

Energy Tidbits

February 11, 2024

Produced by: Dan Tsubouchi

Orsted Cuts Renewable Energy Investment by \$30b to 2030, Which Cuts its Wind Power Capacity Additions by 24-30%

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. Orsted, a global wind leader, made a massive 43% (\$30b) cut to its renewable investment to 2030, which cuts its wind power additions by 24-30% by 2030. [\[click here\]](#)
2. Germany to increase natural gas consumption with its major expansion in natural gas power generation that has the potential to be converted to hydrogen post 2035. [\[click here\]](#)
3. Ford reached its AHA moment on EVs sales beyond high income early adopters "you move into the early majority customer, they are not willing to pay a significant premium for EVs. This was a huge moment for us." [\[click here\]](#)
4. Overlooked new natural gas demand factor for 2020s is rapid data centers/AI growth that run 24/7, not just when sun shines and wind blows. [\[click here\]](#)
5. Alberta's accumulated winter precipitation Nov 1-Jan 31 is brutally low and brings huge risk to 2024 wildfire season and crops. [\[click here\]](#)
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

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Natural Gas: -75 bcf draw from US gas storage; now +187 bcf YoY surplus

It was warm in the US, which led to a small draw from natural gas storage in the US this week with -75 bcf leaving stockpiles, which is less than half the normal draw for this week. For the week of February 2, the EIA reported a -75 bcf draw. Total storage is now 2,584 tcf, representing a surplus of +187 bcf YoY compared to a surplus of +54 bcf last week. Last month was the highest storage has been in 5 years, with the previous high being 3,460 bcf from 2020. Total storage is +248 bcf above the 5-year average, down from the +214 bcf surplus last week. Below is the EIA’s storage table from its Weekly Natural Gas Storage report [\[LINK\]](#).

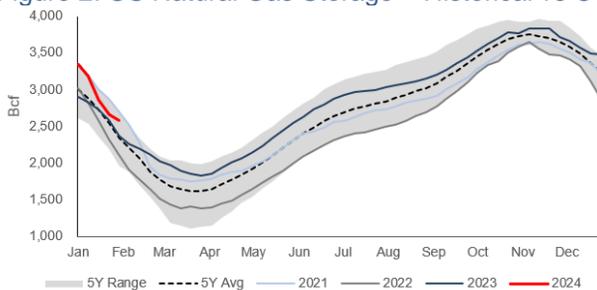
-75 draw in US gas storage

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	02/02/24		01/26/24		Year ago (02/02/23)		5-year average (2019-23)	
	02/02/24	01/26/24	net change	implied flow	Bcf	% change	Bcf	% change
East	568	605	-37	-37	536	6.0	529	7.4
Midwest	689	727	-38	-38	651	5.8	629	9.5
Mountain	183	185	-2	-2	122	50.0	127	44.1
Pacific	228	223	5	5	126	81.0	190	20.0
South Central	916	919	-3	-3	962	-4.8	861	6.4
Salt	257	248	9	9	275	-6.5	256	0.4
Nonsalt	659	672	-13	-13	687	-4.1	606	8.7
Total	2,584	2,659	-75	-75	2,397	7.8	2,336	10.6

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



Source: EIA, SAF

Natural Gas: NOAA record high temperatures drove HH below 2

HH got driven down below \$2 this week and closed the week at \$1.86 driven by the big news stories on Thursday/Friday was record hot temperatures in many parts of the US and Eastern Canada. Toronto hit 15C and people out jogging in shorts, and a similar story in many of the northern US cities. Below is The Weather Channel’s warning from Thursday [\[LINK\]](#) “By tomorrow, 235 million of you are forecast to have highs above average. We’re LIVE with your city’s temperatures!” Below is their forecast map.

Very hot in the US

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Figure 3: The Weather Channel Feb 8 forecast for Feb 8, 9,10



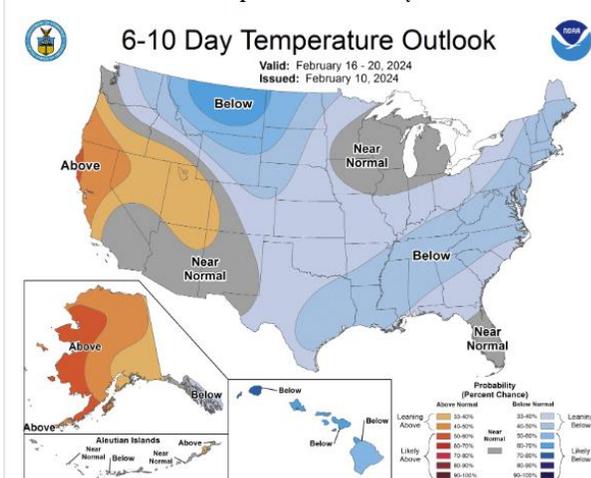
Source: NOAA

Natural Gas: NOAA forecasts return to normal to cooler than normal in a week

Yesterday, we tweeted [\[LINK\]](#) "Still warmer than normal in US today but turning normal to cooler than normal in a week. HH #NatGas closed at \$1.86 so any cooler weather will help BUT it's mid Feb and cooler than normal in NYC still means above freezing temps so no panic in markets. Thx @NOAA #OOTT." Every day, NOAA updates its 6-10 and 8-14 day temperature outlooks and yesterday's calls for mostly normal or cooler than normal temperature for the Feb 16-24 period. Unfortunately, as you move into later Feb, cooler than normal temperatures for place like New York City are still for above freezing. The cooler weather will help but markets are not worried about little cooler temperatures to end Feb.

