2023	1,849.9	1,184.9	2,486.3	1,301.4	1,835.6	0.8%
Oct 2023	3,809.4	3,236.3	4,117.1	880.8	3,676.7	3.6%
Mar 2024	2,268.7	1,184.9	2,486.3	1,301.4	1,835.6	23.6%
Oct 2024	4,117.1	3,236.3	4,117.1	880.8	3,676.7	12.0%
Mar 2025	2,175.4	1,184.9	2,486.3	1,301.4	1,835.6	18.5%
Oct 2025	4,088.9	3,236.3	4,117.1	880.8	3,676.7	11.2%

Source: EIA, STEO

Freeport LNG maintenance

Natural Gas: Freeport LNG restarting Train 3, maintenance next on last 2 trains

The big negative for HH has been the record warm winter temperatures but the maintenance of Freeport LNG has piled on to that weakness. On Friday, Bloomberg gave an update on the Freeport LNG maintenance. As a reminder, Freeport LNG has 3 Trains that produce ~2.2 bcf/d of LNG so at times, there has been 0.7 to 1.4 bcf/d offline for maintenance, *which means that much less natural gas moving into Freeport LNG. Bloomberg wrote "The Freeport LNG export terminal in Texas is restarting its Train 3 and repairs are expected to occur on its other two trains on a rolling basis until May, according to two people familiar with the matter who weren't authorized to comment publicly. * Freeport LNG spokeswoman declined to comment * Train 3 was taken offline in late January to replace an electric motor; due to restart this week * Gas supply into the facility fell earlier this month, indicating two trains have been offline * Once Train 3 resumes production, at least two trains are expected to run through April, with all three trains back online by May, said the people, who have direct knowledge of the maintenance".*

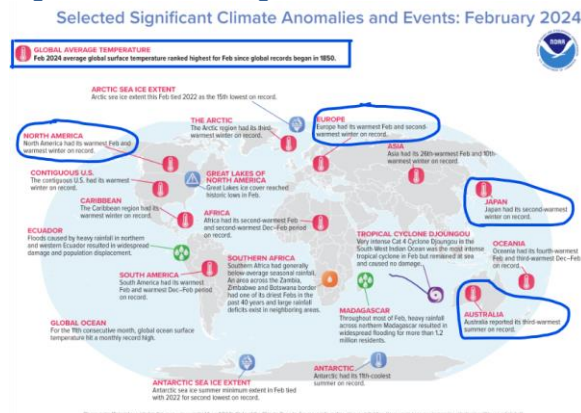
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Hottest Feb on record globally

Natural Gas: Feb 2024 had the hottest average global temperature on record

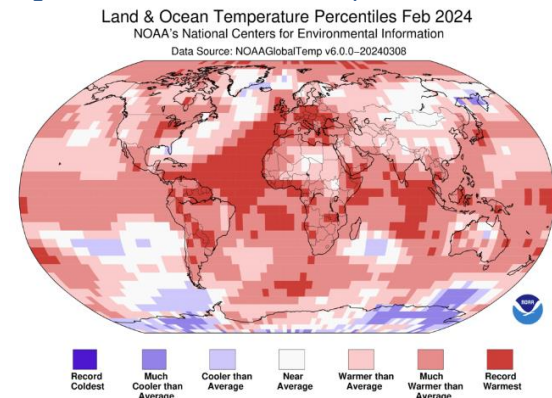
On Thursday, the NOAA posted its global climate recap for Feb, and it was another month of the hottest winter month on record. And importantly, it was warm around the world. It was the warmest February on record for North America, South America and Europe. Since it is February, the NOAA's definition as the "end" of winter, we can also see records set for the overall winter. It was the warmest winter on record for North America, Europe, the Caribbean, and South America (summer). It was the third warmest summer on record for Australia and second-warmest Winter for Japan. Below are the NOAA graphics for Feb.

Figure 8: Selected Significant Climate Anomalies and Events: Feb 2024



Source: NOAA

Figure 9: Land & Ocean Temperature Percentiles for Feb 2024



Source: NOAA

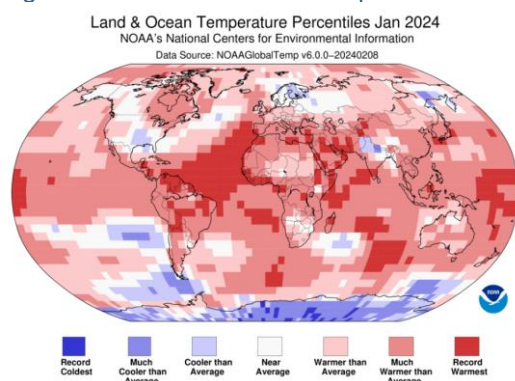
Nov, Dec and Jan had the hottest average global temperature on record

No wonder global LNG and natural gas prices are low, it's been record hottest global temperatures in Nov, Dec, Jan and now Feb. Our Feb 18, 2024 Energy Tidbits memo wrote "On Thursday, we tweeted [\[LINK\]](#) "Here's key reason why global #LNG

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& #NatGas prices went down in Jan. 9th warmest Jan in Asia. 19th warmest Jan in EU. 20th warmest Jan in North America. Unfortunately, weak prices in late winter lead to stalled prices thru spring shoulder season. Thx @NOAA #OOTT.” And [LINK](#) “Forgot to add the punch line - Jan 2024 was the hottest Jan for the world on record. #NatGas #OOTT #LNG.” On Wednesday, NOAA posted its global climate recap for Jan, and it was another of the hottest winter month on record. And importantly, it was warm around the world. The 9th warmest in Asia. The 19th warmest in Europe. The 20th warmest in North America. Below are the NOAA graphics for Jan”. Our Jan 14, 2024 Energy Tidbits memo wrote “On Friday, we tweeted [LINK](#) “Here’s why JKM #LNG and Europe TTF #NatGas prices are basically half of a year ago. And why the risk for repeat of 2023 with soft LNG and #NatGas prices carrying thru shoulder season. Hottest average global temperature on record for BOTH Nov 2023 and Dec 2023. #OOTT.” NOAA’s December 2023 Global Climate Report [LINK](#) had a simple message – it was hot everywhere in December. NOAA noted “Dec 2023 average global surface temperature ranked highest for Dec since global records began in 1850.” “Europe had its seventh warmest Dec on record”. “Asia had its 18th warmest Dec”. “North America had its warmest Dec on record”. Our Dec 17, 2023 Energy Tidbits memo wrote “On Thursday, we tweeted [LINK](#): “No wonder global #LNG #NatGas prices are weak. - Global warmest Nov on record. - US 19th warmest on record - EU 15th warmest on record - Asia warmest on record. Need sustained cold temps ASAP broadly in world or risk repeat of winter 22/23 hit on 2023 prices. Thx @NOAA #OOTT”. The NOAA’s Global Climate Report for the month of November [LINK](#) showed that globally, the average surface temperature was +1.44C above the 20th century average of 12.9C, which made it the warmest November for the planet on record. This makes sense as Asia just had their warmest November on record, Europe tied it’s 15th warmest on record, and as we mentioned earlier in this memo, the US saw the 19th warmest Nov in the past 129 years.”

Figure 10: Land & Ocean Temperature Percentiles for Jan 2024



Source: NOAA

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Figure 11: Land & Ocean Temperature Percentiles for Dec 2023

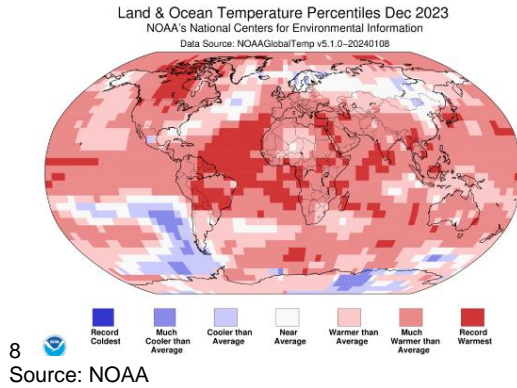
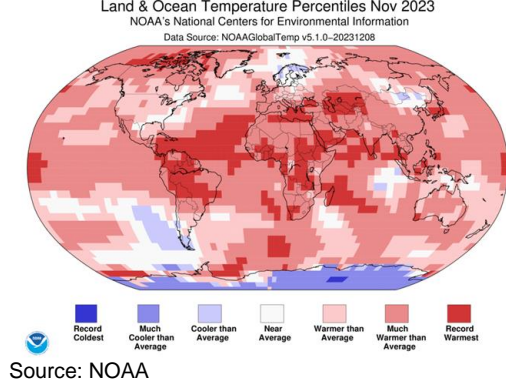


Figure 12: NOAA global temperature percentiles for Nov 2023



Natural Gas: India February natural gas production basically flat MoM at 3.59 bcf/d

India domestic natural gas production peaked in 2010 at 4.6 bcf/d, and then ultimately declined to average 2.8 bcf/d in 2020-2021. India returned to modest growth in 2021/2022. There were several months of basically flat production but production growth returned in 2023. On Friday, India's Petroleum Planning and Analysis Cell released their monthly report for February's natural gas and oil statistics [\[LINK\]](#). India's domestic natural gas production for February was 3.59 bcf/d, which was basically flat MoM from 3.58 bcf/d in January. On a YoY basis, natural gas production was up +7.33% from 3.34 bcf/d in February 2023. Our Supplemental Documents package includes excerpts from the PPAC monthly.

India natural gas production flat MoM

Natural Gas: India LNG imports up MoM at 2.98 bcf/d in February, up +0.66 bcf/d YoY

For the past several years, India has increased LNG imports whenever domestic natural gas production was flat or decreased. But the overriding factor for India tends to be price. If price is high, India pulls back on LNG imports and will normally turn to coal. If prices are low, like has been seen this winter, then India tends to pick up spot cargoes. India is an opportunistic LNG spot buyer. On Friday, India's Petroleum Planning and Analysis Cell released their monthly report for February's natural gas and oil statistics [\[LINK\]](#). Over the past 3 years,

India LNG imports up YoY

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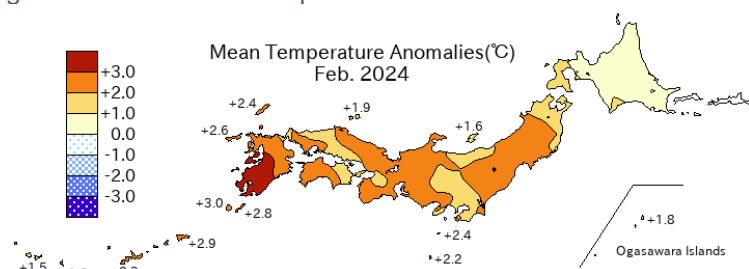
India's LNG imports declined from a 2020-2021 peak of 3.84 bcf/d in Oct 2020 to just 2.85 bcf/d in Jan 2021 and lower in 2022. Additionally, February's 2024's LNG imports were 2.98 bcf/d, which is essentially up +0.23 bcf/d MoM from 2.75 bcf/d in January. LNG imports are now up +28.7% YoY from 2.31 bcf/d in February 2023. Our Supplemental Documents package includes excerpts from the PPAC monthly.

Natural Gas: Above normal temperatures in Japan in January

No one should have been surprised by the Japan Meteorological Agency's recap of February 2024 temperatures that it was above normal temperatures, which meant that any electricity demand, including for natural gas, would be less than normal. Late Thursday night, the Japan Meteorological Agency posted its climate recap for February [\[LINK\]](#). It included the below mean temperature anomalies map. The JMA wrote "*Monthly mean temperatures were significantly above normal in eastern/western Japan and Okinawa/Amami, and were above normal in northern Japan. Monthly snow fall amounts were significantly below normal on the sea of Japan side of northern/eastern/western Japan. These anomalous climate conditions were caused by weaker-than-normal winter monsoon and warm-air inflow mainly in the middle of the month.*" This comes after the December and January recaps, which was also warmer than normal for Japan.

A warm February in Japan

Figure 13: JMA Mean Temperature Anomalies Feb 2024



Source: Japan Meteorological Agency

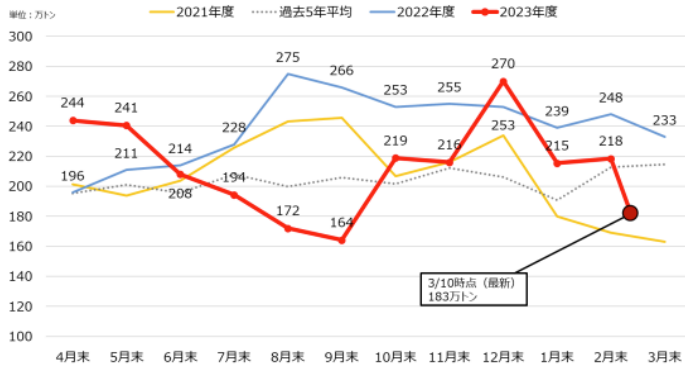
Natural Gas: Japan LNG stocks down big WoW, YoY, below 5-year average

Japan LNG stocks are below 2023 levels and below the 5-year average. On Wednesday, Japan's METI releases its weekly LNG stocks data [\[LINK\]](#). LNG stocks on March 10 were 87.9 bcf, down -6.2% WoW from Mar 3 of 93.7 bcf, and are down -21.5% 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 10 week lows saw some near freezing temps, so it would make sense people were cranking the heat at night. METI did not comment on the WoW decrease. Below is the Japanese LNG stocks graph from the METI weekly report.

Japan LNG stocks down -6.2% WoW

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Figure 14: Japan LNG Stocks



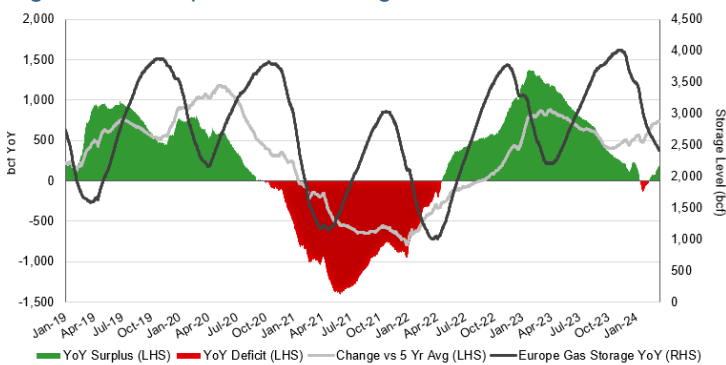
Source: METI

Natural Gas: Europe storage decreases WoW to 59.77%, 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 -1.23% WoW to 59.77% on March 15 vs 61.00% on March 7. Storage is now +3.55% higher than last year's levels of 56.22% on March 7, 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 15: European Gas Storage Level



Source: Bloomberg, SAF

Oil: US oil rigs up +6 rigs WoW to 510 rigs, US gas rigs up +1 WoW to 116 rigs

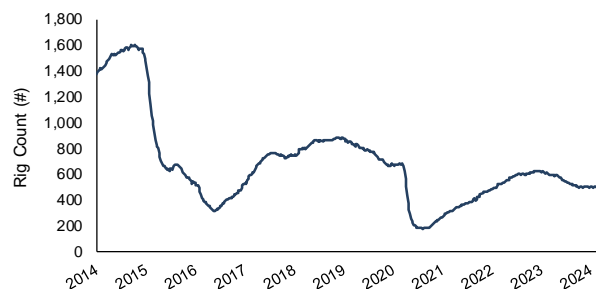
On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note, Baker Hughes has restored their old reporting format so we can break out the state data. (ii) Total US oil rigs were up +6 rigs WoW to 510 oil rigs as of March 15. US oil rigs went below 520 rigs on Aug 25 and stayed there for 4 weeks and for the last 15 weeks have been between 494 and 507 oil rigs, until this week. (iii) The major basin changes for rigs were Eagle Ford +2 WoW to 50 rigs, Granite Wash -2 WoW to 3 rigs, Permian +3 rigs WoW to 313 rigs, and Others +3 WoW to 75 rigs. (iv) US gas rigs were up + 1 rig WoW to 116 gas rigs. We expect

US oil rigs up WoW

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to see some declines in gas rigs given how more producers have responded to low natural gas prices by cutting back programs and shutting in natural gas.

Figure 16: Baker Hughes Total US Oil Rigs



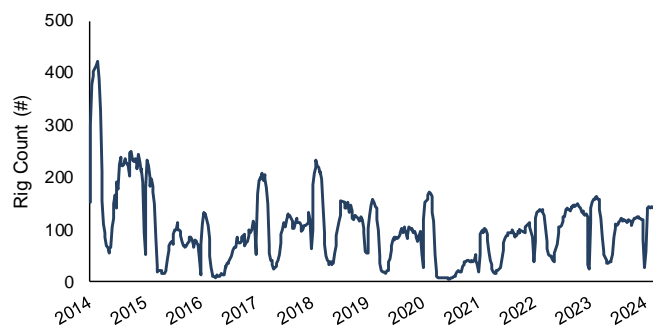
Source: Baker Hughes, SAF

Oil: Total Cdn rigs down -18 rigs WoW, starting end of winter drilling season

Baker Hughes restored their old format so we can now see the provincial rig breakouts. With this drop in oil and gas rigs, we are calling the beginning of the wind down of Winter drilling, especially as we see some warmer weather coming up in Alberta. Expect another big drop next week. For the week of March 1, as expected, total Cdn rigs were down big at -18 rigs WoW to 207 rigs. Cdn oil rigs were down -13 rigs WoW to 128 oil rigs and are up +6 rigs YoY. Cdn gas rigs were down -5 rigs WoW to 79 rigs, which is -6 rigs YoY. By province, Alberta lost 10 rigs and Saskatchewan lost 8 rigs.

Cdn total rigs down WoW

Figure 17: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

Oil: US weekly oil production estimates down -0.100 mmb/d WoW to 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 as they released this week's weekly petroleum status report: "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 between recent trends in survey-based domestic production reported in the Petroleum Supply Monthly (PSM) and other current data."

US oil production down WoW

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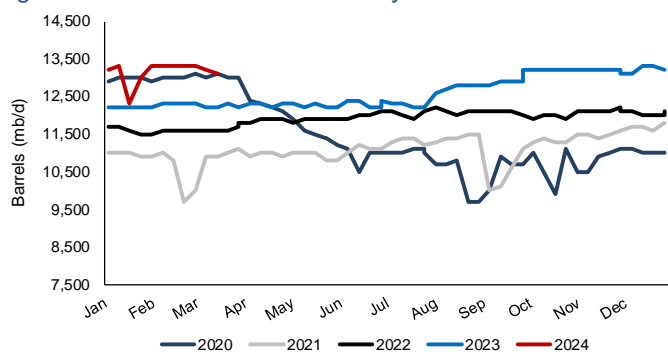
If we find a large difference between the two series, we may re-benchmark the weekly production estimate on weeks when we release STEO. This week's domestic crude oil production estimate incorporates a re-benchmarking that decreased estimated volumes by 177,000 barrels per day, which is about 1.3% of this week's estimated production total". On 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 down -0.100 mmb/d WoW to 13.200 mmb/d for the week ended March 8. Alaska was down -0.004 mmb/d WoW to 0.432 mmb/d. Below is a table of the EIA's weekly oil production estimates.

Figure 18: 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	13,300	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						

Source: EIA

Figure 19: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

Oil: North Dakota Jan oil down big MoM at 1.103 mmb/d after extreme cold shut-ins

On Thursday, the North Dakota Pipeline Authority posted its Monthly Update, which includes January's oil and natural gas production data [\[LINK\]](#). As we expected, due to the extreme cold shut-ins we saw in January, the estimates for North Dakota's oil production in January was down big MoM at -172,363 b/d MoM to 1.103 mmb/d, but is still up +3.9% YoY against 1.061 mmb/d in January 2023. Our Supplemental Documents package includes NDPA Monthly Update.