NOAA 6-10 & 8-14 day temp outlook

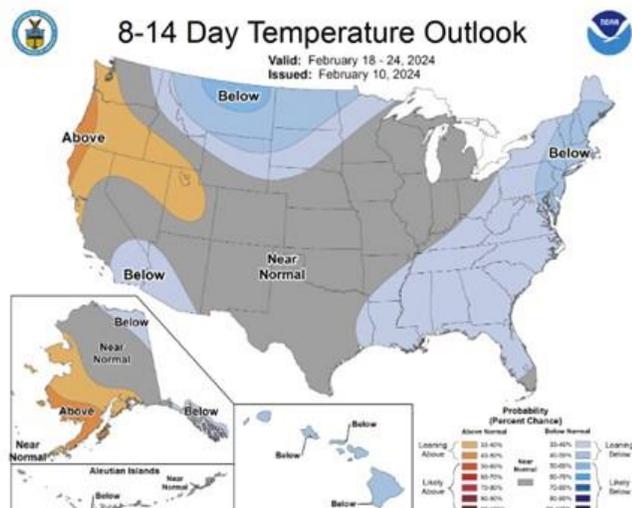
Figure 4: NOAA 6-10 day temperature outlook as of Feb 10



Source: NOAA

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Figure 5: NOAA 8-14 day temperature outlook as of Feb 10



Source: NOAA

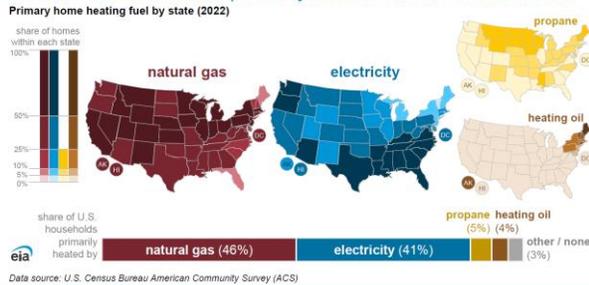
Natural Gas: 62% of US homes have winter home heating fueled by natural gas

We focus our winter temperature looks on the Great Lakes and NE US, which are the major home heating natural gas regions for the winter. We are keeping this item in our memos for Jan and Feb as one of the common questions we get is on where is it important to be cold in the US for natural gas. Here is what we wrote in our Nov 19, 2023 Energy Tidbits memo on overview of US home heating by fuel. “Our primary focus for winter weather tends to be in the US NE and around the Great Lakes for the combination of population density, areas that have colder winters, and a higher percentage of the US homes in these regions that primarily use natural gas for heating. Below is the EIA’s map from Oct showing the primary fuel source for heating homes. (i) On Thursday, we tweeted [LINK](#) “62% of US homes winter heated directly (46%) and indirectly (16%) by #natgas. All direct fuel % splits unchanged YoY ie. #natgas 46%, electricity 41%, etc. @EIAgov #natgas fuels 40% of electricity for home heating ie. indirect 16% #OOTT.” (ii) Natural gas continues to be the major fuel for “direct” fuel for home heating with 46% of US homes followed by electricity 41%, propane 5%, heating oil 4% and other/none at 3%. Note these % shares are unchanged vs last year. (ii) much of the electricity is provided by natural gas. (iii) Natural also is the major fuel to generate electricity. On a direct basis, electricity is the primary source for heating 41% of US homes. The EIA notes that natural gas provides the fuel for 40% of electricity. The EIA wrote “Last winter, electricity generation fueled by natural gas reached a new record of 619 billion kilowatthours (kWh), accounting for nearly 40% of all generation in the U.S. electric power sector. We forecast a similar level and share of natural gas generation for winter 2023–24. The addition of new natural gas-fired generating capacity has been one factor keeping natural gas the largest source of power generation. By October 31, we expect U.S. natural gas generating capacity to have grown by 4.7 gigawatts (GW) from the previous October.” ivi) Adding the indirect and direct, natural gas provides the fuel for 62% of US homes.”

Natural gas home heating

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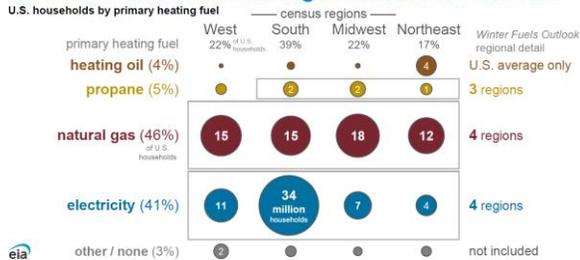
Figure 6: Fuels for winter home heating of US homes
 97% of U.S. homes are primarily heated with one of four fuels



Data source: U.S. Census Bureau American Community Survey (ACS)

2023-2024 Winter Fuels Outlook Webinar
 October 16, 2023
 Source: EIA

Figure 7: Fuels for winter home heating by region
 Our Winter Fuels Outlook has regional detail for three fuels



Data source: Short-Term Energy Outlook

2023-2024 Winter Fuels Outlook Webinar
 October 16, 2023
 Source: EIA

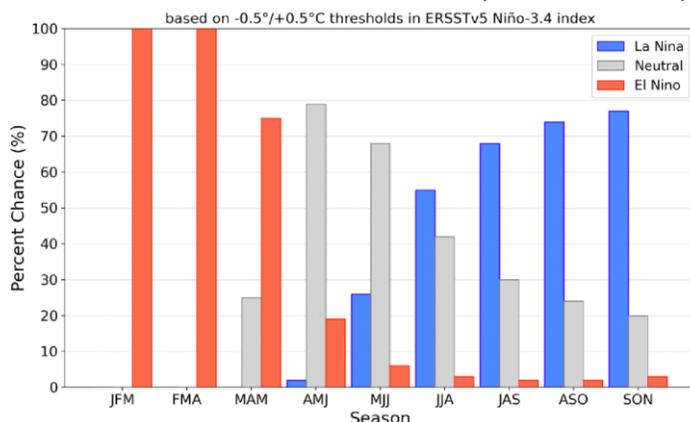
Natural Gas: NOAA sees >70% probability for La Nina conditions during Aug/Sep/Oct

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 isn't over but it is hspaping out as one of the warmest on record and will support the general, but not 100%, correlation that strong El Ninos lead to warm winters in the US. But the major part of winter is over so the El Nino/La Nina focus shifts to the summer and to hurricane season. The probability forecast is over 70% 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 "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. The forecast team is in agreement with the latest model guidance, with some uncertainty around the timing of transitions to ENSO-neutral and, following that, La Niña". Again, weather is never 100% the same, but La Nina summers normally bring a better chance for normal hurricane activity whereas El Nino summers tend to have lesser hurricane activity. Below is the NOAA El Nino/La Nina Feb update.

La Nina/El Nino focus to turn to summer

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Figure 8: NOAA El Nino/La Nina Outlook
Official NOAA CPC ENSO Probabilities (issued Feb. 2024)



Source: CPC/IRI

Natural Gas: EIA raises US gas production for 2023, 2025, but lowers 2024 forecast

The EIA revised upwards its estimate of US natural gas production for 2023 and forecast for 2025, but lowered 2024 by a greater degree, with a big downward revision in Q1/24 likely due to the impact of soft gas prices with the warm December. In October, the EIA made the expected catch-up adjustment in its natural gas production forecast after weekly oil estimates were well below actuals (associated gas production would have gone up as well). In October's STEO the EIA made a +1.0 bcf/d adjustment to 2023 and a +0.2 bcf/d adjustment to 2024, but for the past few of months, the EIA has kept 2023 production forecasts relatively flat. As a reminder the key oil plays produce associated natural gas and NGLs, any increase in US oil production lead to increases in associated natural gas production from these oil plays. (i) On Tuesday, the EIA released its monthly Short Term Energy Outlook for February 2023 [\[LINK\]](#). The EIA raised its 2023 US natural gas production estimate by +0.2 bcf/d to 103.8 bcf/d, which, on a full year average basis, gives solid YoY growth of +4.2 bcf/d from 2022. The EIA had a couple of quarterly change to estimates, which was Q3/23 -0.1 bcf/d to 104.1 bcf/d, and Q4/23 +0.8 bcf/d to 105.4 bcf/d. (ii) The EIA lowered its 2024 forecast -0.60 bcf/d at 104.4 bcf/d, which, on a full year average basis, would be up +0.60 YoY. The biggest quarterly change in 2024 is Q1/24 which was slashed down -1.60 bcf/d to 103.5 bcf/d compared to January's STEO. There was also a -0.2 bcf/d change to the Q3/24 estimate, now at 104.4 bcf/d, and a -0.8 bcf/d downward revision to Q4/24, now at 104.7 bcf/d. (iii) The EIA also released their second forecast for 2025, now +0.1 bcf/d to 106.5 bcf/d, which is a projection of +2.10 bcf/d YoY compared to 2024. The changes to 2025's quarterly forecasts were +0.4 bcf/d in Q3/25 to 106.5 bcf/d, and +1.0 bcf/d in Q4/25 to 107.2 bcf/d, which would be a new record for gas production. The EIA did not comment on the changes in their natural gas consumption forecast. (iv) The EIA immaterially lowered its 2024 HH price forecast to \$2.76/mcf (was \$2.77/mcf), as well as their 2025 forecast to \$3.06/mcf (was \$3.07/mcf). The EIA did not comment on the change in HH gas prices. (iv) Our Supplemental Documents package includes excerpts from the STEO.