North Dakota oil production

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Figure 20: North Dakota Oil Production by Month

(b/d)	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	1,179,564	1,403,808	1,430,511	1,147,377	1,088,613	1,060,708	1,102,506	3.9%
Feb	1,175,316	1,335,591	1,451,681	1,083,554	1,089,091	1,158,837		
Mar	1,162,134	1,391,760	1,430,107	1,108,906	1,122,640	1,122,693		
Apr	1,225,391	1,392,485	1,221,019	1,123,166	900,597	1,133,435		
May	1,246,355	1,394,648	859,362	1,128,042	1,059,060	1,135,009		
June	1,227,320	1,425,230	893,591	1,133,498	1,096,783	1,166,604		
July	1,269,290	1,445,934	1,042,081	1,076,594	1,072,632	1,180,611		
Aug	1,292,505	1,480,475	1,165,371	1,107,359	1,075,307	1,223,617		
Sept	1,359,282	1,443,980	1,223,107	1,114,020	1,121,063	1,280,052		
Oct	1,392,369	1,517,936	1,231,048	1,111,910	1,121,754	1,254,475		
Nov	1,375,803	1,519,037	1,227,138	1,158,622	1,098,389	1,278,909		
Dec	1,402,741	1,476,777	1,191,429	1,144,999	957,864	1,274,869		

Source: NDIC, NDPA

All of the extreme cold Jan shut-in oil production is now fully recovered

On the January 19, 2024 Directors Cut webcast, Director Helms warned some of the shut-in oil volumes from the extreme cold would take some time to recover. On Thursday's monthly webcast, Helms said North Dakota oil production has basically recovered to Dec levels so it did take time for all of the oil to be returned to production. We created a transcript of Helms comments. SAF Group created transcript 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 1:02 min mark, Helms on the hit to North Dakota oil production in January from the extreme cold and has it recovery, he said "*it looks like, as of today, we've probably fully recovered and maybe we are actually above that December production, which was a really good number at 1.27 mmb/d. So we ought to be pressing that 1.3 mmb/d number.*"

01/19/24: North Dakota est 700,000 b/d Bakken shut in on Jan 17

Here is what we wrote in our Jan 21, 2024 Energy Tidbits memo on why North Dakota January production will be hit. "*On Friday, we tweeted [\[LINK\]](#) "Today, North Dakota estimates still 400,000 b/d of #Oil is still offline and warns "A lot of times, these things take a month from the time that it hits until we see back to normal production". Didn't specify #NatGas offline. See 📌 SAF transcript. #OOTT."* On Friday, North Dakota held its monthly Directors Cut webcast to review November oil and gas production data. *One of the first comments by North Dakota's Lynn Helms was the status of shut-in North Dakota oil production from the deep freeze. Helms did not comment on shut-in associated natural gas, only oil. But since the natural gas in North Dakota is almost all from associated natural gas from oil wells, there would still be a big shut-in impact of natural gas. Helms said that the peak oil shut-in was 700,000 b/d on Jan 17, but was down to 400,000 b/d on Friday. Helms also warned that recovery of all the oil doesn't happen overnight and warned some can take some time to recovery. We made the below transcript of his comments."* Note the last update we saw attributed to North Dakota was that shut-in was down to approx. 100,000 b/d."

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SAF transcript of North Dakota's comments on shut in oil from the cold

Our Jan 21, 2024 Energy Tidbits memo also wrote *"Here is the transcript we made of North Dakota's Lynn Helms on the shut-in oil production from the cold. SAF Group created transcript of comments by North Dakota Director of Mineral Resources, Lynn Helms and Justin J. Kringstad, Director North Dakota Pipeline Authority on the monthly Directors Cut webcast on Jan 19, 2024. [LINK](#) Items in "italics" are SAF Group created transcript. At 6:15 min mark, Helms "I do want to talk about what January is going to look like. It started in. Justin kind of tracks this for us. He has access to some numbers that let us look at production, not quite in real time, but pretty much as the days develop. The cold weather hit a week ago, January 11 was the first indication that this Arctic blast was going to have an effect on the oilpatch. By January 12, it looked like we were down almost 300,000 b/d. The worst of it was the 17th, two days go, when it looked like we were down about 700,000 b/d. So if you think 1.3 minus 700, that's way below a million barrels a day. It looks like as of yesterday, we were still down 500,000. And as of today, about 400,000. So we are coming back out of that. But we are probably still well below a million barrels a day of production in North Dakota." At 7:52 min mark, Helms "Once the wells get shut in or curtailed, then it becomes really, really difficult to bring them back on production, especially at minus 30 or minus 70 wind chills. People can't go out and work on the wells, so it's very hard to put them back on. It will be a long slow recovery. A lot of times, these things take a month from the time that it hits until we see back to normal production. So like I said December should be good but January is going to be a very very bad month in terms of production numbers. We still think it will be good in terms of gas capture. But all of the overall numbers are going to be down."*

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

Absent a step change 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*

Bakken DUCs are essentially gone

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in the DUC well count. You see we're below 300 for the time in as long as I can remember at 284 wells. So we just really have essentially no DUC well inventory at all."

One-time oil production adds in 2023 ahead of \$51b privates sales to publics

Here is what we wrote in our Mar 10, 2024 Energy Tidbits memo on the concept that there were one-time oil production adds in 2023 ahead of \$51b of private company sales to public oil and gas companies. "It seems like the consensus is in the camp of lower YoY growth in US oil production in 2024 but also a growing group reminding that US oil growth, in most years, tends to be stronger than expectations. On Thursday, we reminded that there is an overlooked one-time production win for US oil growth in 2023. On Thursday, we tweeted [LINK] "Why lower US oil growth in 2024. Yes, US #Oil supply exceeded expectations in 2023. BUT a good chunk was one-time production adds by privates to be bigger ahead of \$51b in sales to publics. Great analysis/message @ericnuttall. Thx @RaymondJames Oil team for rig splits. #OOTT." Our tweet included the below slide from Eric Nuttall's Ninepoint Energy Strategy Update on Thursday. Nuttall used the Raymond James US rig splits that show how private E&P companies really cranked up their rigs in 2022 and 2023. And then Nuttall added the reminder that there were \$51 billion in large private sales to publics with the comment "Recent shale growth has been driven by privates ahead of sales processes Those barrels now reside in the hands of pubco's." No surprise, the privates wanted to look the biggest and best they could ahead of a sale process and more production leads to higher sale price. We just added the commentary calling looking the biggest and best they can as a "one-time" production addition in 2023. In addition, the publics are now all committed to the return cash to shareholders model so are looking at flat to modest growth models. But the one-time burst to be bigger and better ahead of a sale process is the key reason why we would expect to see lower YoY growth in 2024."

Figure 21: \$51b of private shale sales to publics



Source: Ninepoint, Raymond James

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Oil: North Dakota says 1st yr decline Bakken wells is <30% not 65%

Bakken producers holding back wells

We always listen to the NDIC monthly Directors Cut webcasts as we always get insights into the Bakken and Thursday's webcast was a great example. Yesterday, we tweeted [\[LINK\]](#) *"Surprise Bakken insight. "year-over-year, a new well used to decline 65%, it's <30% probably these days" ND's Helms. Producers restricting well rates for months. No Bakken big growth ahead but <30% 1st yr decline should help play plateau, not go quickly into decline. #OOTT."* This was the big surprise insight from Thursday's webcast – producers are restricting well rates for month with the result being the average first year decline of a Bakken well is <30% and not the old 65% first year well decline. And Bakken is now over its big growth phase but we have to believe first year decline rates <30% provide a much better chance for Bakken to hold a production plateau instead of quickly moving into decline. 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 16:35 min mark, Helms *"For a new North Dakota well, it's roughly 1,600 barrels of oil a day for a new well coming on. They actually bring our new wells on in a restricted state these days. They generally will run an electric submersible pump in the well pretty much Day 1. And they will throttle the well back, trying to sustain that 1,600 barrels a day for 6, 8, 9 months . So they're producing these wells in a very different manner than they did 10 years ago.. So on average 1,600- barrels a day. And the 3-miles wells in the Tier 2 geology are matching what the 2-mile and hopefully the U-Tube wells are going to do in the core area."* At 17:50 min mark, Helms *"On an individual well these days, it used to be that a well would decline about 65% in the first year. That probably declines at less than half that rate now with the restricted production and turning on the artificial lift and the variable speed submersible pumps and gas lift they instill are able to match the production to the gas capture capacity. And sustain a much lower decline for a much longer period of time. So, year-over-year, a new well used to decline 65%, it's less than 30% probably these days."*

Oil – 1st two Bakken horseshoe/U-turn about to be completed

Horseshoe or U-Turn drilling technique

It's taken longer than we would have expected to see word that the first Bakken horseshoe/U-turn wells are finally being drilled. On the monthly NDIC webcast, Director Lynn Helms disclosed the first two Bakken Horseshoe/U-turn wells were being drilled. Although he calls the wells U-Tube and not U-Turn or horseshoe wells. We created a transcript 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 13:15 min mark, Helms *"we're very close to TD on our second U, what do I call it, a U-Tube well. So Slawson Oil & Gas has drilled now two wells that drill a mile in one direction, make a 180-degree turn, and drill a mile back, parallel to that first half of the lateral. The first one has the liner in it and cemented. The second one hasn't had any drilling problems. This is brand new technology that is going to turn 640-acre spacing units into 1,280 acre spacing units now, essentially. So it's really remarkable their plans on drilling and completed these wells. And so it's really the equivalent of drilling a 4-mile lateral. We're anxious to see when these wells get completed what the performance looks like. But the idea you can spud a well and drill a mile in one direction, turn the well 180-degrees and drill back a thousand feet over in the opposite direction is really quite amazing to me. Nobody would have dreamed of that twenty years ago. So the technology keeps marching on"*

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

We always say that drilling technology advancements move quickly through the oil and gas sector, which is why we are surprised it has taken a year to hear that the first Bakken horseshoe/U-turn wells are being drilled. Here is what we wrote in our April 30, 2023 Energy Tidbits memo. *“We recommend reviewing Matador Resources new horseshoe or U-Turn drilling in the Permian as we have to believe this drilling technique will be tried in many basins. (i) Whenever we see a new drilling technique, we can’t help remember how new drilling techniques always get applied to other plays and basins especially when the other produces see the big cost savings. We can’t remember when a drilling technique only applied to a single company or play. So this horseshoe or U-turn drilling technique will be at least tried and it seems logical it will apply to other plays. Note in the Q&A, Matador mgmt. said this new drilling technique was being done in South Texas and we assume that it is likely a reference to the Eagle Ford. (ii) Matador drilled what they called a horseshoe well (see below graphic). They drill two wells that have horizontal legs that do a U-Turn to replace 4 horizontal wells. Their graphic says up to 50% time savings, >\$10 mm cost savings, and increases value of the acreage. (iii) Matador held its Q1 call on Wednesday and provided more color on the benefits. The big cost savings is from steel casing savings. Horizontal wells start with a vertical section before turning to go horizontal. Matador saves by not having to drill vertical sections for four wells, only two wells. There are two benefits – saves time in drilling and using less steel casing. In the Q&A, mgmt said “Obviously, we recognize and realize there is a time savings component to this of if you drill four single-mile wells versus two U-turns. We’ve calculated it’s about a 50% reduction. So not only is there a cost savings associated with that, but you’re bringing offset wells that you’ve shot in, you’re bringing these wells to production faster. And so there’s a time savings component to that, but then also a cost savings. We’ve documented it’s about \$10 million in estimated savings that we’re going to realize. When you think about the amount of steel that’s needed to case a four-string well if you’re doing four single-mile laterals versus two U-turn horseshoes, we’re actually saving about 10 miles of casing basically by reducing two vertical portions of these wells.” \$10 million looks to be a big cost savings. Then later in the Q&A, mgmt. gave detail on the casing savings, they replied “And, with that steel price, that’s a big thing with those U-turn wells, we’ve been talking about the horseshoe wells, because eliminating 50,000 feet of casing, drilling those two wells versus four wells, that does a big savings. That alone was \$4 million savings there.” (iv) Matador doesn’t expect any difference in productivity. Mgmt was asked “Are you guys expecting the productivity of those wells to be in line with kind of a normal two-mile lateral? Are there any changes in productivity per foot as you factor in the U-shape?” Mgmt replied “Hey, Kevin. It’s Glenn Stetson. So, we are -- the short answer is that we’re expecting the same kind of BO per foot, as you would a two-mile well. We’re basing that off -- there’s not a whole lot of U-turn wells that are producing today. There’s a few in South Texas, and then there are four in the Permian within a 20-mile kind of radius of where we’re drilling these wells. And so, we do feel very confident in and again from the technical aspect to get these wells completed, and we’ll wait and see. But for our projections, it’s just a similar performance on a per-foot basis.”*

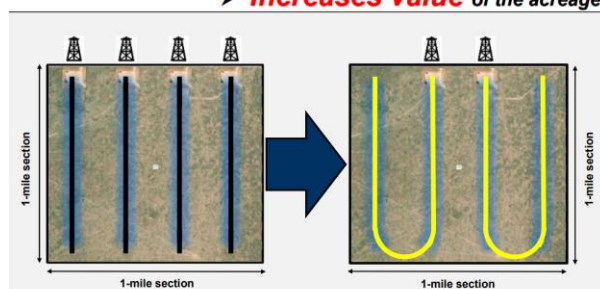
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Figure 22: “Horseshoe” wells in Permian

SLIDE E

“Horseshoe” Wells: 2-Mile Value in 1-Mile Section

- Up to **50%** time savings⁽¹⁾
- **\$10MM** cost savings⁽¹⁾
- **Increases value** of the acreage



(1) Savings of drilling and completing two horizontal “horseshoe” wells, as compared to four one-mile horizontal wells.

Source: Matador Resources

**Patterson-UTi says drilling U-Turn wells for a “few different E&Ps”**

Here is another item from our April 30, 2023 Energy Tidbits memo. “There was a good reminder from Patterson-UTi that they are going the U-Turn wells for other E&P companies besides Matador. Patterson-UTi held its Q1 call on Thursday. PTEN said “We have established ourselves as leaders in conventionally drilling U-turn wells, which involves utilizing a high-performance mud motor to drill complex wells shaped like a U, enabling clients to drill 10,000 foot laterals within a single 5,000 foot section. We’ve even successfully drilled a well in a W shape for a customer recently.” In the Q&A, mgmt. was asked “how broad based is this trend?”. Mgmt replied “Yeah, for the jobs that I know of that we’re doing the hydraulic fracturing on the U-shaped wells, I’m not aware of any difference on how we operate those versus just a straight lateral. And we’ve done the U shaped for a few different E&Ps, certainly the public data out there that shows that we work for Matador and really pleased to have them as a customer.”

Oil: North Dakota crude by rail down MoM to 101,849 b/d in January

On Thursday, the North Dakota Pipeline Authority posted its Monthly Update “March 2024 Production & Transportation” [\[LINK\]](#). Please note that we always go to the backup excel sheets from the North Dakota Pipeline Authority that provide low and high estimates for Williston crude by rail exports. While the NDPA’s chart shows a high and low estimate by month, we always take the midpoint when summarizing the update. In the backup excel, the NDPA estimates crude by rail in January from a low of 86,849 b/d and a high of 116,849 b/d for an average of 101,849 b/d. There was a downward revision to December’s numbers which used to have an average of 149,510 b/d, but is now 131,308 b/d. Because of this, the MoM decrease is slightly smaller. The NDPA did not comment on the MoM changes. Below is a chart showing the crude by rail volumes since 2014. Our Supplemental Documents package includes excerpts from the NDPA Monthly Update.

**North Dakota
CBR down MoM
in January**

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Figure 23: Estimated North Dakota Rail Export Volumes



Source: NDPA

Oil: EIA Mar STEO increases 2024, 2025 US oil production growth forecasts

On Tuesday, the EIA released its Short-Term Energy Outlook for March 2024 [LINK](#) and increased its 2024 and 2025 US oil production forecasts. (i) The March STEO forecasts for 2024 and 2025 US oil production estimates was revised up vs the last STEO in February. (ii) The February STEO estimate for 2023 was kept flat at 12.93 mmb/d from the February STEO of 12.93 mmb/d. The only quarterly revision was Q4/23 -0.01 mmb/d to 13.28 mmb/d from 13.29 mmb/d in the February STEO. Recall the big +140,000 b/d revision in October's STEO from the September STEO's forecast of 12.78 mmb/d, as the EIA had to play catch-up with higher oil production actuals being reported over weekly estimates. (iii) The March STEO forecasts for 2024 US oil production estimates were revised up vs the Feb STEO. The March STEO forecast for 2024 is up +0.09 mmb/d to 13.19 mmb/d from the Feb STEO of 13.10 mmb/d. The revisions by quarter were Q1/24 -0.12 mmb/d to 12.91 mmb/d, Q2/24 +0.01 mmb/d to 13.13 mmb/d, Q3/24 +0.19 mmb/d to 13.25 mmb/d, and Q4/24 exit +0.29 mmb/d to 13.47 mmb/d. (iv) The EIA also revised upwards their 2025 forecast. The EIA expects oil production to ramp up to 13.65 mmb/d over 2025, up +0.16 mmb/d from the Feb STEO. The revisions by quarter were Q1/25 +0.12 mmb/d to 13.49 mmb/d, Q2/25 +0.20 mmb/d to 13.66 mmb/d, Q3/25 +0.18 mmb/d to 13.68 mmb/d, and Q4/25 +0.14 mmb/d to 13.78 mmb/d. If true, these would be record quarters for US oil production. Below is our EIA STEO forecast comparison by month.

EIA STEO US oil production

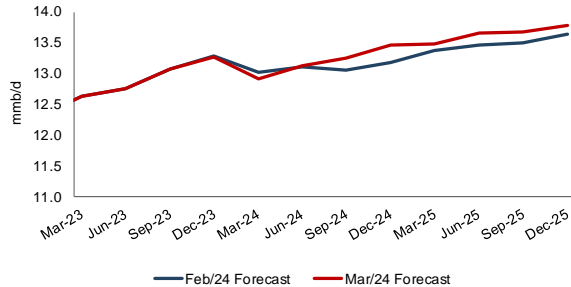
Figure 24: EIA STEO Oil Production Forecasts by Month

(million b/d)	Q1/23	Q2/23	Q3/23	Q4/23	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	Q1/25	Q2/25	Q3/25	Q4/25	2025
Mar-24	12.63	12.75	13.07	13.28	12.93	12.91	13.13	13.25	13.47	13.19	13.49	13.66	13.68	13.78	13.65
Feb-24	12.63	12.75	13.07	13.29	12.93	13.03	13.12	13.06	13.18	13.10	13.37	13.46	13.50	13.64	13.49
Jan-24	12.63	12.75	13.07	13.22	12.92	13.27	13.22	13.15	13.21	13.21	13.36	13.44	13.43	13.53	13.44
Dec-23	12.63	12.75	13.06	13.26	12.93	13.09	13.07	13.07	13.23	13.11					
Nov-23	12.63	12.75	13.07	13.17	12.90	13.06	13.08	13.11	13.35	13.15					
Oct-23	12.63	12.75	13.13	13.16	12.92	13.07	13.02	13.07	13.31	13.12					
Sep-23	12.63	12.71	12.86	12.94	12.78	13.03	13.09	13.15	13.36	13.16					
Aug-23	12.63	12.67	12.81	12.93	12.76	12.98	13.01	13.08	13.27	13.09					
Jul-23	12.61	12.55	12.48	12.63	12.56	12.67	12.71	12.88	13.13	12.85					
Jun-23	12.60	12.56	12.57	12.70	12.61	12.69	12.63	12.76	13.00	12.77					
May-23	12.54	12.51	12.46	12.61	12.53	12.63	12.58	12.68	12.85	12.69					
Apr-23	12.54	12.50	12.50	12.61	12.54	12.69	12.71	12.77	12.83	12.75					
Mar-23	12.31	12.43	12.48	12.54	12.44	12.58	12.58	12.64	12.71	12.63					
Feb-23	12.44	12.46	12.49	12.56	12.49	12.63	12.62	12.65	12.70	12.65					
Jan-23	12.37	12.34	12.40	12.51	12.41	12.63	12.72	12.86	13.03	12.81					

Source: EIA STEO

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Figure 25: Estimated US Crude Oil Productions by Forecast Month



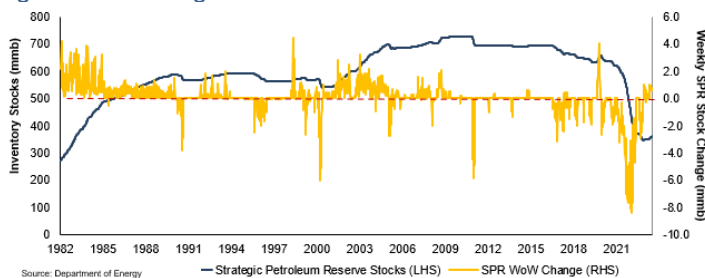
Source: EIA, STEO

Oil: US SPR less commercial reserve deficit now -85.438 mmb

US SPR reserves

The US elections are now eight months away on Nov 5, 2024 and the Biden Administration has added 14.2 million barrels back to the SPR since Aug 4, 2023 but SPR reserves are still down 276 million barrels since Biden was inaugurated. So there is less in the SPR if Biden wants to draw on the SPR ahead of the elections to keep oil and gasoline prices from getting too high. 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 8 [LINK](#) saw the SPR reserves increase +0.596 mmb WoW to 361.556 mmb, while commercial crude oil reserves decreased -1.536 mmb to 446.994 mmb. There is now a -85.438 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.

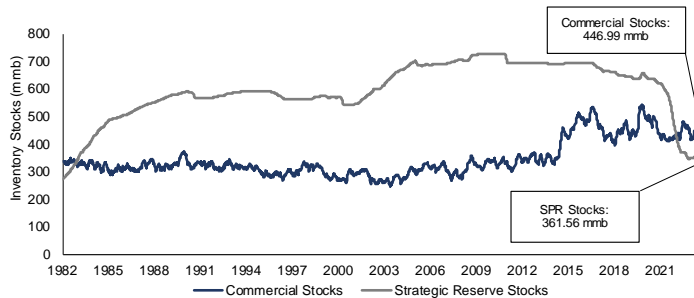
Figure 26: Strategic Petroleum Reserve Stocks and SPR WoW Change



Source: EIA

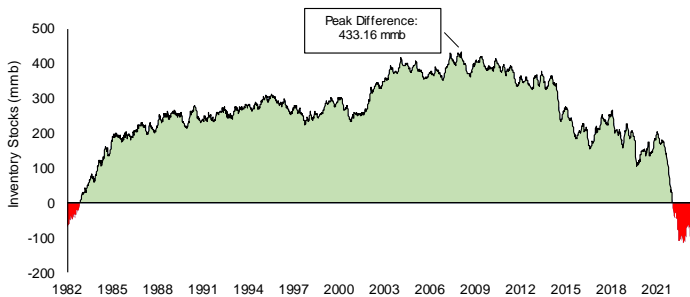
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Figure 27: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 28: US Oil Inventories: SPR Less Commercial



Source: EIA

Oil: US national average gasoline prices +\$0.06 this week to \$3.46

Yesterday, AAA reported that US national average prices were \$3.46, which was +\$0.06 WoW, up \$0.18 MoM and now flat YoY. The 435,000 b/d BP Whiting (Indiana) refinery was only reported to be restored to normal operations on Friday so that should give some relief to local gasoline prices. But it didn't as of yet. Yesterday, AAA reported Indiana gasoline prices were \$3.52, which was still up \$0.17 WoW. As of yesterday, the California average gasoline prices were +\$0.03 WoW to \$4.90, which is a \$1.44 premium to the national average gasoline price of \$3.46.

US gasoline prices

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

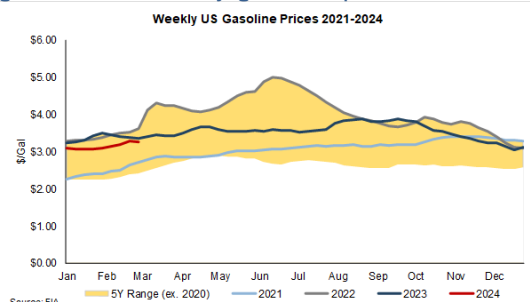
Here is what we wrote in last week's (Mar 10, 2024) Energy Tidbits memo on the normal seasonal increase in US gasoline prices. "Yesterday, we tweeted [LINK](#) "Reminder March is normally when US #Gasoline prices start to seasonally ramp up. Like air travel, Presidents' Day marks start of increasing 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

Seasonal increase in US gasoline prices

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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 California 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.”

Figure 29: US weekly gasoline prices



Source: EIA

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

Last week's (Mar 10, 2024) Energy Tidbits memo included 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 the cost to produce these higher-grade fuels.” Our Supplemental Documents package includes the NACS report.”

Summer blend gasoline is more costly

Oil: Crack spreads widened \$3.39 WoW to \$33.00

On Friday, we tweeted [\[LINK\]](#) “Positive for WTI #Oil over coming weeks. 321 crack spreads at \$33.00 are very big margins for refineries ie, huge incentive to maximize runs/crude input. Refineries taking as much oil as possible tends to drag up oil prices a bit. #OOTT Thx @business.” 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 \$33.00 on Mar 15, which was a widening of \$3.39 WoW. \$33.00 crack spreads are big and a huge

Crack spreads closed at \$33.00

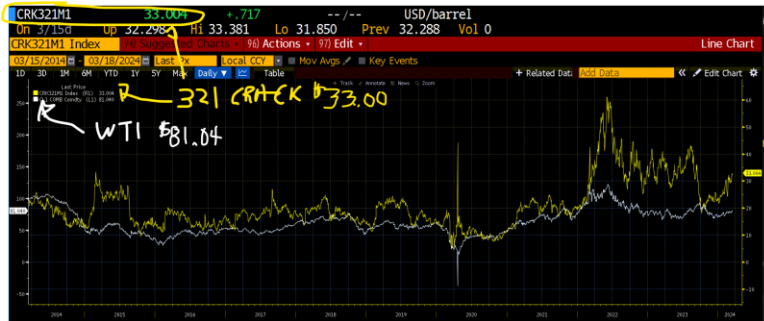
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incentive for refiners to get maximize crude runs. We remind that oil demand is driven by refiners and their ability to make money by processing oil and selling petroleum products. So crack spreads are a good indicator if refiners will be looking to buy more or less oil. And when crack spreads are at or over \$30, its' a very big incentive to refiners to want more crude and produce more product. This week, crack spreads widened \$3.39 WoW to \$33.00 on Mar 15, which followed \$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 \$33.00 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 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 \$33.00 as of the Friday March 15 2024 close.

Figure 30: Cushing Oil 321 Crack Spread & WTI Mar 15, 2014 to Mar 15, 2024



Source: Bloomberg

Oil: Cdn heavy oil differentials continue to seasonally narrow ahead of TMX start

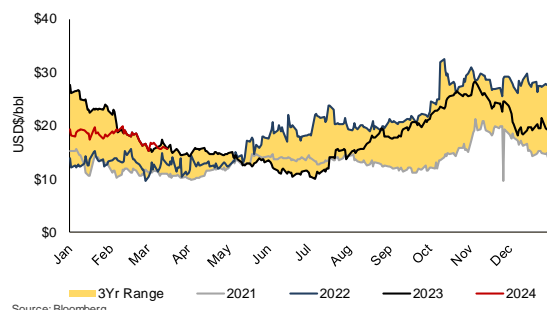
Early in the year, every year, we start to remind that that Cdn WCS less WTI differentials normally narrow in late Feb thru May as US refiners maximize production of asphalt for annual paving season. Refineries have, for the most part, finished planned winter turnarounds and are moving to maximize production 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. We have seen Cdn heavy oil differentials narrowing already and a key factor for that is the OPEC+ cuts, which tend to first be on heavy/medium sour barrels that would

WCS differentials normally narrow in spring

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tend to compete with Cdn heavy/medium barrels. The WCS less WTI differential closed on March 15 at \$15.72, which was $-\$0.28$ WoW vs \$16.00 on March 8. These are both well below the Feb peak of \$19.75. We note that this is before the start up of Trans Mountain 590,000 b/d TMX expansion, which is expected to have a major reduction of WCS less WTI differentials when it comes online later this spring.

Figure 31: WCS less WTI oil differentials to March 15 close



Source: Bloomberg

Source: Bloomberg

Oil: 435,000 b/d BP Whiting refinery has returned to normal operations

It took a couple extra weeks but, on Friday, Bloomberg reported “BP’s refinery in Whiting, Indiana, has returned to normal operations, spokeswoman Christina Audisho said. * The largest US inland refinery had been idled after a Feb. 1 abrupt loss of power * Shutdown of 435k b/d Whiting has tightened Midwest fuel supplies, boosting margins and propelling prices higher at the pump”. BP Whiting was originally expected to be back to normal by the end of February. BP Whiting is significant as it is run primarily on imports of Cdn oil, which is why US oil imports from Canada have been down since mid January.

BP Whiting back to normal operations

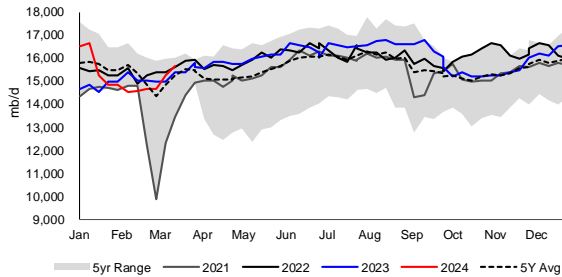
Oil: Refinery Inputs up +0.390 mmb/d WoW to 15.658 mmb/d, refineries coming online

There are always unplanned refinery items that impact crude oil inputs into refineries such as the 435,000 b/d BP Whiting (Indiana), which was still shut down for the March 8 week. It was reportedly starting up last weekend so wouldn’t have impacted the March 8 data. But 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 8 [\[LINK\]](#). The EIA reported crude inputs to refineries were up +0.390 mmb/d this week to 15.658 mmb/d and are up +0.260 mmb/d YoY. Refinery utilization was up +190 bps WoW at 86.8%, which is -140 bps YoY.

Refinery inputs +0.390 mmb/d WoW

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Figure 32: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports -0.240 mmb/d WoW as oil imports down -1.730 mmb/d WoW

The EIA reported US “NET” imports were up +0.928 mmb/d to 2.344 mmb/d for the March 8 week. US imports were down -1.730 mmb/d to 5.491 mmb/d against exports which were -1.490 mmb/d WoW to 3.147 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 down -1.092 mmb/d. Some items to note on the country data: (i) Canada was down -0.174 mmb/d to 3.458 mmb/d. US oil imports from Canada have been well of the recent 4.188 mmb/d for the Jan 12 week as BP Whiting (Indiana) 435,000 b/d refinery has been down. It is reportedly restarting this weekend but we suspect it won’t impact the March 8 import data. (ii) Saudi Arabia was down -0.101 mmb/d to 0.265 mmb/d. (iii) Mexico was down -0.337 mmb/d to 0.303 mmb/d. (iv) Colombia was down -0.351 mmb/d to 0.000 mmb/d. (v) Iraq was down -0.083 mmb/d to 0.093 mmb/d. (vi) Ecuador was down -0.116 mmb/d to 0.102 mmb/d. (vii) Nigeria was down -0.090 mmb/d to 0.132 mmb/d.

US net oil imports

Figure 33: US Weekly Preliminary Imports by Major Country

	Dec 8/23	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	WoW
Canada	3,572	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	-174
Saudi Arabia	316	406	75	139	474	413	81	150	353	390	224	139	366	265	-101
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	633	851	380	952	522	756	356	427	661	294	784	569	640	303	-337
Colombia	214	215	157	129	220	212	72	79	415	150	286	71	351	0	-351
Iraq	85	22	380	239	192	64	206	205	0	43	226	240	176	93	-83
Ecuador	233	49	142	83	30	150	3	103	72	201	158	0	218	102	-116
Nigeria	111	162	80	95	165	147	199	190	81	137	159	165	222	132	-90
Brazil	255	197	238	305	249	264	266	213	338	148	44	234	178	272	94
Libya	87	86	0	171	0	7	37	0	0	63	92	65	0	66	66
Top 10	5,506	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	-1,092
Others	1,011	1,076	1,396	986	832	1,219	1,090	665	1,448	1,045	1,012	1,136	602	1,694	6,583
Total US	6,517	6,750	6,276	6,895	6,241	7,420	5,580	5,605	6,907	6,470	6,654	6,385	6,385	6,385	5,491

Source: EIA, SAF

Oil: AMLO says 340,000 b/de Dos Bocas to produce fuel, latest is in April

We have been highlighting the big change in medium sour oil supply to US Gulf Coast (PADD 3) refineries in Q2/24 driven by the start up of the 590,000 b/d Trans Mountain TMX pipeline and ramp up in processing at Pemex’s 340,000 b/d Dos Bocas (Olmeca) refinery. This is a challenge for Biden in election year to try to make sure oil and gasoline prices don’t

AMLO’s 340,000 b/d Dos Bocas update

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run up this summer. But these startups are also why Cdn WCS less WTI differentials will be significantly narrower. The Dos Bocas refinery has continued to be late and AMLO's prior statements on startup have not played out. However, AMLO's latest update is that it finally ramping up in April. On Monday, we tweeted [\[LINK\]](#) "Can Biden keep a lid on normal seasonal #Gasoline price increases & avoid price spike 2022 or even 2023. AMLO 340 kbd Dos Bocas about to produce fuels so less #Oil for export ie. to Gulf Coast. 📌 @eleconomista Cdn 590 kbd TMX about to start, reduce Cdn oil to Gulf Coast #OOTT." The reason for our tweet was the El Economista Monday report [\[LINK\]](#) that "President Andrés Manuel López Obrador said Monday that Dos Bocas will begin refining fuel in April. "I can say that thanks to the fact that we are rehabilitating the refineries, that thanks to the purchase of the Deer Park refinery ... we are about to start producing the Dos Bocas refinery. I think that by April at the latest, next month (it will start producing fuel)... and it will produce 20% of the gasoline we need," announced the president of Mexico." And "Since September 2023, the authorities detailed that primary gasoline of 340 thousand barrels per day of capacity was already being produced in the aforementioned facilities, and that it had received its first load of crude oil. However, in December last year, Pemex indicated that it was inspecting the facilities so that the Olmeca refinery could plan its start-up date. On the other hand, in January, AMLO detailed that Dos Bocas would be operating at 100% capacity in February."

Oil: Petrobras keeps forecast for flat Brazil oil production in 2024 and 2025

It looks like Petrobras, at least for now, is holding to their forecast for flat production in 2024 and 2025. Last Friday, Petrobras held its Q4 call. We didn't get a chance to listen to the call last week as we wanted to make sure the transcript was correct. We listened to the webcast that was in Portuguese but there was the English interpreter. In the Q4, Petrobras stress how "in the last 3 years, we have achieved more than 96% accuracy in our targets. With a robust risk analysis, we have incorporated uncertainties related to the complexity of our reservoirs and the business." For 2023, it sounds like they had few disruptions so they slightly outperformed but when asked about 2024, they still expect guidance midpoint for 2024 would be an unchanged 2.8 mmb/d. The transcript was correct to what the interpreter said, but we believe the translator made an error in saying 12.8 million boe/d instead of 2.8 million boe/d. Regardless, a 2.8 mmb/d mid-point guidance is exactly the same as in their Nov 23, 2023 2024-28 plan that called for flat YoY production in 2024 and 2025 before returning to growth in 2026. Here is transcript of the translator in the Q&A. "Good afternoon, Bruno. Thank you for that question. About the downtimes you mentioned, they're all in line with what had been foreseen, nothing new. The production from the first quarter is in line with what we've forecasted. Last year, we had four new production systems and two that were ramping up. So we were a bit above the production levels that we had foreseen last year, but still within that range. We have some forecasts that fortunately did not materialize in terms of possible delays and so on. This year, we have fewer foreseen problems, right? We have one FPSO that's ramping up and some areas in decline. So I would say that, well, you asked if we could be above the range, and I'd say that our best bet is 12.8 equivalent barrels per day, and we're going to announce a certain range, but I would bet that we would be about, on that average, in the middle of that average."

Flat YoY Brazil oil production

02/06/24: Petrobras forecasts flat Brazil oil production in 2024 and 2025

Here is what we wrote in our Feb 11, 2024 Energy Tidbits memo." On Tuesday morning, we tweeted [\[LINK\]](#) "One for the Oil bulls. Petrobras reminds its 11/23/23

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2024-28 plan forecasts flat Brazil #Oil production in 24 & 25 vs IEA forecast for +240,000 b/d YoY in 2024. Thx @maridurao #OOTT.” Bloomberg’s report “Petrobras Hunts for More Oil as Production Growth Falter” was based on comments from Petrobras’s head of exploration and production, Joelson Mendes. Mendes reminded that Petrobras doesn’t expect YoY growth in oil production in 2024 and 2025, rather they don’t expect growth until 2026. This is a reminder as it is what Petrobras presented in its 2024-2028 Strategy Plan from Nov 23, 2023. Petrobras forecast flat YoY oil production in 2024 vs 2023, and again in 2025 vs 2024. It was interesting to see that Mendes made a point of noting outside forecasts, like the IEA, were more optimistic than Petrobras ie. the IEA forecasts Brazil oil production +240,000 b/d YoY in 2024. Bloomberg wrote “According to Mendes, many analysts have a more optimistic view on production than the company, which takes into account complications from maintenance work and equipment delivery delays. The International Energy Agency expects Brazil to grow by 240,000 barrels a day this year.” Below is the Petrobras oil forecast from its Nov 23, 2023 2024-2028 plan. Our Supplemental Documents package includes the Bloomberg report.”

Figure 34: Petrobras oil forecast from Nov 23, 2023 2024-2028 Plan



Source: Petrobras

10% decline = Petrobras needs to add 280,000 boe/d to keep oil production flat

Here is another item from our Feb 11, 2024 Energy Tidbits memo. “Our second tweet on Wednesday was specific to Petrobras’s decline rate challenge. We tweeted [\[LINK\]](#) “#1 oil challenge every year! #Oil production declines every year so co's have to replace declines just to stay flat. Petrobras: Brazil average decline is 10% so have to add 280,000 boe/d each year just to stay flat. Petrobras reminds no YoY oil growth in 2024 & 2025. #OOTT.” Petrobras forecasts flat production in 2024 and 2025 in the face of a 10% annual decline rate. That means they must add 280,000 boe/d in new production just to keep production flat at 2.8 million boe/d.”

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

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 peak oil production to hit 2025

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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 sentence 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.

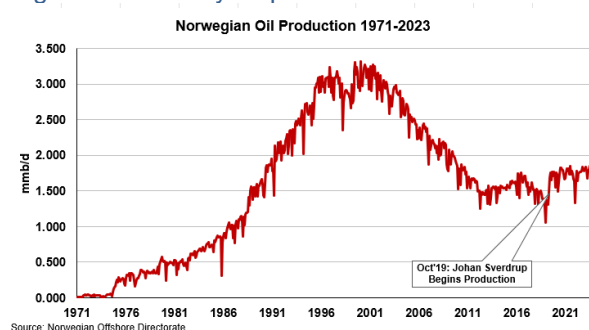
Has Norway oil production peaked w/ Johan Sverdrup field moving to decline?