EIA US natural gas production forecast

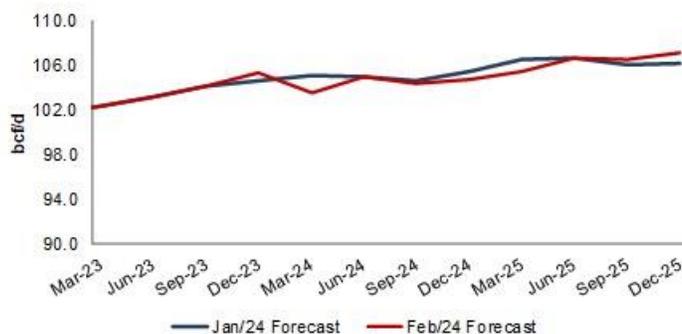
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Figure 9: EIA STEO Natural Gas Production Forecasts

bcfd	2022	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
Feb-2024	99.6	102.3	103.2	104.1	105.4	103.8	103.5	105	104.4	104.7	104.4	105.5	106.7	106.5	107.2	106.5
Jan-2024	99.6	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-2023	99.6	102.3	103.2	104.0	105.1	103.7	104.8	104.8	104.7	105.3	104.9					
Nov-2023	99.6	102.3	103.2	104.1	105.1	103.7	105.1	104.8	104.7	105.9	105.1					
Oct-2023	99.6	102.4	103.2	104.4	104.9	103.7	104.7	104.8	104.8	106.1	105.1					
Sep-2023	98.1	102.1	102.8	102.7	103.1	102.7	104.3	104.7	104.9	105.9	104.9					
Aug-2023	98.1	102.1	102.8	103.4	103.6	103.0	104.0	103.9	104.0	104.6	104.1					
July-2023	98.1	102.0	102.2	103.0	102.2	102.4	101.8	101.5	102.5	103.7	102.4					
June-2023	98.1	102.0	103.7	103.4	101.9	102.7	102.8	102.8	103.0	103.6	103.0					
May-2023	98.1	102.1	101.9	99.9	100.4	101.1	100.7	101.1	101.4	101.8	101.2					
Apr-2023	98.1	101.6	100.5	100.5	100.9	100.9	101.2	101.5	101.8	101.8	101.6					
Mar-2023	98.1	101.0	100.2	100.6	101.0	100.7	101.4	101.4	102.0	102.0	101.7					
Feb-2023	98.1	99.9	100.0	100.3	100.9	100.3	101.2	101.6	102.0	101.9	101.7					
Jan-2023	98.0	100.8	99.9	100.1	100.6	100.3	101.1	101.8	102.7	103.6	102.3					

Source: EIA, STEO

Figure 10: EIA STEO Natural Gas Production Forecasts by Month



Source: EIA, STEO

Natural Gas: EIA STEO forecasts Apr 1/24 storage 1.905 tcf, -0.250 tcf vs Jan STEO

The cold snap in early Jan is why we believe the EIA Feb STEO decreased its forecast for storage to end winter 2023/24. (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 3.808 tcf, which is +0.238 tcf YoY. (ii) The EIA forecasts gas storage to end this winter at 1.905 tcf, which would be +0.055 tcf YoY and down vs Jan STEO of 2.155 tcf., so a material draw revision to estimates. (iii) The EIA forecasts the 2024/2025 winter ending with 2.162 tcf, down -0.114 tcf from the Jan STEO, and a start to the 2025/2026 winter at 4.112 tcf, down slightly from 4.136 tcf in the Jan STEO which would be the highest level since 2016. Below is a table tracking the working gas inventory forecasts and actuals since 2016.

EIA February STEO storage forecast

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Figure 11: EIA STEO US Natural Gas in Storage (2016-2025)

	US Working Natural Gas in Storage (billion cubic feet)					
	Storage 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	4,012.7	776.4	3,624.5	10.7%
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	4,012.7	776.4	3,624.5	5.3%
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	4,012.7	776.4	3,624.5	-10.7%
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	4,012.7	776.4	3,624.5	3.8%
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	4,012.7	776.4	3,624.5	8.4%
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	4,012.7	776.4	3,624.5	1.1%
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	4,012.7	776.4	3,624.5	-1.5%
Mar 2023	1,849.6	1,184.9	2,486.3	1,301.4	1,835.6	0.8%
Oct 2023	3,808.1	3,236.3	4,012.7	776.4	3,624.5	5.1%
Mar 2024	1,905.1	1,184.9	2,486.3	1,301.4	1,835.6	3.8%
Oct 2024	3,961.0	3,236.3	4,012.7	776.4	3,624.5	9.3%
Mar 2025	2,162.1	1,184.9	2,486.3	1,301.4	1,835.6	17.8%
Oct 2025	4,112.4	3,236.3	4,112.4	876.1	3,674.4	11.9%

Source: EIA, STEO

Natural Gas: Did Precision point to Coastal GasLink start up this summer?