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 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

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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 35: Norway oil production



Source: Norwegian Offshore Directorate

Figure 36: Johan Sverdrup production plateau 755,000 b/d

Johan Sverdrup
A giant field with excellent reservoir properties

- Excellent operational performance
- Stable production at elevated capacity level
- Continuously working to optimise production

Daily oil production since start-up

Source: Aker BP Q4 Presentation Feb 8, 2024

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Oil: Nigeria individual terminal data supports something fishy on its oil volumes

Sometimes numbers just jump at you and that was the case in Bloomberg's short report on Friday "Nigeria's February Crude Output Dropped to 1.32M B/D: Regulator". The story was on how "Nigeria's crude oil output dropped to 1.32m b/d in February, the lowest since November, according to data from the country's upstream petroleum regulatory commission. * Down from 1.43m b/d in January; Numerous key grades saw production decline to multi-month lows." That number didn't surprise as this was consistent with the OPEC Monthly Oil Market Report on Tuesday for Nigeria's "Direct Communications", which is the data Nigeria provides to OPEC for the MOMR. In this week's OPEC Monthly Oil Market Report, Secondary Sources estimates Nigeria's oil production in Feb was 1.476 mmb/d, +47,000 b/d MoM vs 1.429 mmb/d in Jan. Whereas Direct Communications (Nigeria's numbers to OPEC) were its oil production in Feb was 1.322 mmb/d, -104,000 b/d MoM from 1.427 mmb/d in Jan. But what jumped out at us was the Bloomberg below table that showed all terminals were down MoM. It seemed odd that all terminals were down a bit as if there was a mandated cut. But Nigeria in Jan was already below its 1.5 mmb/d target so it didn't need to cut. It seems highly unlikely that there was some sort of common operational items that impacted oil output to be down a bit at every terminal. So we have to assume its just Nigeria's way of making sure it reports oil output that is less than tanker trackers report. Our Supplemental Documents package includes the Bloomberg report.

Nigeria's oil data by terminal

Figure 37: Nigeria crude and condensate output data by terminal

Terminal/Stream	February	January	Notes on February output*
Qua Iboe	3.71m	4.3m	Lowest since April
Forcados	7.59m	8.75m	Lowest since November
Escravos	3.73m	4.24m	Lowest since September 2022
Agbami	2.84m	2.94m	Lowest since September
Bonga	3.6m	3.75m	Lowest since February 2023
Egina	2.61m	2.88m	Lowest since November
Bonny	5.19m	6.94m	Lowest since November
Amenam	2.73m	2.94m	Lowest since December
Akpo	1.53m	1.66m	Lowest since at least 2020

Source: Bloomberg

Oil: What does 6 more years of Putin in charge mean?

We don't think it makes a difference which side of the political aisle people in North America sit, today is pointing to increasing geopolitical conflict as Putin is on track to win the Russian presidential election for another 6-year term. Putin has domestic challenges including on how he keeps funding and getting manpower for the war on Ukraine, But one thing we do know is that Putin isn't stopping the war on Ukraine especially as he sees signs of wavering from the West. We expect to see a range of analysis and views tomorrow on what the next 6 years could bring in addition to the war on Ukraine. Don't forget in 2021, Putin signed a decree that would in theory allow him one further term so he could be in power for 12 years. The voting for Russia's presidential election ends its 3rd and final day today. The voting is still open. The latest update from TASS on voting numbers is that nationwide voter turnout had reached 65.05% as of 3:50am MT.

Putin on track for re-election

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Russian refineries hit by drones

Oil: Multiple Russian oil refineries hit by Ukrainian drones

There seems to be no question now that Ukraine is impacting global oil markets as its drone attacks hit critical equipment in more Russian refineries. This is reducing Russian refining capacity, which means Russia will produce less refined products and have less to export. It also means more crude can be freed up for export. Ukraine's drone attacks during Russia's three-days of voting continued overnight. Here is our update as of 7am MT this morning collecting reports from AFP, Bloomberg, Reuters, and TASS. (i) On Tuesday, we tweeted [\[LINK\]](#) "Refining 101. Lukoil drone reportedly hitting a distillation unit. it's a critical part of the 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". (ii) On Wednesday, Bloomberg reported Wednesday that Ukraine sent over 60 drones into Russia overnight and successfully struck three major refineries: The Rosneft Ryazan refinery (340,000 b/d), Lukoil's Norsi refinery in Nizhny Novgorod (on Tuesday), and the Novoshakhtinsk refinery near the Black Sea (112,000 b/d). Combined, these refineries account for 12% of Russia's refining capacity. We know from video footage that two big fires broke out in Ryazan, and reports that two "primary oil refining units" had to be shut down. Based on the video, one of the units looks to be a distillation tower, but we can't be sure. The drone strike at the Novoshakhtinsk facility forced the refiner to halt operations, although there's been no official damage reports. The geographical locations of these refineries are important: the Ryazan and Norsi plants are close to Moscow and supply a lot of the capital's gasoline and diesel, while the Novoshakhtinsk refinery is near the Ukrainian border in the south and likely provides fuel to the Russian army. Below are some maps of refinery locations. (iii) Early this morning, Reuters reported a drone hit the Slavyansk-on-Kuban refinery (in the southern Russia Krasnodar region, east of the Sea of Azov). Reuters said the refinery capacity was 90,000 b/d. (iv) Also on Saturday, AFP reported another drone hit the refinery in Ryazan, which is 620 miles from the Ukraine border. Below are some maps of refinery locations.

Figure 38: Russian oil refineries hit by drones this week

Russian Oil Refineries Hit by Drones This Week

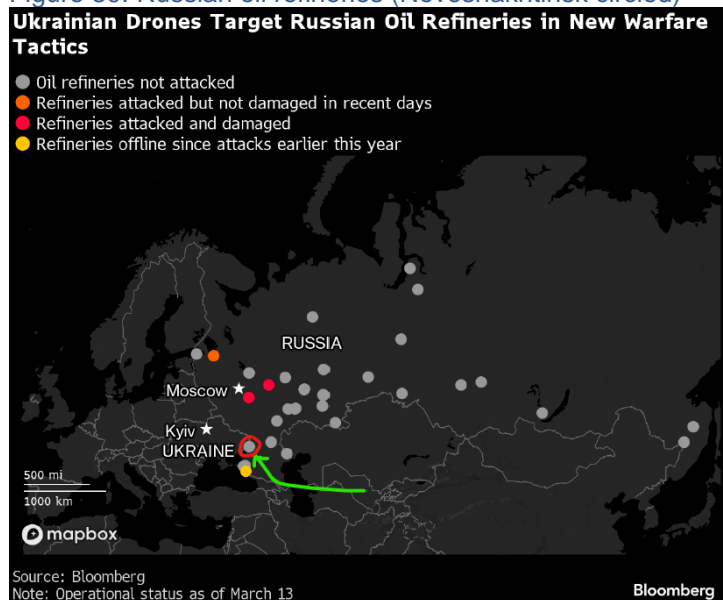


Source: Bloomberg

Source: Bloomberg

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Figure 39: Russian oil refineries (Novoshakhtinsk circled)

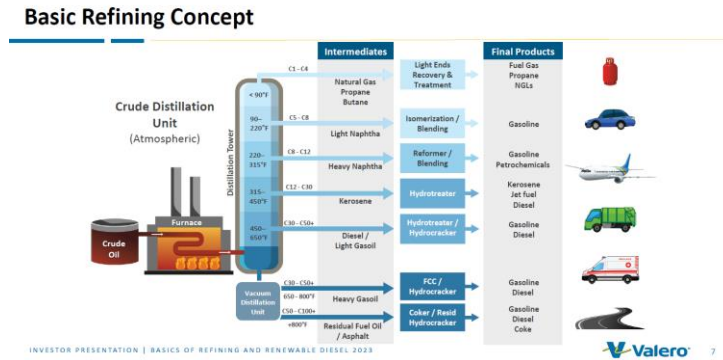


Ukrainian drones are hitting critical parts of Russian refineries

One of the big items from the Ukrainian drone strikes on Russian refineries is that the drones are reportedly hitting critical parts of the 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. Upon seeing pictures and reports from major news outlets on the 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.

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Figure 40: Valero's Basic Refining Concept

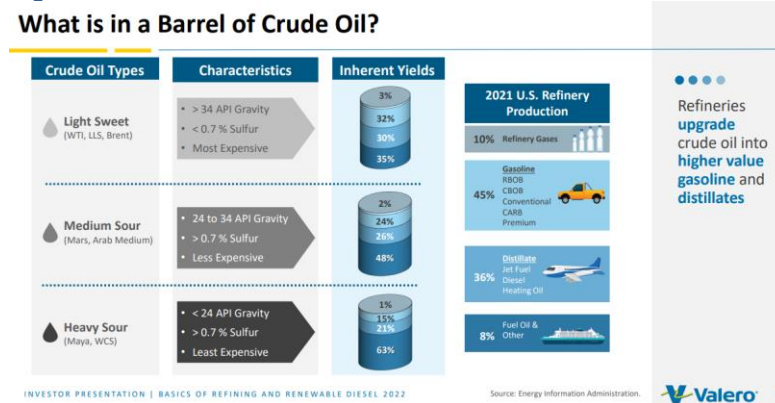


Source: Valero

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

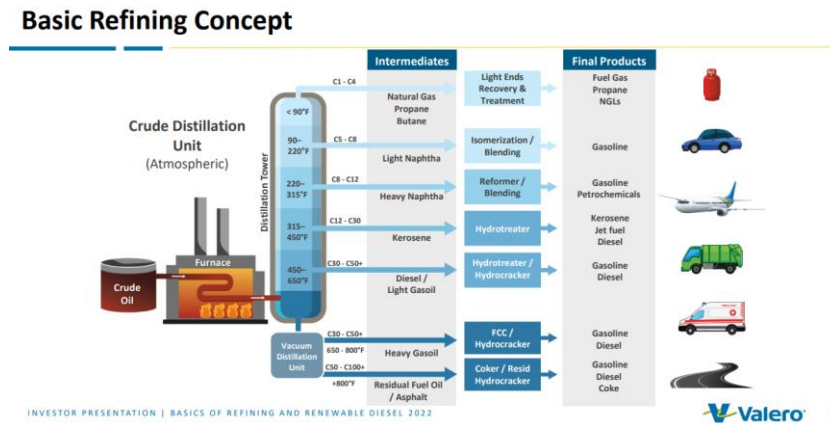
Figure 41: What is in a Barrel of Crude Oil?



Source: Valero

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Figure 42: Basic Refining Concept



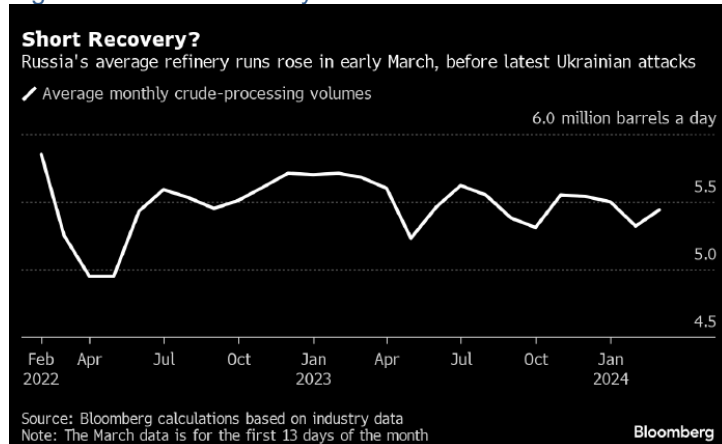
Source: Valero

Oil: Russian refineries oil processing highest level in 2 months, before drone strikes

Ukraine drone attacks have already had an impact on Russian refineries even before this week's drone attacks. It has been a key reason why Russian refinery runs were down in Jan/Feb when they would normally be higher even as the normal winter peak refining period before Russian refineries normally decline in March/April. On Friday, Bloomberg reported that Russian refiners processed 5.44 mmb/d between Mar 1 and Mar 13. This is up 7,000 b/d WoW, but the recovery from February's strikes looks like it will be short-lived given the drone attacks this week. Normally Russia refineries are starting their seasonal decline but this year has been extra impacted by drone attacks. Bloomberg predicts drone strikes this year will reportedly reduce Russia's throughput by at least 300,000 b/d this year, and pointed out with choked-up refineries, the Russians are more likely to export the excess raw crude. Our Supplemental documents package includes the Bloomberg report.

Russia oil refinery runs

Figure 43: Russia refinery runs thru Mar 13 week



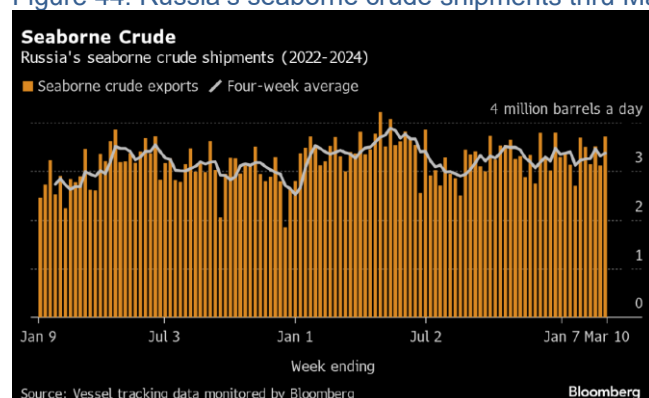
Source: Bloomberg

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Highest Russia oil shipments YTD

Oil: Russia’s crude oil shipments for Mar 10 set new record for 2024, up after storms
 Russia’s crude exports are up big after the Kozmino terminal was hammered by storms last week. Bloomberg reported “Russia’s seaborne crude exports surged to the highest level for the year so far, with shipments from a key Pacific port rebounding after a storm hampered loading operations in the previous week. The 590,000-barrels-a-day jump in the week to March 10 came shortly after Moscow renewed its commitment to the OPEC+ effort to avert a global surplus and shore up prices by restricting output. Weekly flows were 420,000 barrels a day above Russia’s pledge to its partners for the first quarter, with the four-week average topping the target by 80,000 barrels a day”. The March 10 figures are up +590,000 b/d WoW, and 420,000 b/d above Russia’s renewed Q1/24 export cap. The Kozmino port saw 11 ships get loaded this week, up from 6 last week and up +1 from the previous high at 10 tankers in Feb. Sokol crude is reportedly getting shipped directly to Chinese refiners now, rather than transferred to other ships, so that is helping Russia move the grade which its usual Indian buyers have shied away from recently. Still, there’s over 10 mmb of Sokol in floating storage just waiting to be delivered. The tanker sitting outside Karachi ended up delivering its load of crude and should be returning this week. Below are Russia’s seaborne crude shipments since 2022 and tanker loading data. 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. Our Supplemental Documents package includes the Bloomberg report.

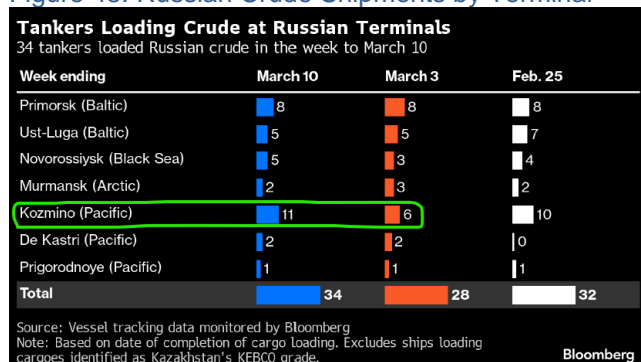
Figure 44: Russia’s seaborne crude shipments thru Mar 10 week



Source: Bloomberg

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Figure 45: Russian Crude Shipments by Terminal



Source: Bloomberg

Oil: OPEC cuts working, global oil stocks at low levels

Even the oil bears have to admit there is at least one common takeaway from the Tuesday OPEC Monthly Oil Market Report and the Thursday IEA Oil Market Report – global oil stocks were down MoM and ended Jan 31 at very low levels ie. OPEC extended cuts thru Q1/24 are working especially in Q1/24 when Q1 is always a seasonally lower global oil demand period than the preceding Q4. (i) OPEC MOMR. On Tuesday morning, we tweeted [\[LINK\]](#) “#OPEC cuts working - Oil stocks down MoM. Crude oil only stocks. Jan 31 at 1,318 mmb, 113 <2015-19 ave. Down vs Dec 31 at 1,342 mmb or 86 <2015-19 ave. Total Oil + Products stocks. Jan 31 at 2,735 mmb, 192 <2015-19 ave. Down vs Dec 31 at 2,767 mmb, 159 <2015-19 ave #OOTT.” (ii) IEA’s limited public information on its OMR had a pretty clear statement. IEA wrote “Global stocks plunged by 48.1 mb in January, with OECD industry stocks at a 16-month low.”

Low global oil stocks

Oil: OPEC MOMR, global oil stocks down MoM and a wider deficit to 2015-19 average

On Tuesday at 6:30am MT, OPEC released its March Monthly Oil Market Report. We thought the takeaway was neutral to slightly positive. (i) Global oil stocks are down MoM in Jan. On Tuesday, we tweeted [\[LINK\]](#) “#OPEC cuts working – Oil stocks down MoM. Crude only stocks. Jan 31 at 1,318 mmb, 113 < 2015-19 ave. Down vs Dec 31 at 1,342 mmb or 86 < 2015-19 ave. Total Oil + Products stocks. Jan 31 at 2,735 mmb, 192 <2015-19 ave. Down vs Dec 31 at 2,767 mmb, 159 <2015-19 ave”. We believe the MoM decline in stocks and wider deficit vs the 2015-2019 average support why some OPEC+ members extended their voluntary cuts. Total Oil + Products stocks at Jan 31 were -192 mmb below 2015-19 average, which is a higher deficit than the Feb MOMR Dec 31 figures at -159 mmb below 2015-19 average. Crude only oil stocks at Jan 31 are -113 mmb/d below the 2015-2019 average, which is wider than the Dec 31 deficit at -86 mmb/d. (ii). There was no change to oil demand forecasts for 2024 and 2025. We were a little surprised by this considering Aramco last week put out a forecast of 2025 demand growth at +1.5 mmb/d (lower than OPEC’s +2.25 mmb/d). On Tuesday, we tweeted [\[LINK\]](#) “OOPS! OPEC MOMR makes no change to #Oil demand. OPEC made a small reduction in non-OPEC supply growth for 2024 to +1.07 mmb/d YoY (was +1.19 mmb/d YoY), but revised 2025 supply growth up +0.13 mmb/d to 1.40 mmb/d (was 1.27 mmb/d). The big criticism on OPEC’s forecast is their demand growth forecast is

OPEC Monthly Oil Market Report

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too optimistic. For 2024, no change to YoY growth of +2.25 mmb/d YoY but a higher total of 104.46 mmb/d due to higher 2023 starting point (Was +2.25 mmb/d YoY to 104.40 mmb/d.) For 2025, no change to YoY growth of +1.85 mmb/d YoY but a higher total of 106.30 mmb/d due higher starting point (was +1.85 mmb/d to 106.25 mmb/d). No change to China demand forecasts of 16.82 mmb/d and 17.23 mmb/d in 2024 and 2025, respectively. (iii) OPEC still forecasts increasing oil demand for OECD countries at +0.25 mmb/d YoY to 46.06 mmb/d in 2024 (was 46.03 mmb/d), i.e. not reaching peak oil demand. (iv) Non-OECD is still forecast to grow +2.00 mmb/d YoY to 58.39 mmb/d (was 58.37 mmb/d) in 2024 with the largest growth being China +0.63 mmb/d YoY to 16.82 mmb/d and the Middle East +0.38 mmb/d YoY to 9.59 mmb/d. Other Asia non-OECD is forecast up +0.32 mmb/d YoY to 9.59 mmb/d, and India +0.22 mmb/d YoY to 5.57 mmb/d. (iv) Non-OPEC supply was revised up for 2023 at 69.46 mmb/d (was 69.36 mmb/d), which was the main reason for the decrease in the 2024 supply growth forecast. OPEC forecasts non-OPEC supply growth at +1.07 mmb/d YoY to 70.53 mmb/d (was 70.55 mmb/d). Key YoY non-OPEC growth areas for 2024 are US +0.54 mmb/d (unchanged), Canada +0.20 mmb/d (unchanged), Brazil at +0.12 mmb/d (unchanged), and Norway +0.12 mmb/d (unchanged). (v) Non-OPEC supply in 2025 is expected to grow by +1.40 mmb/d (was +1.27 mmb/d) to 71.93 mmb/d (was 71.82 mmb/d), with major growth areas in North America at +0.70 mmb/d (unchanged, US at +0.60 mmb/d) and Latin America +0.27 mmb/d (unchanged). (vii) OPEC Secondary Sources for February were +203,000 b/d MoM to 26.571 mmb/d. The noticeable MoM changes were Libya +0.144 mmb/d to 1.167 mmb/d and Nigeria +0.047 mmb/d to 1.476 mmb/d. The Libyan rebound is due to the protests they had in their major Sharara and El-Feel oil fields that shut-in production for a couple of weeks in January. (vii) Direct Communications (what the OPEC countries report). There were a few items to note vs what countries directly reported vs Secondary Sources estimates: Iran does not provide production numbers. Iraq does its norm and says it produced less at 3.992 mmb/d in Feb vs. Secondary Sources of 4.203 mmb/d, Saudi Arabia says it produced 9.011 mmb/d in Jan vs Secondary Sources of 8.980 mmb/d, and Venezuela does its norm and says it produced more at 877,000 b/d vs. Secondary Sources of 820,000 b/d. (ix) Our Supplemental Documents package includes excerpts from the March OPEC MOMR.

OPEC kept a much more bullish 2024 oil demand growth vs Saudi Aramco

Early Tuesday morning, we tweeted [\[LINK\]](#) “OOPS! OPEC MOMR makes no change to #Oil demand growth of +2.25 mmb/d YoY in 2024. Looks like Aramco CEO Sunday comments to media of his +1.5 mmb/d YoY demand growth wasn't an indicator of a change in OPEC MOMR forecast. #OOTT.” The biggest surprise, at least to us, from OPEC MOMR's report is that it did not lower its 2024 oil demand growth of +2.25 mmb/d YoY. We were expecting OPEC to lower its 2024 oil demand forecast as evidenced by the title of last week's (March 10, 2024) Energy Tidbits memo “Will OPEC Lower Its +2.2 mmb/d YoY Oil Demand Growth in 2024 Given Saudi Aramco is Lower at +1.5 mmb/d YoY?” Saudi Aramco reported its Q4 last Sunday morning and held its media call early Sunday morning (North America time). And what caught our attention was Reuters [\[LINK\]](#) quoting Aramco CEO Nasser ““We expect it to be fairly robust, we are looking at growth of about 1.5 million barrels,” Nasser said. Nasser put demand for 2024 at 104 million barrels a day as opposed to an average of 102.4 million barrels in 2023.” When we saw the Nasser forecast for oil demand to be +1.5 mmb/d YoY in 2024, we thought that OPEC

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Secretariat would at least be aware of Saudi Aramco’s demand view and that would have some impact on OPEC Secretariat’s view of oil demand growth. But that was not the case and OPEC Secretariat made no change to their demand forecast of +2.25 mmb/d YoY in 2024.

IEA Oil Market Report

Oil: IEA OMR “oil consumption reverts towards its historical trend”, higher ’24 demand

On Thursday, the IEA released its monthly Oil Market Report for March at 2am MT. They only release very limited public info, but Bloomberg provided detailed tables and added colour from the report. (i) We see the report as neutral to slightly positive. The IEA revised their 2024 demand outlook slightly (+0.1 mmb/d), while non-OPEC supply was essentially flat, and oil stocks in Jan continue to be low. (ii) Most thought the IEA was bullish as they increased their demand forecast. 2024 demand. There were a few quarterly changes to estimates: Q1/24 was revised +0.3 mmb/d to 102.0 mmb/d, Q2/24 +0.2 mmb/d to 103.0 mmb/d, Q3/24 +0.2 mmb/d to 104.0 mmb/d, and Q4/24 flat mmb/d at 103.7 mmb/d. FY2024 demand was bumped up +110,000 b/d to 103.2 mmb/d (was 103.0 mmb/d in Feb’s OMR). (iii) In the following item, we note how we wonder if the IEA, through its careful drafting and non-answer on BloombergTV are pointing to the IEA increasing their mid term demand outlook for oil. (iv) IEA kept non-OPEC supply flat. Note that the IEA now includes Angola’s production in this category since they left OPEC. 2023 non-OPEC was left unchanged from the Feb OMR at 69.1 mmb/d. For 2024, non-OPEC supply growth rate was held flat at +1.6 mmb/d to 70.6 mmb/d for FY2024 (Bloomberg shows it as 70.4 mmb/d). By quarter, Q1/24 is 71.0 mmb/d, Q2/24 70.7 mmb/d, Q3/24 70.7 mmb/d, and Q4/24 is 71.0 mmb/d. (v) Onshore crude stocks are down MoM, -0.38 mmb, mainly due to displaced storage in floating inventories as tankers spend longer on the water: “Global onshore oil stocks fell a further 38 mb last month, taking the draw down since July to 180 mb, according to preliminary data. Over the same period, oil on water surged. Trade dislocations from the rerouting of Russian barrels and more recently due to unrest in the Middle East, have boosted oil on water by 115 mb. In February alone, oil on water surged by 85 mb as repeated tanker attacks in the Red Sea diverted more cargoes around the Cape of Good Hope. At nearly 1.9 billion barrels as of end-February, oil on water hit its second highest level since the height of the Covid-19 pandemic”. Our Supplemental documents package includes the IEA release and the Bloomberg reports.

Figure 46: IEA Global Demand Forecast by OMR Report

mmb/d	Q1/23	Q2/23	Q3/23	Q4/23	2023	23-22	Q1/24	Q2/24	Q3/24	Q4/24	2024	24-23
Mar 24	100.3	101.9	103.0	102.2	101.8	2.2	102.0	103.0	104.0	103.7	103.2	1.4
Feb 24	100.2	101.8	102.9	102.1	101.8	2.2	101.7	102.8	103.8	103.7	103.0	1.2
Jan 24	100.2	101.8	102.9	102.0	101.7	2.1	101.7	102.7	103.7	103.8	103.0	1.3
Dec 23	100.2	101.7	102.8	102.2	101.7	2.1	101.4	102.4	103.4	103.9	102.8	1.1
Nov 23	100.3	101.7	103.0	102.8	102.0	2.4	101.5	102.4	103.5	104.1	102.9	0.9
Oct 23	100.4	101.8	102.7	102.6	101.9	2.3	101.3	102.2	103.5	103.9	102.7	0.8
Sep 23	100.4	101.7	102.6	102.5	101.8	2.2	101.1	102.6	104.0	103.5	102.8	1.0
Aug 23	100.6	102.0	102.9	103.1	102.2	2.2	101.5	102.6	104.2	104.3	103.2	1.0
July 23	100.5	101.4	103.1	103.3	102.1	2.2	101.4	102.6	104.3	104.5	103.2	1.1
June 23	100.5	101.6	103.4	103.5	102.3	2.4	101.5	102.5	104.1	104.4	103.1	0.8
May 23	100.5	101.3	103.0	103.1	102.0	2.1						
Apr 23	100.4	101.2	103.1	103.0	101.9	2.0						
Mar 23	100.7	101.3	101.9	101.9	101.5	1.6						
Feb 23	100.1	101.1	102.9	103.5	101.9	1.9						
Jan 23	99.6	100.8	102.9	103.5	101.7	1.8						
Dec 22	99.7	100.6	102.7	103.4	101.6	1.7						

Source: IEA, Bloomberg, SAF

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Do IEA's well-crafted words & non-answer point to increasing oil demand

Ever since the IEA issued its annual global EVs report in April 2023, we have been highlighting our disbelief in their overlooked assumption on how much and how quickly EVs will displace oil consumption. That was one of the key reasons why we have been saying the IEA is inevitably going to increase its oil demand forecasts and thereby pushing back its forecast for peak oil demand. And on top of that, for months now we have highlighted how the IEA and others have to lower their forecasts for EV adoption for the balance of the 2020s, which only adds more support to our view that the IEA has to push back its forecast for peak oil demand. So we look for hints or careful wording from the IEA if such a change is forthcoming. We expect they will make a big change in their EVs forecast next month. (i) We tweeted [\[LINK\]](#) "*Historical #Oil demand growth for only 24 or till when? ". #oil consumption reverts towards its historical trend after several years of volatility from the post-pandemic rebound. A weaker economic outlook further tempers oil use, as do efficiency improvements & surging #EV sales" IEA. #OOTT.*" IEA OMR's highlighted "*oil consumption reverts towards its historical trend*". It looks like some well-crafted words. They don't say if this is just for 2024 or if it is for the future. If it's for the future, they would be suggesting oil demand growth with GDP growth and not one where oil demand doesn't grow. We think it is not clear for the reason is that it will allow them to use this in the event they push back their peak oil demand. So the demand statement makes us wonder if it is a set up for a discussion on the long term demand for oil. The Mar OMR wrote "*While 2024 growth has been revised up by 110 kb/d from last month's Report, the pace of expansion is on track to slow from 2.3 mb/d in 2023 to 1.3 mb/d, as demand growth returns to its historical trend while efficiency gains and EVs reduce use.*" "*The slowdown in growth, already apparent in recent data, means that oil consumption reverts towards its historical trend after several years of volatility from the post-pandemic rebound. A weaker economic outlook further tempers oil use, as do efficiency improvements and surging electric vehicle sales.*" (ii) IEA's non-answer to BloombergTV on future demand growth. And we can't help but have the antenna go up when we head smart people like IEA's oil head Toril Bosoni duck a question or give an answer that wasn't on the question on the IEA's view for oil demand for 2-3 years down the line. On Thursday morning, we tweeted [\[LINK\]](#) "*Here's why to wonder if IEA is increasing its #Oil demand outlook to one of historical growth for longer. 🙄 @flacqua clearly asks on demand growth for foreseeable future , 2, 3 yrs down the line? IEA oil head either didn't hear or chose to only speak to 2024. #OOTT.*" Bosoni gave a long answer on 2024 but just avoided giving any views other than on 2024. Whenever someone ducks a question, it makes us wonder. Our tweet included the video clip we made of Bosoni's response.

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IEA increases gasoline consumption forecast

Oil: IEA’s new global gasoline consumption forecast is well above its peak oil call

We have been consistent since April that we believe the IEA will have to push out its forecast for peak oil demand with one of the key factors being that they will have to reduce its gasoline/oil displacement assumption by EVs in the upcoming annual global EVs report. We saw more support that this is inevitable. One of the problems with not paying up for the full IEA OMR report is that we don’t get all the detail on their forecast numbers. Fortunately, we can see tweets from top oil followers that provide some of this detail. A good example is Bloomberg’s Javier Blas who tweeted [\[LINK\]](#) "Back in July 2023, the IEA put global gasoline consumption in 2024 at ~26.7m b/d. But it now sees it this year at ~27.2m b/d (up 500k b/d). That’s a remarkable (and upbeat) change in view for global gasoline demand, the most exposed product to growing EV penetration. 2/2 #OOTT." Blas is referring to the IEA OMR July full report. When we saw Blas tweet, we tweeted [\[LINK\]](#) "Note 📌 @JavierBlas IEA OMR fcast global gasoline consumption to 27.2 mmbd in 2024 vs July 2023 OMR fcast of 26.7 mmbd. IEA Oil 2023 from Jun 2023 fcast peak global gasoline consumption 26.6 mmbd in 2023/24/25, then decline. Looks like higher gasoline demand in Oil 2024. #OOTT." Our tweet included the IEA’s forecast from its annual Oil 2023 forecast to 2028 that was posted in June 2023. So a few weeks before the IEA OMR July. The Oil 2023 forecast was for global gasoline consumption to reach peak gasoline consumption in 2023 at 26.6 mmb/d, hold that level flat for 2024 and 2025, before beginning a slow decline. Blas is noting the IEA has bumped up its 2024 forecast for gasoline consumption to 27.2 mmb/d, which is why we find it inevitable that the IEA will have to increase at least the gasoline consumption part of its upcoming Oil 2024 and forecast for oil and products demand to 2029. Below is the table from the IEA Oil 2023 forecast thru 2028.

Figure 47: IEA global oil demand by productd (mb/d), 2019-2028t
Global oil demand by product (mb/d), 2019-2028

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2022-28 Growth Rate	2022-28 Growth
LPG/Ethane	13.2	13.2	13.8	14.2	14.4	14.6	14.8	15.1	15.5	15.9	1.9%	1.7
Naoptha	6.6	6.4	6.9	6.8	7.0	7.4	7.8	8.0	8.2	8.3	3.4%	1.5
Gasoline	26.7	23.7	25.6	26.0	26.6	26.6	26.6	26.4	26.1	25.8	-0.2%	-0.3
Jet/Kerosene	8.0	4.7	5.2	6.2	7.3	7.5	7.6	7.9	8.0	8.2	4.7%	2.0
Gasoil/Diesel	28.3	26.1	27.5	28.3	28.4	28.5	28.7	28.7	28.8	28.9	0.4%	0.6
Residual fuel oil	6.2	5.6	6.2	6.5	6.7	6.7	6.7	6.7	6.7	6.7	0.4%	0.2
Other products	11.8	11.9	12.2	11.8	11.8	11.9	11.9	12.0	12.0	12.0	0.3%	0.2
Total products	100.7	91.7	97.5	99.8	102.3	103.1	104.1	104.8	105.3	105.7	1.0%	5.9
Annual change	0.6	-9.0	5.8	2.3	2.4	0.9	1.0	0.7	0.5	0.4		

Source: IEA Oil 2023, posted June 2023

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Surprise IEA blog

Oil: Interesting IEA blog on oil security, too bad it wasn't posted seven years ago

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 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.

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

We think the takeaway from this week's Houthis vs US action in the Red Sea is that 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.

No end in sight for Houthis

Oil: Houthi leader reminds of "reward for jihadist deeds" during Ramadan

Last Sunday after we went to print, the Houthi Leader spoke about the start of Ramadan. (i) We tweeted [LINK](#) "*Houthi leader today. "One of the most important things about the month of Ramadan is that it is not only for acts of worship on a spiritual level, voluntary acts, etc., but rather it is one of the most important seasons for jihad for the sake of God, and the reward for jihadist deeds in the holy month is beyond what a person can imagine." "if certain developments arise in the month of Ramadan, we will keep up with them, God willing, with what we sense and hope for from God's grace in what we have to do." "Our operations will continue, God willing, our activities will continue for the most part, and there are basic and necessary activities that should continue." #OOTT*" (ii) The Sunday headlines on his speech were on how they would continue naval operations during Ramadan. Although, as noted from his quote, it feels like he was saying that would be more dependent upon if the US attacks them. (iii) What was overlooked or didn't get coverage was how the Houthi leader stressed how Jihadist events during Ramadan bring big rewards. This is the concern we have raised every year is what the US Overseas Security Advisory Council [LINK](#) for Security Alerts has typically warned about Ramada saying "*martyrdom during the month may hold a special allure to some*". That isn't just a western view. The Houthi leader basically said the same thing to his followers. He said "*One of the most important things about the month of Ramadan is that it is not only for acts of worship on a spiritual level, voluntary acts, etc., but rather it is one of the most important seasons for jihad for the sake of God, and the reward for jihadist deeds in the holy month is beyond what a person can imagine.*" That is our concern when the leader reinforced to his followers and why there is a heightened risk during Ramadan. Our Supplemental Documents package includes the Saba reporting of the Houthi leader speech.

Houthi leader on Ramadan

Oil: Houthi leader expanding to target in Indian Ocean & towards Cape of Good Hope

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 Houthi 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,*

Houthi leader expanding targets

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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 Houthis leader warning on a surprise for the last couple weeks, we couldn't help remember the Houthis 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 Houthis 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 Gravelly. But the Houthis launched >3 missiles at two of the Maersk container ships around the Bab el Mandeb. And it forced the 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: Added oil tanker days from avoiding Suez Canal and Panama Canal

No one knows how long the re-routing from the Red Sea via the Cape of Good Hope will last, but we don't see anyone calling for that to end in the next 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

**Add tanker days
to avoid Red
Sea**

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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 48: Selected commercial shipping routes, as of January 2024



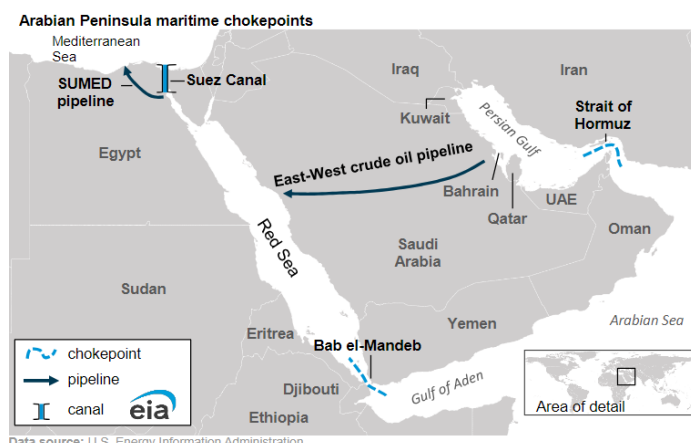
Source: EIA

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 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.”

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Figure 49: Bab el-Mandeb Strait, a world oil chokepoint



Data source: U.S. Energy Information Administration

Source: EIA

Figure 50: 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 LNG=liquefied natural gas. 1H23=first half of 2023

Source: EIA

Oil: China EV makers having to turn to “novel add-ons” in “slowdown in demand”

No one can deny China is the lead in growing EV sales but it looks like it is facing the same headwinds as EV sales in the US – EV growth rates are much less and hybrids are taking market share. And China EV sales, like other major consumer cost items, is facing the bigger, broader issue of the Chinese consumer staying to the most part on the sidelines. As a result, China EV automakers are having to offer extras to get buying. Certainly not the sign of a deep, solid buyer pool. Last Sunday night, we tweeted [\[LINK\]](#) “China consumer not spending. Carmakers are turning to increasingly novel add-ons from beds to cooktops to boost sluggish sales. Top [China] EV makers are facing a slowdown in demand at home as consumers curb spending ..” @business C Zhu, C Zhang #OOTT [\[LINK\]](#). Having to offer “novel add-ons” never seems to be a sign of a deep, strong buyer pool. Bloomberg led off their report “In China, electric vehicles with built-in fridges and even in-car karaoke systems are considered passé. Instead, carmakers are turning to increasingly novel add-ons from beds to cooktops to boost sluggish sales. Top EV makers are facing a slowdown in demand at home as consumers curb spending, just as geopolitical tensions with major Western

China EV
“slowdown in demand”

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economies cloud the outlook for export.” Our Supplemental Documents package includes the Bloomberg report.

Oil: China stocks extend win streak to 5 week, can it be extended?