We continue to look for any indications or hints as to how early Coastal GasLink will start to deliver natural gas to the start up of the 1.8 bcf/d LNG Canada Phase 1. All that seems clear is that the startup is expected within the next 12 months. This is a game changer for natural gas in western Canada so there is a big difference between a start-up in Q4 vs a start-up in either Q3 or Q4. We have been hearing more industry players pointing to an earlier start-up, perhaps even with the next few months for taking natural gas. Precision didn't give any specific date in 2024 when LNG Canada would start up, but said "*The Coastal GasLink pipeline achieved mechanical completion in late 2023 and will deliver gas to LNG Canada, which is expected to begin start-up activities in 2024.*" Even though they didn't give a specific timing for Coastal GasLink to start, it seemed like they were hinting they could be flowing natural gas this summer. This timing would make sense if LNG Canada is to start commissioning activities later in 2024. On Tuesday, we tweeted [\[LINK\]](#) "*Hmmm! Precision CEO expects rig demand to "ramp up after spring breakup as the TMX becomes operational & #CoastalGasLink begins to support LNG Canada start-up activities". Is he expecting some level of #NatGas to be flowing to #LNGCanada 1.8 bcf Phase 1 this summer? #OOTT.*"

Coastal GasLink

Shell seems to point to 1.8 bcf/d LNG Canada commissioning cargos in 2024

Last week's (Feb 4, 2024) Energy Tidbits memo highlighted the comments from Shell's Q4 call on Feb 1. Shell CEO Sawan said "*Thank you very much. Our free. I'll take the first one and then let Sinead address the second one. LNG Canada. You will have. We also address this last year, we have seen of course the GasLink Coastal GasLink Pipeline completed mechanically last year and ready and available to ramp-up through the course of 2024. The facility itself at Kitimat is now just over 90% complete. As per the report from the joint-venture. So they're making good progress and. I would expect that we would expect that later this year, they would start-up. The commissioning of the plant. That of course takes several months well into 2025, but it's comforting to see the progress that is being made. And of course, once we start producing those commissioning cargos will be made available from day-one to our*

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foundational customers. As you would expect. So. Pleased with the progress. But this no doubt this is a very-very complex facility that's going to be. Be ramped-up. And therefore, we are going to be to watch it and to support the team as they do that in the course of the coming 12 months to 18 months.” Sawan didn't specifically say it but commissioning activities include commissioning LNG cargos and he is pointing to that later in 2024. This would fit the hinted Precision timing for Coastal GasLink to start up this summer.

TC Energy's Coast GasLink update should be coming on Feb 16

We should see a good update on Coastal GasLink from TC Energy on Feb 16 and we expect analysts to ask when will Coastal GasLink start line fill and if they are starting earlier than expected as seems to be the view from some natural gas producers. Two weeks ago, TC Energy announced “*TC Energy to issue Fourth Quarter 2023 Results on Feb 16. will hold a teleconference and webcast on Friday, Feb. 16, 2024, to discuss its fourth quarter financial results.*”

Natural Gas: QatarEnergy and Petronet sign 20-year LT LNG Deal

Long-term LNG deal

There was a significant slowdown in long-term LNG deals in since the end of H1/22 compared to the activity seen from July 1, 2021 through June 30, 2022. That's because most, if not all the available long term LNG supply available before 2026 was locked up in the July 1, 2021 through June 30, 2022 rush. Since that first rush, there have been a lesser number of long term deals. The long-term deals now being done are generally for long-term supply starting in 2026 or later. There have been some very long-term LNG deals even out past 2050. And the big LNG suppliers have been stepping in more to lock up other long-term LNG supply to add to their supply portfolio to be able to use to supply to their customers. This week, there was a major long-term LNG deals. (i) On Tuesday, QatarEnergy announced they signed a 20-year LNG Sales and Purchase Agreement (SPA) deal with Petronet LNG (India) [\[LINK\]](#), whereby Petronet will purchase 0.99 bcf/d annually from QatarEnergy beginning in 2028. QatarEnergy's President and CEO, Saad Sherida Al-Kaabi said “*This agreement is another key milestone in the long-standing energy partnership between Qatar and India and comes on the heels of the 20th anniversary of the first LNG shipment to India... We believe that this new agreement, with our valued customers Petronet LNG and its esteemed shareholder companies, will further strengthen the relationship with India and support its vision to increase the contribution of natural gas in its energy mix*”. Note later in the memo, we note that Petronet was able to get a lower slope in this new deal ie. a cheaper LNG price. Our supplemental documents package contains the QatarEnergy news release.