On Friday, we tweeted [LINK](#) “Shenzhen 300 on 5-week up streak. Chinese investors hope the last two weeks small gains aren’t a sign that the rally is losing steam. Regardless, Shenzhen 300 is +12% off Feb 2/24 bottom. Better but still down 38% off Feb 19/21 high. Thx @business #OOTT”. It’s been five consecutive weeks of gains for the Shanghai Shenzhen 300, which is the longest consecutive week streak since July 2022. The only caveat we noted in our tweet is that the last two of these five weeks have only been modest up weeks. And when we see how existing home prices continue to decline, it’s hard to see how the Chinese will be confident to pour back into markets not-stop. But, at least for now, it looks like the ongoing government measures/policies are having some impact on stock prices. Recall early this year the Chinese gov announced they would be injecting 2 trillion yuan (~\$280b) into the Chinese stock market [LINK](#). Our concern is that the rally doesn’t last. Below are the Bloomberg charts from our tweet, showing the Shenzhen 300 index performance.

China stocks up for 5 consecutive weeks

Figure 51: Shanghai Shenzhen 300 weekly change, last two years



Source: Bloomberg

Figure 52: Shanghai Shenzhen 300 last 5 years



Source: Bloomberg

Oil: China house prices continue to lose value

While stocks have had a good last five weeks, the single most important wealth factor for most Chinese, their homes, continue to lose value. On Friday, we tweeted [LINK](#) “Continued

China houses keep losing value

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big negative holding back Chinese consumers. Their existing primary wealth item, their houses continue to lose value. Existing home prices -5.2% YoY in Feb, worse than -4.5% YoY in Jan, falling in all 70 cities. Thx @business Charlie Zhu, Emma Dong". On Friday, Bloomberg reported on the China new and existing home prices for Feb. Bloomberg reported "New-home prices in 70 cities, excluding state-subsidized housing, fell 1.9% from a year earlier, steeper than January's 1.2% drop. They slid 0.36% from January, when they retreated 0.37%. Existing-home prices dropped 5.2% year on year, worsening from 4.5% in January and falling in all 70 cities. They declined 0.62% month on month, improving from a 0.68% decrease in January." Our Supplemental Documents Package includes the Bloomberg Report.

Figure 53 China house prices



Source: Bloomberg, National Bureau of Statistics

Oil: Chinese moving from countryside to cities is down ~10 million people per year

One of the items that many of my contacts weren't aware was the massive slowdown of Chinese moving from the countryside to cities. Here is what we wrote in last week's (Mar 10, 2024) Energy Tidbits memo. "Last Sunday night, we were watching Bloomberg The China Show and we heard a great demographic that we hadn't heard before and one that explains a lot of the reason for real estate and other consumer spending – there has been a massive decline in people from Chinese countryside to cities. It is a huge factor for real estate but also speaks to other consumer items. Last Sunday night, we tweeted [\[LINK\]](#) "No wonder empty China apartments everywhere. See 📍 structural reduction in 3 buyer types of apartments in China. Marriage rate 1/2 of 10 yrs ago. Birth rate 9 mm vs 16 mm in 2000-2020. Last 2 yrs, only 12/yr mm moved from rural to cities, used to be 22 mm/yr. Big job creation needed to get people back to cities. Thx @BNPParibas George Sun @DavidInglesTV @YvonneManTV #OOTT." BNP's George Sun was talking about the structural changes that have led to the massive amount of vacant apartments. We hadn't heard the number that the number of Chinese moving from countryside to cities was about 12 million/yr the last two years, which is down 10 million/yr from 22 million/yr. Sun was talking about the structural reduction in three key home buyer groups – people getting married, married couples having children and, most of all, people moving from countryside to cities.

10 million per year less Chinese moving to cities

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Sun noted how the key will be jobs so companies can attract people to the cities. Our tweet included a video clip of the George Sun comments.

Oil: Baidu China city-level road congestion done recovering from new year, flat WoW

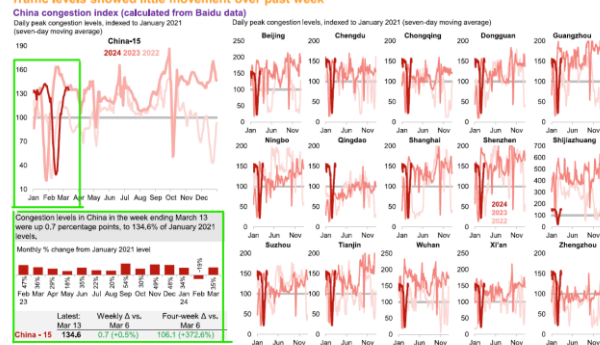
On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly March 14 report, which includes the Baidu city-level road congestion for the week ended March 13. There is no more steam from the Lunar New Year bounce back of people returning to cities to work, and traffic levels were essentially flat WoW. Baidu city-level road congestion was +70bps WoW to 134.6% of Jan 2021 levels. Below is the BloombergNEF key graph.

China city-level traffic congestion

Figure 54: China city-level road congestion for the week ended Mar 13

China's city-level road congestion

Traffic levels showed little movement over past week



Source: BloombergNEF

Oil: Vortexa crude oil floating storage est 69.28 at Mar 15, -6.23 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 9 at 9am MT. (i) Yesterday, we tweeted [\[LINK\]](#) "#Oil floating storage 69.28 mmb Mar 15. Last 7 wks ave 73 mmb. Seems floating normalizing at lower (<80 mmb) level as refiners/tankers had ~2 mts to work in longer tanker trips. 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 15 at 69.28 mmb, which is -6.23 mmb WoW vs revised up Mar 8 of 75.51 mmb. Note Mar 8 was revised +5.42 mmb vs 70.09 mmb originally posted at 9am on Mar 9. (iii) It seems like oil floating storage/longer tanker travel has mostly sorted out to a new normal. It's been two mons 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. Other than the +5.42 mmb revision to Mar 8, all other revisions were either basically zero or revisions down 2 or 3 mmb. We believe the return of revisions to smaller ranges is likely due to the normalization of the forced longer than originally expected tanker travel voyages. Prior to the normalization, floating storage

Vortexa floating storage

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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 9. Mar 8 revised +5.42 mmb. Mar 1 revised -0.06 mmb. Feb 23 revised +0.10 mmb. Feb 16 revised -2.18 mmb. Feb 9 revised -2.56 mmb. Feb 2 revised -2.38 mmb mmb. Jan 26 revised 3.03 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 73.28 mmb vs last week's then seven-week average of 74.07 mmb. The big decrease is primarily due to the 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 15 estimate of 69.28 mmb is -60.95 mmb vs the recent June 23, 2023 high of 130.23 mmb. Recall Saudi Arabia stepped in on July 1, 2023 for additional cuts. (ix) Mar 15 estimate of 69.28 mmb is -24.55 mmb YoY vs Mar 17, 2023 of 93.83 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Mar 16, 9am MT Mar 9, and 9am MT Mar 2.

Figure 55: Vortexa Floating Storage Jan 1, 2000 – Mar 15, 2024, posted Mar 16 at 9am MT



Source: Bloomberg, Vortexa

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Figure 56: Vortexa Estimates Posted 9am MT on Mar 16, Mar 9, and Mar 2

Posted Mar 9, 9am MT					Mar 2, 9am MT					Feb 24, 9am MT				
FZWWFST VTXA Inde 94 SU					FZWWFST VTXA Inde 94 SU					FZWWFST VTXA Inde 94 SU				
ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD
01/01/2020				- 03/08/2024	01/01/2020				03/01/2024	01/01/2020				- 02/23/2024
Date					Date					Date				
Fr	03/08/2024			70085	Fr	03/01/2024			67433	Fr	02/23/2024			64460
Fr	03/01/2024			75346	Fr	02/23/2024			71760	Fr	02/16/2024			74206
Fr	02/23/2024			65352	Fr	02/16/2024			71072	Fr	02/09/2024			91806
Fr	02/16/2024			70467	Fr	02/09/2024			90919	Fr	02/02/2024			93654
Fr	02/09/2024			85938	Fr	02/02/2024			89953	Fr	01/26/2024			79907
Fr	02/02/2024			78165	Fr	01/26/2024			76451	Fr	01/19/2024			88387
Fr	01/26/2024			73122	Fr	01/19/2024			86864	Fr	01/12/2024			79539
Fr	01/19/2024			84875	Fr	01/12/2024			77553	Fr	01/05/2024			83963
Fr	01/12/2024			74553	Fr	01/05/2024			81870	Fr	12/29/2023			84075
Fr	01/05/2024			80273	Fr	12/29/2023			82007	Fr	12/22/2023			97485
Fr	12/29/2023			80319	Fr	12/22/2023			94772	Fr	12/15/2023			79495

Source: Bloomberg, Vortexa

Oil: Vortexa revises down Oct 20, 2023 to 59.48 mmb, a post Covid low

There was a good reminder this week on how Vortexa will make revisions going back months to their floating storage. Whenever, we see a Vortexa crude oil floating storage in the 60's, like we did yesterday, we always go back over week since Covid and check to see how many that makes it in the 60's since Covid. So the last time we did that week by week check was on Feb 24. We did not do a week by week check when we pulled down Vortexa data on Mar 2 and on Mar 9. However with the Mar 15 at 69.28 mmb, we did the weekly check and saw eight weeks below 70 mmb including Oct 20, 2023 at 59.48 mmb. Sometime over the past three week, Oct 20, 2023 was revised down below 60 mmb. We checked our notes and on Feb 24, Oct 20, 2023 was showing at 62.00 mmb, and on Feb 17, it was showing at 63.35 mmb. So sometime over the past three weeks, Vortexa revised Oct 20, 2023 to 59.48 mmb, The only week below 60 mmb since Covid. As of Mar 16, the only weeks below 70 mmb since Covid are: Mar 14/24 at 69.28 mmb. Feb23/24 at 65.45 mmb. Feb 16,/24 at 68.29 mmb. Dec 1/23 at 69.13 mmb. Oct 20/23 at 59.48 mmb. Oct 13/2 at 67.69 mmb. Dec 16/22 at 69.14 mmb. Jan 14/22 at 68.30 mmb.

Vortexa revises Oct 20/23 down to 59.48 mmb

Figure 57: 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

Posted Mar 16, 2024 at 9am MT					Dec 30, 2023 9am MT					Oct 21, 9am MT				
FZWWFST VTXA Inde 94 SU					FZWWFST VTXA Inde 94 SU					FZWWFST VTXA Inde 94 SU				
ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD
03/15/2023				- 03/15/2024	01/01/2020				- 12/29/2023	01/01/2020				- 10/20/2023
Date					Date					Date				
Fr	11/03/2023			77078	Fr	12/29/2023			72975	Fr	10/20/2023			64270
Fr	10/27/2023			75028	Fr	12/22/2023			90109	Fr	10/13/2023			71763
Fr	10/20/2023			59479	Fr	12/15/2023			74522	Fr	10/06/2023			69549
Fr	10/13/2023			67690	Fr	12/08/2023			81841	Fr	09/29/2023			87637
Fr	10/06/2023			71824	Fr	12/01/2023			69433	Fr	09/22/2023			93341
Fr	09/29/2023			82623	Fr	11/24/2023			85790	Fr	09/15/2023			91699
Fr	09/22/2023			86237	Fr	11/17/2023			87539	Fr	09/08/2023			93267
Fr	09/15/2023			82930	Fr	11/10/2023			72057	Fr	09/01/2023			91364
Fr	09/08/2023			85447	Fr	11/03/2023			79349	Fr	08/25/2023			86721
Fr	09/01/2023			86042	Fr	10/27/2023			79913	Fr	08/18/2023			103.001k
Fr	08/25/2023			78677	Fr	10/20/2023			64323	Fr	08/11/2023			108.69k

Source: Bloomberg, Vortexa

Prepared by SAF Group: <https://safgroup.ca/news-insights/>

Source: Bloomberg, Vortexa

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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 8, in total, was revised +5.42 mmb. Asia was revised +6.09 mmb and Other was revised -2.02 mmb vs the estimates posted as of 9am Mar 9 for Mar 8. (ii) As noted above, Mar 15 of 69.28 mmb was -6.23 mmb WoW vs revised up Mar 8 of 75.51 mmb. The major WoW changes by region were Asia -4.07 mmb WoW and Middle Est -2.60 mmb WoW. (iii) Mar 15 at 69.28 mmb is -60.98 mmb vs the summer June 23, 2023 peak of 130.23 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 -38.50 mmb and Other -22.24 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 8 that was posted on Bloomberg at 9am MT on Mar 9.

Vortexa floating storage by region

Figure 58: Vortexa crude oil floating by region

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Mar 15/24	Mar 8/24	WoW	Mar 8/24	Jun 23/23	Mar 15 vs Jun 23
Asia	34.41	38.48	-4.07	32.39	72.91	-38.50
Europe	6.20	4.59	1.61	4.82	6.22	-0.02
Middle East	8.00	10.60	-2.60	9.19	6.76	1.24
West Africa	6.07	5.38	0.69	5.39	7.62	-1.55
US Gulf Coast	1.12	2.15	-1.03	1.97	1.00	0.12
Other	13.48	14.31	-0.83	16.33	35.72	-22.24
Global Total	69.28	75.51	-6.23	70.09	130.23	-60.95

Vortexa crude oil floating storage posted on Bloomberg 9am MT on Mar 16
 Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

Oil: Bloomberg Oil Demand Monitor “India, Flying and Refineries Lighten Outlook”

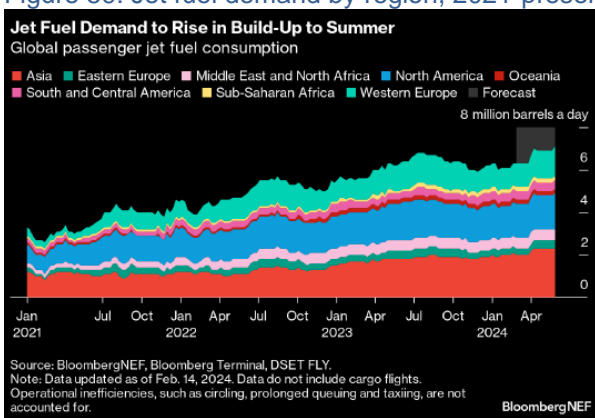
The Bloomberg Terminal Oil Demand Monitor is a good recap of key oil demand indicators around the world. The major focus this week was on positive signs of demand growth in India, a ramp-up in global aviation, and encouraging utilization rates heading into summer blends. While many market observers look to China as being the major determinant of oil demand growth this year, this month’s report points to strong growth coming out of the world’s most populous country: India. Founder and president of Rapidan Energy Advisors, Bob McNally, said “*India is roaring back — I think folks overlook the role of India and Indian demand*”... and in an interview theorised there’d be a big bull cycle for oil markets by mid decade due to slowing production growth in the US, capacity cuts by Saudi Arabia, and higher demand. India’s fuel consumption (diesel and gasoline) was up +6% YoY in February, and utilization rates are at multi-year highs for this time of year. Globally, demand for jet fuel is growing, and is projected to grow from 6.3 mmb/d in March to 6.9 mmb/d by May. Air travel is now well above 2023, and even above pre-pandemic levels depending on data source. Additionally, while recently we saw very weak refinery runs in the US, the ramp up in utilization rates are coming back quicker than in prior years, up 340 bps in one week to just under 85%, indicating refiners are getting ready to pump out summer blends earlier than normal this year. Mexico’s Dos Bocas (Olmeca) and Nigeria’s Dangota refineries are also expected to come online this spring, and Bloomberg estimates show the oil market slipping into a deficit this summer as a result of strong global throughput. Looking at consumption

Bloomberg oil demand monitor

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indicators, the demand monitor showed that global flights continued to track comfortably above both 2023 and 2022 levels during the week of March 11, up +6.5% and +11.0% respectively, and up +5.6% on a MoM basis. For the month of February, diesel and gasoline sales in India were up +6.2% and +8.9% YoY, respectively, while on a MoM basis diesel sales were up +0.1% MoM and Gasoline sales were down -2.5% MoM. Refinery utilization in the US as of Feb 16 was up +250 bps MoM but -110 bps YoY at 84.9%, while total crude intake is up +200 bps YoY and 250 bps MoM. Recall the Whiting Refinery in India is delayed in coming back online, which will boost utilization rates later this month assuming it's running again. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor. Below is a graph of jet fuel demand since 2021.

Figure 59: Jet fuel demand by region, 2021-present



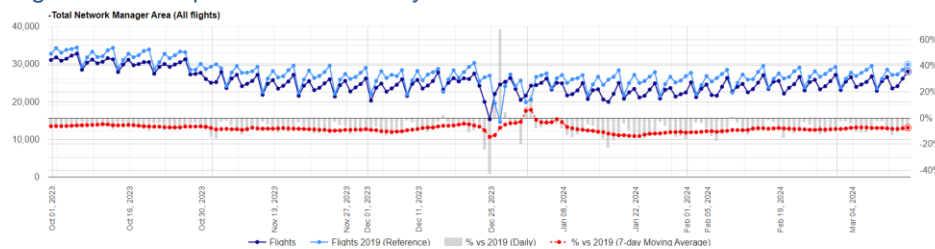
Source: Bloomberg

Oil: Europe airports daily traffic 7-day average is -7.5% 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 14 is down small WoW at -7.5% (was -7.4%) below pre-Covid 2019 levels. Eurocontrol updates this data daily and it is found at [LINK](#)

Europe airports daily traffic

Figure 60: Europe Air Traffic: Daily Traffic Variation to end of Mar 14



Source: Eurocontrol

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Oil: United Airlines CEO see no let up in air travel demand

On Tuesday morning, Delta Air Lines CEO Bastian was on CNBC Squawk Box and said they are seeing no let up in air travel demand. The caveat is that Delta is widely viewed as the top US airline, but the other airlines also seem positive on summer air travel ie. no sign that the post-Covid pent up travel boom is coming to an end. Bastian highlighted the continued strength in premium but also that "classic business" was almost back to pre-Covid travel. We tweeted [\[LINK\]](#) *"Buckle up for another summer of busy airports! "we are seeing demand continuing with great strength and I don't see any let up. the spring and summer is going to be very busy" Delta Airlines CEO Bastian on @SquawkCNBC continued strength in premium, classic business almost to pre-Covid, etc. #OOTT."*

United sees no let up in air travel

Oil – Covid-19 took the world into a shut-down in March 2020

We have been reminded by companies, media and analysts that the world's response to Covid-19 went to full blown stop in March 2020. March 11, 2020, WHO declares Covid-19 a pandemic. March 13, 2020, the Trump Admin declares a nationwide emergency and bans non-US citizens from 26 European countries from entering the US. March 15, 2020, state of New York shuts down schools. March 21, 2020, US, Canada and Mexico halt all non-essential travel. Those were just a few of the key March dates, but that is when Covid-19 exploded into a worldwide slowdown. On March 21, 2020, WTI was \$26.98 and going lower.