There have been 21.23 bcf/d of long-term LNG supply deals since July 1, 2021

We first highlighted this abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg “*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs*”. We included a table of the deals done in that short two week period. We continue to update that table, which now shows 21.23 bcf/d of long-term LNG deals since July 1, 2021. 64% of the deals have been by Asian LNG buyers, but we are now seeing rest of world locking up long term supply deals post Russia/Ukraine. Note in our non-Asian LNG deals will major LNG players (ie. Chevron, Shell, etc) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 54% of all

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Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long-term supply deals since July 1, 2021. Our Supplemental Documents package includes our July 14, 2021 blog.

Figure 12: Long-Term LNG Buyer Deals Since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							Long-Term LNG Buyer Deals Since July 1, 2021								
Date	Buyer	Seller	Country	Volume (bcfd)	Duration (Years)	Start	End	Date	Buyer	Seller	Country	Volume (bcfd)	Duration (Years)	Start	End
Asian LNG Deals							Non-Asian LNG Deals								
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032	Jul 28, 2021	PGNIG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Jul 9, 2021	ORC	QatarEnergy	Taiwan / Qatar	0.13	15.0	2022	2037	Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034	Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045	Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037	Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032	May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035	May 17, 2022	PGNIG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
Nov 4, 2021	Unipac	Venture Global LNG	China / US	0.46	20.0	2023	2043	May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043	Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040	Jun 21, 2022	ENBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043	Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034	Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037	Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037	Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Dec 15, 2021	SFOC Guangdong	BP	China / US	0.03	10.0	2023	2033	Jul 13, 2022	Vitol	Defin Midstream	US / US	0.07	15.0	n.a.	n.a.
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043	Aug 9, 2022	Centrica	Defin Midstream	UK / US	0.13	15.0	2026	2041
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032	Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035	Oct 6, 2022	ENBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039	Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053	Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Feb 24, 2022	Guangdong Energy	QatarEnergy	China / Qatar	0.20	20.0	2026	2046	Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046	Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU/US	0.13	20.0	2027	2047
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.	Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026	Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043	Apr 24, 2023	Hartree Partners LP	Defin Midstream	US / US	0.08	20.0	n.a.	n.a.
May 2, 2022	Cumor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046	Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042	Jun 22, 2023	SEFE	Venture Global LNG	EU/US	0.30	20.0	2026	2046
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.	Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.	Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039	Jul 28, 2023	OMV	BP	Austria/UK	0.13	10.0	2026	2036
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036	Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051	Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047	Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050	Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046	Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qatar	0.46	27.0	2026	2053
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046	Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046	Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053	Nov 29, 2023	OMV	Cheniere	Netherlands / US	0.11	15.0	2029	2044
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.	Dec 5, 2023	Woodside Energy	Mexico Pacific Ltd	Australia / Mexico	0.17	20.0	2024	2044
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035	Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21 7.73							
Jan 19, 2023	ITOC/CHU	Venture Global LNG	Japan / US	0.13	15.0	n.a.	n.a.	Total New Long Term LNG Contracts since Jul/21 21.23							
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.	Excludes Asian short term/spot deals							
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.	*on Dec 20, 2021 CNOOC agreed to buy an additional 0.13 bcfd from Venture Global for an undisclosed shorter period							
Mar 6, 2023	Gumor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042	Source: Bloomberg, Company Reports							
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.	Prepared by SAF Group https://safgroup.ca/news-insights/							
May 16, 2023	KOSPO	Cheniere	Korea / US	0.05	19.0	2027	2046								
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh / Qatar	0.24	15.0	2026	2031								
Jun 21, 2023	Petro Bangla	Oman	Bangladesh / Oman	0.20	10.0	2026	2036								
Jun 21, 2023	CNPC	QatarEnergy	China / Qatar	0.53	27.0	2027	2054								
Jun 26, 2023	ENN LNG	Cheniere	Singapore / US	0.24	20.0	2026	2046								
Jul 5, 2023	Zhejiang Energy	Mexico Pacific Ltd	China / Mexico	0.13	20.0	2027	2047								
Aug 8, 2023	LNG Japan	Woodside	Japan / Australia	0.12	10.0	2026	2036								
Sep 7, 2023	Petrochina	ADNOC	China / UAE	n.a.	n.a.	n.a.	n.a.								
Nov 2, 2023	Foran	Cheniere	China / US	0.12	20.0	n.a.	n.a.								
Nov 4, 2023	Sinopec	QatarEnergy	China/Qatar	0.39	27.0	2026	2053								
Nov 27, 2023	Gumor Singapore Pte	Defin Midstream	Singapore / US	0.10	15.0	n.a.	n.a.								
Dec 20, 2023	ENN	ADNOC	Singapore / UAE	0.13	15.0	2028	2043								
Jan 5, 2024	GAIL	Vitol	India / Singapore	0.13	10.0	2026	2036								
Jan 8, 2024	Shell	Ksi Lisims LNG	Singapore / Canada	0.26	20.0	2027	2047								
Jan 16, 2024	ExxonMobil	Mexico Pacific Ltd	Singapore / Mexico	0.16	20.0	2024	2044								
Jan 29, 2024	Exxcelerate	QatarEnergy	Bangladesh / Qatar	0.13	15.0	2026	2041								
Jan 30, 2024	ADNOC	GAIL India	UAE / India	0.07	10.0	2024	2034								
Feb 6, 2024	Petronet LNG	QatarEnergy	India / Qatar	0.99	20.0	2028	2048								
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				13.49											

Source: SAF

Natural Gas: Petronet gets lower slope LNG price in new Qatar deal

One item that didn't get disclosed in the Qatar/Petronet LNG deal was the "slope". On Wednesday, Bloomberg's report "India Gets Cheaper LNG From Qatar in Landmark New Supply Deal" wrote "The new contract is at about a 12.2% link to Brent oil with a fixed charge of roughly 30 cents per million British thermal units, said traders who asked not to be named as the terms are private. That's less than the current agreement, which expires in 2028, and is at a 12.67% link to Brent with a 52 cent fixed charge. State-owned QatarEnergy didn't immediately respond to a request for comment." Assuming Brent of US\$80, that would be an LNG price, before fixed charge, of \$9.76 ie. 12.2% of \$80, whereas it would have been \$10.14 under the current agreement ie. 12.67% of \$80.

Lower slope in new Petronet deal

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Explaining “slope” in LNG contracts

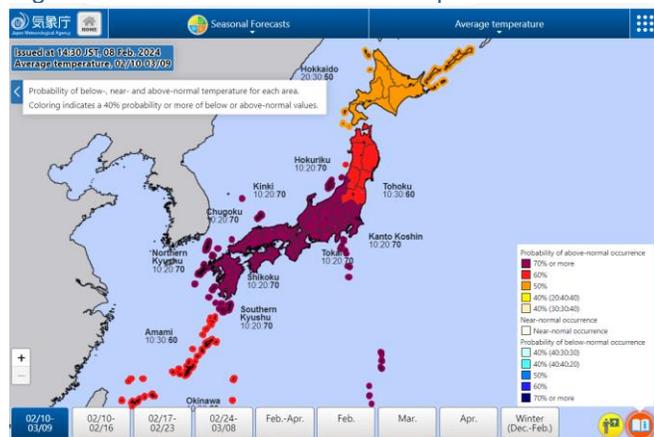
Our Sept 27, 2020 Energy Tidbits item noted above reference the slope of 10.19. price is and divide by the slope. The original Qatar and most other long term LNG supply deal were done at a slope of 16.7, or 1/6 the price of oil. Basically, the energy equivalent of oil and natural gas. In our March 28, 2021 Energy Tidbits, we noted Qatar negotiated a lower slope with Sinopec, which was reported at 10.19. This week’s rumored Beijing Gas deal is reported at 12.7% to 12.9%, which, at Brent \$80 is ~\$10.25, compared to a 10.19 slope of \$8.15.

Natural Gas: Japan to see a hot end to Winter

Japan is the #2 LNG importer just behind China. It’s now Feb and JKM LNG markets are past any worry about a risk to winter LNG supply and prices especially with the current forecasts for a much warmer Feb in Japan. And, in Japan, that really takes it through any winter weather driven natural gas demand period. We have been warming for weeks that it is setting up a repeat of winter 2022/23 where the warm winter led to JKM LNG prices being held back for months. This is when JKM LNG prices should be high and not showing JKM LNG futures around \$9.50 to end winter. Every Thursday, the Japan Meteorological Agency updates its 30-day outlook [\[LINK\]](#). The February 8 update calls for much warmer than normal temperatures for the rest of January and through most of February. The JMA forecast is for Feb 10 – Mar 9, which is forecasted to be much warmer than normal across the entire country so a hot end to Winter for Japan. Below is the JMA’s 7-day temperature probability forecast for Feb 10 – Mar 9.

Japan’s 7-day temperature forecast

Figure 13: JMA Feb 10 – Mar 9 Temperature Probability Forecast



Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks up WoW, down YoY, but above 5-yr average

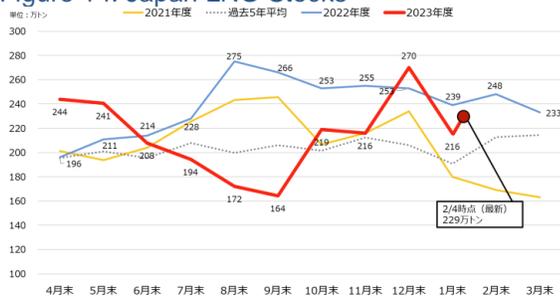
Japan LNG stocks are below 2022 levels and above the 5-year average. On Wednesdays, Japan’s METI releases its weekly LNG stocks data [\[LINK\]](#). LNG stocks on Feb 4 were 110.0 bcf, up +2.7% WoW from Jan 28 of 109.7 bcf, down -4.2% YoY from 114.8 bcf a year earlier, but above the 5-year average for the end of January of 91.7 bcf. Last week was the lowest