Covid-19 global shut-down was in March 2020

01/19/20: Wuhan virus, CDC routine screening at 3 US airports

Our first comments on Covid-19 was one where we were careful that we didn't want to whip up fear but we wanted to include it as a potential oil story. Here is what we first wrote about Covid-19 in our Jan 19, 2020 Energy Tidbits memo. *"We aren't including this write up in as an oil story or to whip up fear, rather we just hope that nothing comes out of this for all of us as people. We recognize its still early days but we should put the Wuhan Coronavirus on radar screens. It isn't just because it is a potential new virus originating out of China, where there is the concern on the quality of the updates. Wuhan is a city of approx. 11 million people, the capital of Hubei province and is approx. 500 miles west of Shanghai. And its not because of the Centers for Disease Control and Prevention (CDC) update yesterday [\[LINK\]](#) that it "continues to closely monitor an outbreak of a 2019 novel coronavirus (2019-nCoV) in Wuhan City, Hubei Province, China that began in December 2019. CDC has established an Incident Management System to coordinate a domestic and international public health response." Rather, what raised our antenna was when we read the CNN reporting on the news that the CDC started routine screenings at three major US airports: New York City's JFK, San Francisco international an LA international. And when we read the CNN Friday story "CDC to screen at three US airports for signs of new virus from China" [\[LINK\]](#) that said "It's a highly unusual step. The last time the CDC did routine passenger health screening was during the 2014 Ebola outbreak, according to Dr. Martin Cetron, director of the CDC's division of global migration and quarantine. "I've been here since 1996, and that's the only other time we've ever done this -- for Ebola," Cetron said." CNN also reported ""This is not a time for people to freak out and be overly concerned," Cetron said. "This is a time for vigilance and awareness." He added that much more common illnesses, such as the flu, are "much bigger threats" to Americans than the new virus from China. "I'm fully aware that the unknown is more of a source of anxiety than that*

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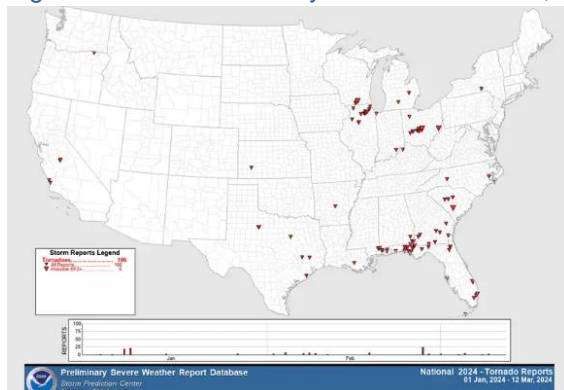
which is already defined," he said. "But we should not freak out." The other reason why we all have to hope this isn't something big is that we are starting this week the biggest global travel period of the year – multiples more travel than during US Thanksgiving and that is Chinese New Year on Jan 25 and start of spring festival. Its not just domestic travel, but international travel. There couldn't be a worse time to spread some thing that is still a bit of an unknown. Our Supplemental Documents package includes the CDC Jan 17 update and the CNN story."

Oil & Natural Gas –Record warm winter temps led to tornadoes in the Midwest in Q1/24

We follow tornado activity as it can impact oil and gas onshore operations in Oklahoma and Kansas. As a rule, most of the key Texas oil and gas operations (Permian and Eagle Ford) tend to be west and/or south of major tornado activity. Normally we don't bring up tornadoes for another month or two but, on Monday, The Weather Channel posted its report "U.S. Tornadoes: Why This Is The Strangest Map I've Seen In 2024." [\[LINK\]](#) on the unusual tornado activity in March. The reason why we include the report is that they remind of one of the items we normally include each year – tornado activity by month. Winter months are typically low months for tornadoes as the temperatures are cold. But this the record warmth in the winter has led to their unusual map - there were tornadoes in the Midwest in Q1/24. Our Supplemental Documents package includes The Weather Channel report.

Tornadoes in Q1/24 in Midwest

Figure 61: Tornado activity Jan 1 to March 12, 2024

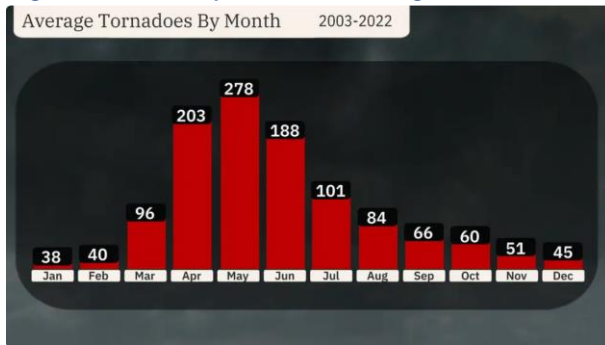


Source: The Weather Channel

Normal peak tornado season is May

The Weather Channel provided an updated monthly distribution of tornadoes for the 20-year period 2003-2022. This is an update from what we included in our May 17, 2023 Energy Tidbits memo that had the monthly distribution for the 20-yr period 1991-2010. The distribution by month is the same: tornado activity really ramps up in April, peaks in May, is still high in June and then in July is below April levels. Below is the graph from The Weather Channel report.

Figure 62: Monthly Tornado Averages 2003-2022



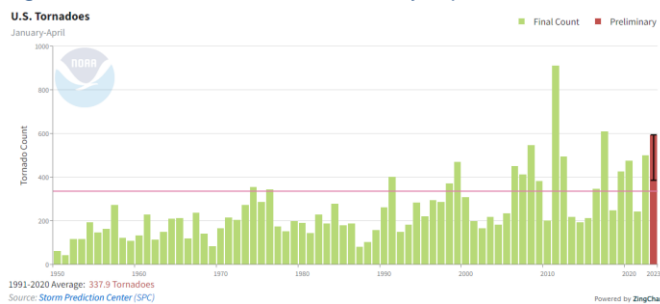
(Data: NOAA/NWS/SPC)

Source: The Weather Channel

April 2023 saw lower than normal tornado activity

Here is what we wrote in our May 17, 2023 Energy Tidbits memo. *“We follow tornado activity as it can impact oil and gas onshore operations in Oklahoma and Kansas. Most of Texas oil and gas operations tend to be south of major tornado activity. But so far, we haven’t seen any reports of any major impact to oil and gas in either March or April. March saw record US tornadoes but there were almost zero tornadoes in Oklahoma and Kansas, whereas there were a lower level of tornadoes in the US in April, but a lot more in Oklahoma and Kansas. We haven’t seen an reports of a major impact on oil and gas operations from tornadoes. This week, NOAA’s National Centers for Environmental Information posted its “April 2023 Tornadoes Report” [\[LINK\]](#). NOAA wrote “According to data from NOAA’s Storm Prediction Center, during April, there were 121 preliminary tornado reports. This was below the 1991-2010 average of 155 tornadoes for the month of April.” And “A tornado outbreak occurred on April 19 across areas of the southern and central Plains. In total, there were 19 preliminary tornadoes that impacted central Oklahoma, eastern Kansas and western Iowa. These tornadoes included two rated as EF-3s in Oklahoma that caused heavy damage to many homes, businesses, vehicles and other infrastructure. There was at least one reported injury and one fatality.”.*

Figure 63: U.S. Tornadoes: January-April

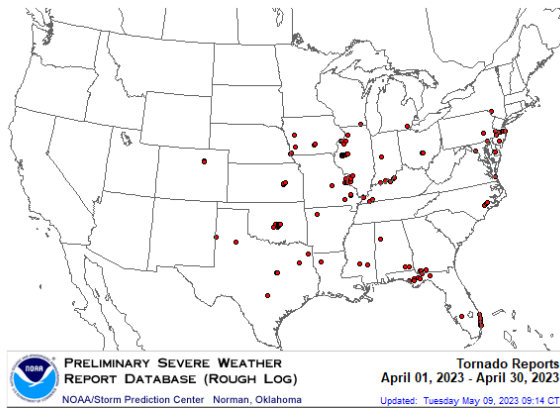


Source: NOAA

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Figure 64: April 2023 Tornadoes

April 2023 Tornadoes



Source: NOAA

Tornados Enhanced Fujita Scale (EF Scale) Intensity & Rating

NOAA’s National Weather Service has a recap of the Enhanced Fujita Scale (EF Scale) for the intensity and rating of tornadoes. [LINK](#). NOAA explains “*The Fujita Scale. Fujita Scale (or F Scale) of tornado damage intensity. The F Scale was developed based on damage intensity and not wind speed; wind speed ranges given are estimated, based on the extent of observed damage.*” But there is also the Enhanced Fujita Scale (EF Scale). NOAA explains “*The Enhanced Fujita Scale or EF Scale, which became operational on February 1, 2007, is used to assign a tornado a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DIs) and Degrees of Damage (DoD) which help estimate better the range of wind speeds the tornado likely produced. From that, a rating (from EF0 to EF5) is assigned. The EF Scale was revised from the original Fujita Scale to reflect better examinations of tornado damage surveys so as to align wind speeds more closely with associated storm damage. The new scale has to do with how most structures are designed.*”

Figure 65: Enhanced Fujita Scale (EF Scale) for Tornadoes

EF SCALE	
EF Rating	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

Source: NOAA

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Energy Transition: UK says need more, not less, natural gas power for longer

No one should have been surprised to see the UK's Tuesday release "*Energy Secretary takes action to reinforce UK energy supply.*" [\[LINK\]](#). PM Sunak focus has been to ensure energy security during the energy transition and the Tuesday announcement fit into that approach – UK wants more, not less, natural gas power generation in the 2030s. It is important to note that this call for more natural gas is for more 'unabated' natural gas. The release was released Tuesday morning in the UK but came out Monday evening in Canada. On Monday night, we tweeted [\[LINK\]](#) "*Optimistic to realistic! UK govt to support building of new #NatGas power plants as "need for continued unabated gas generation into the 2030s...." If want energy security & 24/7 reliable, affordable power in energy transition, more #NatGas will be needed, not less. #OOTT,*" The focus of the release on the need to take a "common sense" approach, which means the UK needs more natural gas, including new natural gas power generation into the 2030s for energy security. The UK wrote "*There are no two ways about it. Without gas backing up renewables, we face the genuine prospect of blackouts. Other countries in recent years have been so threatened by supply constraints that they have been forced back to coal. There are no easy solutions in energy, only trade-offs. If countries are forced to choose between clean energy and keeping citizens safe and warm, believe me they'll choose to keep the lights on. We will not let ourselves be put in that position. And so, as we continue to move towards clean energy, we must be realistic. As part of the second consultation on the Review of Electricity Market Arrangements, the Energy Secretary has set out a plan to boost gas power capacity. Firstly, by broadening existing laws requiring new gas plants to be built net-zero ready and able to convert to low carbon alternatives in the future such as carbon capture and hydrogen to power. Secondly, these gas power plants will run less frequently as the UK continues to roll out other low carbon technologies. Finally, this is in line with wider government plans to deliver net zero whilst keeping costs down for billpayers.*" There is more in the announcement. Our Supplemental Documents package includes the UK release.

UK wants more natural gas power in the 2030s

Natural gas replacing coal is why UK has been able to reduce emissions

The UK announcement also reminded on how the UK has been able to cut its emissions. The UK wrote "*No other major economy has done more when it comes to cutting emissions. The UK is the first major economy to cut its emissions by half since 1990, compared to the EU who have cut emissions by 30%, the US not at all and China's emissions are up by 300%.*" This big reduction in emissions is not a new story and has only been possible due to natural gas replacing coal. Here is what we wrote in our Jan 5, 2020 Energy Tidbits memo. "*Natural gas has UK zero emissions > fossil fuels power, but natural gas is big winner On Wed, we tweeted [\[LINK\]](#) on the UK National Grid's Jan 1 press release "Britain hits historic clean energy milestone as zero carbon electricity outstrips fossil fuels in 2019" that highlighted "2019 was the cleanest year on record for Britain as, for the first time, the amount of zero carbon power outstripped that from fossil fuels for a full twelve months. This historic milestone comes as we enter the mid-point between 1990 and 2050 – the year in which the UK has committed to achieve at least a 100% reduction in emissions based on 1990 levels. Data released by National Grid shows a combination of wind farms, solar and nuclear energy, alongside energy imported by subsea*

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interconnectors, delivered 48.5% of Britain’s electricity in 2019 compared to 43% generated by fossil fuels. The remaining 8.5% was generated by biomass.” It was a short release but, in their excitement on reaching this milestone, they failed to mention the big winner in the last 30 years power transition was natural gas. Our tweet said “Until challenge is solved to provide reliable, available, affordable power for all power requirements (ie. making steel), #NatGas is big winner in transition to clean energy. UK 1990-2019 power mix, #NatGas from 0.1% in 1990 to 38.4% to 2019 market share.”

Figure 66: UK Power Generation By fuel

Generation source	Coal + Other	Gas	Nuclear	Wind + Solar + Hydro	Biomass & Waste	Imports	Fossil fuels	Zero carbon	Biomass & Waste
1990	75.0%	0.1%	18.8%	2.3%	0.0%	3.8%	75.5%	24.4%	0.1%*
2019	2.1%	38.4%	16.8%	26.5%	8.2%	8.0%	43.0%	48.5%	8.5%

*Note actual figure is 0.02% rounded to 0.1%.
Source: National Grid (UK)

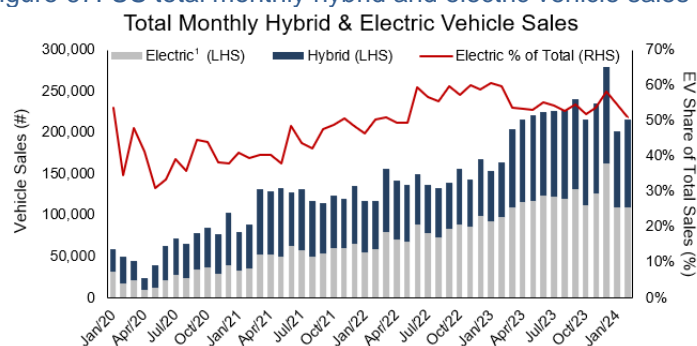
Energy Transition: Weak US EV sales growth, hybrids continue to take share from EVs

On Monday, we tweeted [LINK](#) “US EV sales keep supporting as former Ford CEO said Mar 8 EV market going from optimistic to realistic. EV Feb 24 +1.0% YoY to 81,946 from 81,158. PHEV Feb 24 +59% YoY to 28,259 from 17,789. HEV Feb 24 +60% YoY to 105,803 from 66,320. Thx @argonne for sales data. #OOTT.” Argonne National Laboratory posted its monthly US sales data for EV, PHEV and HEV for February. The Feb sales data continues to show a continuation of the two key US EV sales trends from H2/23: US EV sales growth is significantly slowing and hybrids continue to take share from EVs. Feb 2024 EV sales basically flat at only +1.0% YoY at 81,946 in Feb 24 vs 81,158 in Feb 23. Hybrid sales continue to grow at strong rates and gain market share vs EVs for both PHEV (plug-in hybrid) and HEV (hybrid). Feb 2024 PHEV +59% YoY to 28,259 in Feb 24 vs 17,789 in Feb 23. Feb 2024 HEV +60% YoY to 105,803 in Feb 24 vs 66,320 in Feb 23. Below is our updated graph on the Argonne data. Note that in the below table we included PHEV with EVs as their fuel efficiency is much closer to EVs than to hybrid. Our Supplemental Documents package includes the data from Argonne.

US EV sales +1.05 YoY in Feb

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Figure 67: US total monthly hybrid and electric vehicle sales



¹ Electric includes BEV+PHEV
Source: Argonne National Laboratory

Source: Argonne National Laboratory

EV “market that’s going from optimistic to realistic” ex Ford CEO

Last week, we heard a great line from former Ford CEO Fields on the EV market. Here is what we wrote in last week’s (March 10, 2024) Energy Tidbits memo. “We have used the term “reality check” so many times when tweeting or writing about how the Energy Transition is happening but it’s going to take way longer, cost way more and be a bumpy/rocky road. But, on Friday morning, we saw a better term used by former Ford CEO Fields to describe the EV market as “going from optimistic to realistic”, a term that can be used to offshore wind, hydrogen, sustainable aviation fuel, etc. On Friday morning, we tweeted [\[LINK\]](#) ““this is a [EV] market that’s going from optimistic to realistic. You’re seeing waning demand ... It’s growing but the bottom line is that it’s not accelerating at pace all the automakers expected” Ex Ford CEO Fields to @BeckyQuick. #Oil will be needed for longer. #OOTT.” Fields noted how the consumer is holding back with issues of cost, range anxiety and insurance. And then highlighted loss of residual value. Here is the transcript we made of Fields comments. SAF Group created transcript of comments by Ford’s Ex-CEO Mark Fields with CNBC’s Becky Quick on Squawk Box on March 8, 2024. [\[LINK\]](#) Items in “italics” are SAF Group created transcript. Quick “I mean there’s still a lot of EV cars that are selling, but there’s a lot of supply to meet that demand at the same time. Maybe Mark, kind of rethinking the supply/demand picture?” Fields ““Yeah I mean I would characterize - this is a market that’s going from optimistic to realistic. And you’re seeing kind of waning demand. Listen the growth is still there – right – we know that EV sales here in the US passed over a million last year, it was up almost, slightly less than 50%, so it’s growing Becky, but it’s not growing at the rate at which everybody was expecting.” Quick “so what’s the national total sales, is it, I don’t know, 12, 13, 14 million? Of Automobiles?” Fields “Yeah the national sales last year was a little over 15 million vehicles, and so you had EVs that represented I think it was about 1.1 million, so it was a little over 7% share, so it was up from the prior year which was about 5.5% share, so its growing but the bottom line is it’s not accelerating at the pace all the automakers expected, and that’s why you’re seeing right now all the automakers make changes, delaying programs, shifting out the construction of plants, and things of that nature, because you know at the end of the day the consumer, you know, has the issues around the cost, they have issues around the

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charging anxiety, you got insurance. And the big issue for consumers which nobody really talks about, is with the reduction in prices you've seen here in the US and around the world - but let's stay here in the US – you know, a Model Y is about 20% less of cost or price this year than it was last year. And that has huge impacts on residual values. So if you're a consumer that owns an EV right now, your vehicle is probably worth a lot less. And I think that weighs on consumers as they think about EVs going forward."

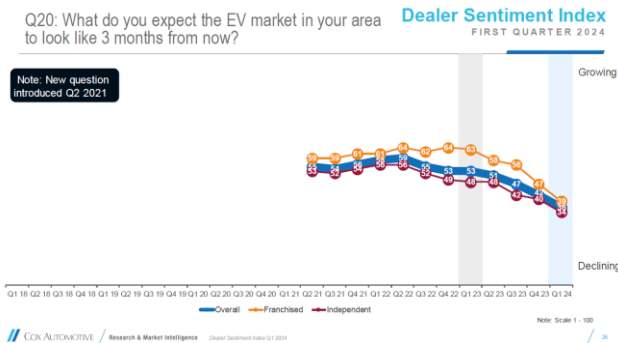
Energy Transition: Cox, don't see average consumer will be easily persuaded to go EV

On Wednesday, we tweeted [LINK](#) "EVs reality check! "In 2024, the Cox Automotive team expects the industry to fully acknowledge the fact that the average consumer needs to be convinced on the merits of going electric, and many won't be easily persuaded" @CoxAutomotive Stephanie Valdez Streaty. Higher income early adopter fast growth rate not applicable to average consumer. Lots more in [LINK](#)." Valdez Streaty's quote was a clear statement on the reality of the EV market – how to convince the average consumer to step up and buy an EV and the bigger reality that that will be hard to do. On Wednesday, Cox Automotive posted its "The Cox Automotive Dealer Sentiment Index (CADSI)" for Q1. It was titled "U.S. Auto Dealer Sentiment Improves in Q1, but Current Market View Remains Weak as Profit Pressures Replace Inventory Woes." The big picture view was that "The Cox Automotive Dealer Sentiment Index (CADSI) shows that current market sentiment improved slightly in the first quarter compared to the fourth quarter of 2023, increasing from 40 to 42, but remains well below the 50 threshold, indicating most dealers see the current market as weak." So better but still a way to go. However, the dealer message on EVs was not better, it was that it was still getting worse. Cox wrote "Electric Vehicle Sales Index Drops to Record Low. When asked how EV sales compare to one year ago, a majority of dealers say they are worse, not better. The index score for EV sales in Q1 dropped to 42, the lowest score since the question was added in the second quarter of 2021. The index score in Q1 was down from 48 in Q4 and lower than the 50 recorded in Q1 2023. The outlook for EV sales tumbled as well, with the index score falling from 42 in Q4 to 36 in Q1. A year ago, when the index score was 53, a majority of auto dealers indicated that the EV market would be growing, not declining. That sentiment has changed. The Q1 score of 36 was the lowest score for the EV outlook index since the question was in 2021. In both indexes, independent dealers scored lower than franchised dealers. The gap between the two was very small for current EV sales, suggesting a consistent perspective across the board. "The drop in dealer sentiment related to electric vehicles is understandable when we look at where EVs stand on the adoption continuum – shifting from early-adopter buyers to mainstream," said Stephanie Valdez Streaty. "In 2024, the Cox Automotive team expects the industry to fully acknowledge the fact that the average consumer needs to be convinced on the merits of going electric, and many won't be easily persuaded. The EV market is likely to see a rise in the number of models, incentives, discounting, and advertising. However, selling more EVs will require more effort on the part of dealers." Our Supplemental Documents package includes the Cox Automotive release [LINK](#) and excerpts from the slide deck.

Auto dealers see negative EV market

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Figure 68: Dealer expected EV market to look like 3 months from now



Energy Transition: Volkswagen reminds hybrids are part of the equation

We doubt that anyone was surprised by Volkswagen’s Q4 call on Wednesday and how, even to an EV committed Volkswagen, the same key trends impacting others are impacting them and they are also pulling back on their EV ambitions. Early Wednesday morning, we tweeted [\[LINK\]](#) “Slower transition to EVs = ICE for longer & more Hybrids. Volkswagen “is convinced the future of mobility is electric” BUT Q4 reminds taking longer than expected & “highly competitive, efficient and attractive models with combustion engines will remain part of the product range during the transition phase. Improved and new plug-in hybrids complement the range in many markets”. #OOTT.” Volkswagen was one of the most ambitious on moving to an all-electric platform ie. eliminating ICE but also they didn’t include hybrid in their all-electric ambitions. But they are like others and seeing EV sales less than expected and are also looking to add hybrids. We listened to most of the media call and, on numerous occasions, mgmt. stressed their flexible strategy ie. how they have manufacturing capacity for both EVs and ICE and can do shifting depending on demand. They also stressed their looking to add hybrids. In their Q4 release, Volkswagen wrote “Flexible strategy. Volkswagen Group is convinced that the future of mobility is electric. While some countries continue to show an impressive pace of transformation, the ramp-up of electric mobility in other regions is unfolding less quickly than expected. Volkswagen Group’s strategy is therefore characterized by flexibility. While extensive investments are being made in the expansion of electric mobility, highly competitive, efficient, and attractive models with combustion engines will remain part of the product range during the transition phase. Improved and new plug-in hybrids complement the range in many markets.” On the analyst call, mgmt. also highlighted how EV margins dilute there overall margin saying “And an increasing BEV share, which is currently diluting our margins.” Our Supplemental Documents package includes excerpts from the Volkswagen Q4 release and Q4 call.

Volkswagen Q4

Capital Markets: Biden “reforms capital gains tax” catches his omissions

Last week’s (Mar 10, 2024) Energy Tidbits memo highlighted the Biden’s State of the Union that included the wealthy pay their fair share in its 03/07/24 “Fact Sheet: President Biden Is Fighting to Reduce the Deficit, Cut Taxes for Working Families, and Invest in America by Making Big Corporations and the Wealthy Pay Their Fair Share.” [\[LINK\]](#). (i) On Monday, the White House posted its “Fact Sheet: The President’s Budget Cuts the Deficit by \$3 Trillion Over 10 Years” [\[LINK\]](#), which included the wealthy provisions from Mar 7. However, the Mar

Taxing unrealized capital gains

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10 fact sheet also corrected an omission from the Mar 7 fact sheet as well as expanding the wealthy tax to include more. (ii) ON Monday, we tweeted [LINK](#) “Must read! Biden's “reforms capital gains tax”. Looks like today's 03/11 White House Fact Sheet added in new items vs 03/07 Face Sheet? Biden's revised “billionaires” tax. No change, 25% min tax on income is on those with wealth >\$100mm ie. 1/10th a Billionaire. Did 03/11 now include what 📌 03/07 Brainard that 25% tax incl “unrealized capital gains”. Is that what they mean by “their appreciated investments” in their “reforms capital gains tax”. IF “their appreciated investments” refers to “unrealized capital gains”, then those with >\$1mm income will have “appreciated investments” taxed at the same rate as “wage income”. #OOTT.” (iii) Corrected the omission that the 25% tax would include unrealized capital gains. Last week’s (Mar 10, 2024) Energy Tidbits memo wrote “A big detail missing from the Fact Sheet – the income for the minimum tax includes unrealized capital gains. On Thursday morning, we were watching CNBC Squawk Box interview NEC Director Brainard on the Biden plan. And she surprised with a big missing detail. We tweeted [LINK](#) “NOT in 📌 press release. “have billionaires pay 25% of their income including unrealized capital gains would be like prepaying those taxes ... it's very well crafted...” NEC Lael Brainard to @JoeSquawk. Note: release says >\$100mm wealth, not just billionaires. #OOTT.” Our tweet included the video clip of Brainard saying the 25% would be on income including unrealized capital gains and the White House looked at being like prepaying taxes.” The Mar 10 fact sheet did not use the words unrealized capital gains. Rather it seemed to sneak it in there by calling them “appreciated investments”. The Mar 10 fact sheet wrote “. It also proposes taxing capital gains at the same rate as wage income for those with more than \$1 million in income, closing the capital gains loophole that allows the wealthy to avoid ever paying tax on their appreciated investments,” (iv) Plus Biden tucks in this appreciated investments will be taxed as ordinary income for those who make more than \$1 million income ie. not limited to billionaires or those with over \$100 million wealth. What isn’t clear is if the \$1mm in income is including unrealized capital gains. If so, that will catch a large number who only get to \$1 million in income from appreciated investments. Our Supplemental Documents package includes the Mar 11 fact sheet.

03/07/24: Biden 25% min tax on income incl unrealized cap gains for wealthy

Here is what we wrote in last week’s (Mar 10, 2024) Energy Tidbits memo on Biden’s Mar 7 Fact Sheet. “Early Thursday morning the White House posted its “Fact Sheet: President Biden Is Fighting to Reduce the Deficit, Cut Taxes for Working Families, and Invest in America by Making Big Corporations and the Wealthy Pay Their Fair Share.” [LINK](#). This was setting the stage for th State of the Union on Thursday night. (i) Early Thursday morning, we tweeted [LINK](#) “Biden kicks off election campaign with a bang! Plans multiple tax items on corps & wealthy. Plan to raise \$trillions “by enacting a new billionaire minimum tax and ...” Note his billionaire minimum tax is minimum 25% income tax on those who have >\$100 mm wealth. #OOTT.” (ii) “Requiring billionaires to pay at least 25 percent of income in taxes”. It sounds simple but there was a twist in the Fact Sheet – this applied to those with wealth >\$100 mmm. The Fact Sheet said “Requiring billionaires to pay at least 25 percent of income in taxes. Billionaires make their money in ways that are often taxed at lower rates than ordinary wage income, or sometimes not taxed at all, thanks to giant loopholes and tax preferences that disproportionately benefit the wealthiest taxpayers. As a result, many of these wealthy Americans are able to pay

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an average income tax rate of just 8 percent on their full incomes—a lower rate than many firefighters or teachers. To finally address this glaring inequity, the President is proposing to levy a 25 percent minimum tax on the wealthiest 0.01 percent, those with wealth of more than \$100 million.” Note this is not what people call a wealth tax or a tax on someone’s wealth, rather the wealth test of >\$100 mm is used to determine who will be hit by the minimum 25% tax on income including unrealized capital gains. (ii) A big detail missing from the Fact Sheet – the income for the minimum tax includes unrealized capital gains. On Thursday morning, we were watching CNBC Squawk Box interview NEC Director Brainard on the Biden plan. And she surprised with a big missing detail. We tweeted [\[LINK\]](#) “NOT in 📌 press release. “have billionaires pay 25% of their income including unrealized capital gains would be like prepaying those taxes ... it’s very well crafted...” NEC Lael Brainard to @JoeSquawk. Note: release says >\$100mm wealth, not just billionaires. #OTT.” Our tweet included the video clip of Brainard saying the 25% would be on income including unrealized capital gains and the White House looked at being like prepaying taxes. Our Supplemental Documents package includes the Fact Sheet.”

Capital Markets: Trump not sure he would want to take Bitcoin away at this point

Trump on Bitcoin

CNBC Squawk Box had a 40-minute interview with former President Trump on Monday. One item that caught our attention was Trump’s view on Bitcoin. So while the interview was still going on, we tweeted [\[LINK\]](#) ““there has been a lot of use of that [Bitcoin] and I’m not sure that i would want to take it away at this point” Former President Trump just now to @JoeSquawk @SquawkCNBC. #Bitcoin will love it!” Our tweet included a sort video clip of his comments.

Capital Markets: Apple reaches \$490mm to settle over earnings call China comments

Apple settlement

There was a good reminder this week that mgmt has to make sure that their earnings calls comments are accurate. In this case, it was Apple CEO Tim Cook’s comments on the 2018 results earnings call in Nov 2018 on China iPhone demand. On Friday, WSJ reported [\[LINK\]](#) “Apple to Pay \$490 Million to Settle Lawsuit Over Tim Cook’s China Comments. Plaintiffs said Apple misled investors in 2018 by hiding weak China demand; company denied wrongdoing.” And “During a conference call with analysts in November 2018, Apple CEO Tim Cook said the company’s iPhone sales were facing challenges in countries such as Turkey, India, Brazil and Russia. “I would not put China in that category. Our business in China was very strong last quarter,” Cook said at the time. Apple also said at the time it would stop providing unit-sales data for iPhones and other products. The company said the number of units sold in a 90-day period wasn’t necessarily representative of the underlying strength of the business and pointed to Apple’s financial strength in recent years. In early January 2019, Apple disclosed that its iPhone business in China was struggling and slashed its quarterly revenue projection for the first time in more than 15 years. Shares fell 10% following the announcement, which wiped out nearly \$75 billion in market value. The plaintiffs said Apple knew it was performing poorly in China and should have disclosed that earlier. “Apple’s business metrics and financial prospects were not as strong as defendants had led the market to believe,” the plaintiffs said.”

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Capital Markets – Canada is #1 in Ultra Wealthy per capita

It seems like many were surprised to see Visual Capitalist/Knight Frank numbers that show Canada has more Ultra High Net Worth Individuals per capita than all the other major global countries. The cut off was wealth with US\$30 million. On Tuesday, we tweeted [LINK](#) “CAN is #1 in Ultra High Net Worth Individuals per capita. CAN: 27, 928, 0.072% of 39mm. US: 225,077, 0.066% of 340 m. FRA: 24,941, 0.038% of 65mm. DEU: 29,021, 0.035% of 83mm. UK: 23,072, 0.034% of 68mm. JAP: 21,710, 0.018% of 123mm. CHN: 98,551, 0.007% of 1,426mm. Thx @VisualCap @knightfrank #OOTT.” Below is the Visual Capitalist graphic and the table we created for the major countries that shows the UHNWI % of total population and Canada leads at 0.072%. So not quite at the top 0.1% but not too far from that.

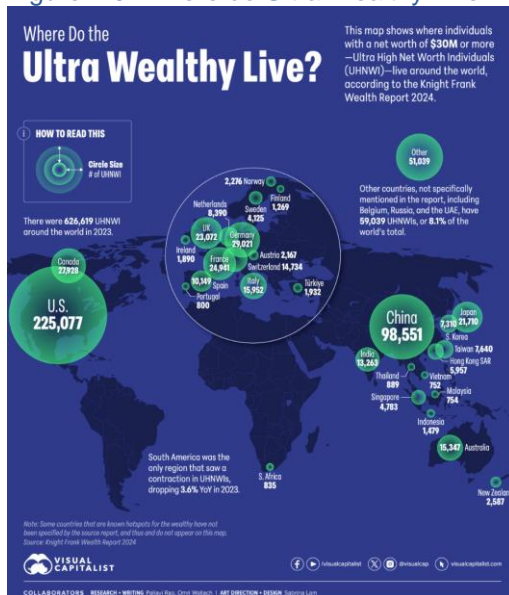
Canada has more rich per capita

Figure 69: Ultra High Net Worth Individuals, % of population

Country	# of UHNWI	Population	UHNWI % of Population
Canada	27,928	39,000,000	0.072%
US	225,077	340,000,000	0.066%
France	24,941	65,000,000	0.038%
Germany	29,021	83,000,000	0.035%
UK	23,072	68,000,000	0.034%
Japan	21,710	123,000,000	0.018%
China	98,551	1,426,000,000	0.007%

Source: Visual Capitalist, Knight Frank, WorldOmeter
 Source: Visual Capitalist, Knight Frank, WorldOmeter

Figure 70: Where do Ultra Wealthy Live?



Source: Visual Capitalist, Knight Frank

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Capital Markets: Will real estate commissions now finally go down?

There was big news on Friday, when the “National Association of REALTORS® Reaches Agreement to Resolve Nationwide Claims Brought by Home Sellers” [\[LINK\]](#) “The National Association of REALTORS® (NAR) today announced an agreement that would end litigation of claims brought on behalf of home sellers related to broker commissions. The agreement would resolve claims against NAR, over one million NAR members, all state/territorial and local REALTOR® associations, all association-owned MLSs, and all brokerages with an NAR member as principal that had a residential transaction volume in 2022 of \$2 billion or below. The settlement, which is subject to court approval, makes clear that NAR continues to deny any wrongdoing in connection with the Multiple Listing Service (MLS) cooperative compensation model rule (MLS Model Rule) that was introduced in the 1990s in response to calls from consumer protection advocates for buyer representation. Under the terms of the agreement, NAR would pay \$418 million over approximately four years.” The plaintiffs had argued the standard 6% commission violated anti-trust laws. The settlement is believed to have done away with the standard mandatory commissions. And real estate followers expect it to lead to lower commissions. And hopefully, this approach comes to Canada.

Will real estate commissions go down?

Cyber: Sainsbury “technical issue” or “an error with an overnight software update”

We had BBC news on early yesterday morning and saw the report on Sainsbury’s problems on Saturday morning that say some stores only able to take cash and also no online deliveries. Needless to say, there were many unhappy grocery customers. We fill pages with cyber attacks but the reason we mention Sainsbury their different statements on Facebook vs Twitter “X”. To be fair, the Twitter statement came out a few hours before Facebook. And as is the norm, there is no suggestion it was a cyber attack. On Twitter, Sainsbury wrote [\[LINK\]](#) “We are currently experiencing a technical issue affecting some stores, our Groceries Online service and our ability to contact customers directly. Unfortunately, we will not be able to fulfil the vast majority of today’s Groceries Online deliveries. We are working hard to fix the issue and apologise to our customers for the inconvenience. We will contact customers proactively to rebook orders as soon as we can.” The Facebook statement was [\[LINK\]](#) “Due to an error with an overnight software update, we are experiencing issues with contactless payments and will not be able to deliver the vast majority of today’s Groceries Online orders. Our stores are open as usual, accepting chip and pin and cash payments. We are unable to contact customers directly but our online ordering system is working as normal and customers can place a new order now for delivery any time from tomorrow. We apologise to customers for the inconvenience and are working hard to fix the issue.” We have to look at cyber, much like shrinkage, it has to be worked into the cost of products for groceries.

Sainsbury cyber issues

Demographics: Lots of unhappy Canadian workers

It seems like there are a lot of unhappy Cdn workers who can’t wait to leave their jobs but, until then, are not working very hard. On Wednesday, the Hays “Canada 2024 Salary Guide & Hiring Trends: Navigating Labour dynamics in 2024” [\[LINK\]](#) got some media attention with the headlines on how “71% of workers want to leave their jobs in the next 12 months”. Hays opening paragraph on the survey results “In 2022 we told you 60% professionals were going to leave, and that year Canadian vacancies were 75% higher than 2019. In the US, where we saw the same percentage of people wanting to leave, 71 million jobs had to be filled, in a workforce of 161 million working Americans. The number of professionals intending to leave

71% of Cdn workers want to leave their jobs

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their job this year is the highest that we have ever seen (71%), which means managers need to prepare for a potential new wave of resignations.” The other big reminder was “Quiet Quitting is Getting Loud. Quiet quitting was the dominant theme in 2023, defined as ‘putting in no more time, effort, or enthusiasm than necessary’ this trend is evident in labour productivity, which has declined nationally in six consecutive quarters. But this quiet quitting trend could be about to turn into real quitting. More people than ever are considering quitting their jobs and looking for better opportunities elsewhere. With nearly three quarters of employees considering leaving their current roles.” There is a lot more in the report including some information on salaries by level of job by sector. Our Supplemental Documents package includes excerpts from the Hays report.

Figure 71: Employees level of satisfaction



Source: Hays

Demographics: 28% of Americans have nothing saved for retirement

On Tuesday, GOBankingRates posted the results of its survey “Retirement 2024: 28% of Americans Have \$0 Saved for Their Golden Years” [\[LINK\]](#). We might not have referenced this if we hadn’t seen real life stories on how older people are seeing unplanned expenditures as people live much longer lives as this means they need even more money as they age and can expect less inheritance from their longer living parents who are living well into their 80s and into their 90s. Back to the GOBankingRates survey, it found that “28% of people have nothing saved for the future, 39% aren’t contributing to a retirement fund and another 30% don’t think they’ll ever be able to retire.” And these statements hold for ages. Our Supplemental Documents package includes the GOBankingRates release.

Americans not prepared for retirement

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Figure 72: % of Americans have saved \$0 for retirement



Source: GOBankingRates

Demographics: 1st yearly increase in China marriages since 2013

Yesterday, Global Times (China state media) reported [\[LINK\]](#) that the number of marriages in China in 2023 was +12.4% YoY to 7.68 million couples. But they also reported that it was -43% vs the peak number of marriages of 13.469 in 2013. But it is the first rebound in marriages after yearly declines since the 2013 peak. It's only one year but perhaps China's big push to encourage marriages is having an impact. Global Times also reported that "Registrations for divorce fell 286,000 to 2.88 million, down 9.9 percent from number of 2022." Our Supplemental Documents package includes the Global Times report.

**China marriages
+12.4% YoY**

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.

Australia expects China to reopen markets to Aussie wines

We remind those who like a great Australian Shiraz or Margaret River Chardonnay or other Australian wines that this is probably a good year to buy as supply may be less in 2025. This week, Chinese Foreign Minister Wang Yi is to make the first high level China visit to Australia in seven years and it is believed to be the event that will mark a reopening of trade with Australia, in particular wine. On Wednesday night (North America time), Mitchell Taylor (Managing Director of Taylors Wines in Australia) was

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on Bloomberg TV and talking about the expectation for China to reopen their markets to Australian wines. He reminded that prior to the China tariffs, China markets represented close to 40% of Australian wine exports and that Australia will be going back to try to recapture market share. This should reduce the supply of Australia wines to other markets.

Shout out to Pemex in closing scene of The Terminator

Happened to have The Terminator on in the background when couldn't help notice the Pemex signs in the closing scene. Sarah Connor has left for Mexico, she is pregnant and as she pulls into the gas station, we see it is a Pemex station. She fills up and as she is about to leave the little kid says something in Spanish. Connor asks the gas station attendant what the kid said and he says "*he said there is a storm coming*". Connor then says looking in the distance "*I know*".

Figure 73: Closing scene from Terminator 1984



Source: Bib48_MovieClips