Japan LNG stocks up +2.7% WoW

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storage had been since October. METI did not comment on the WoW increase. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 14: Japan LNG Stocks



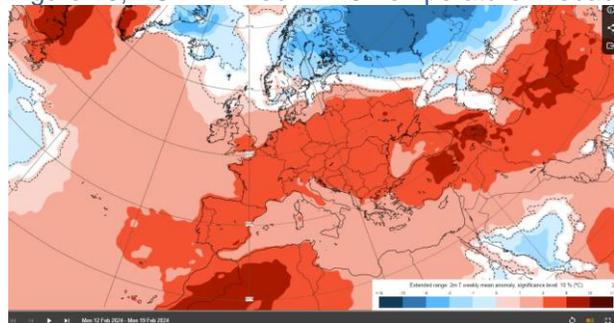
Source: METI

Natural Gas: Western Europe forecast for warmer than normal temp in mid Feb

Winter natural gas season in Europe is essentially over and it is turning out similar to winter 22/23, which was a negative and a negative for natural gas thru the spring shoulder season. We have been warning that, as far as Europe natural gas markets are concerned, any risk to winter natural gas is effectively over. The short-term weather forecasts for Europe have been pretty accurate so far this winter. The ECMWF (European Centre for Medium-Range Weather Forecasts) temperature probability forecasts from yesterday's forecast much warmer than normal temperatures over the next two weeks for western Europe. Yesterday's ECMWF forecasts call for much warmer than normal temperatures for Feb 12-19 and generally normal temperatures for Feb 19-26. It's Feb and Europe natural gas markets are no longer worried about a natural gas risk this winter. And it is looking like a replay of 2023 where a weak Europe natural gas market to end winter led to months of soft Europe natural gas prices thru shoulder season and into summer 2023.

Europe temperature forecast

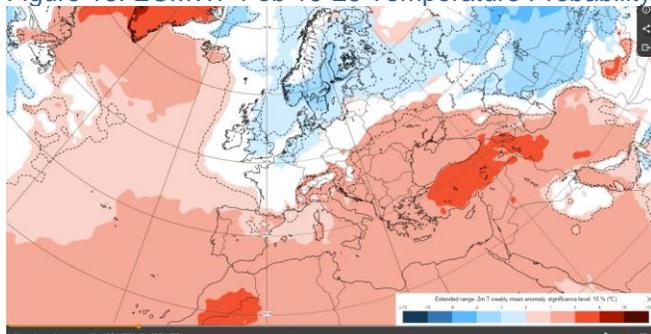
Figure 15: ECMWF Feb 12-19 Temperature Probability Forecast



Source: ECMWF

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Figure 16: ECMWF Feb 19-26 Temperature Probability Forecast



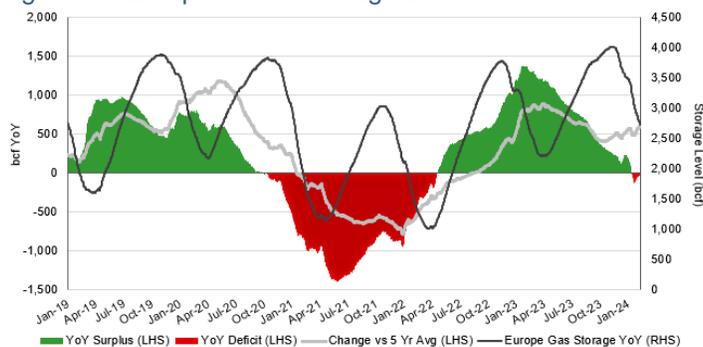
Source: ECMWF

Natural Gas: Europe storage drops again WoW to 67.48%, YoY deficit continues

Europe has been experiencing cold weather and delayed LNG shipments due to storms and rerouting of tankers around Africa that would otherwise have taken the Suez. Please note that Europe generally refers to the start of winter natural gas withdraw season as starting Oct 1, whereas North America refers to the start of winter natural gas season as starting Nov 1. After entering winter essentially full at over 99%, Europe is seeing some big draws on storage. This week, Europe storage decreased by -2.25% WoW to 67.48% on Feb 8 vs 69.73% on Feb 1. Storage is now -0.75% lower than last year's levels of 68.23% on Feb 8, 2023. Recall the panic of late 2021 on natural gas, it was because Europe gas storage was only 67.21% full on Dec 1, 2021. Below is our graph of Europe Gas Storage Level.

Europe gas storage

Figure 17: European Gas Storage Level



Source: Bloomberg, SAF

Oil: US oil rigs flat WoW at 499 rigs, US gas rigs +4 WoW to 121 rigs

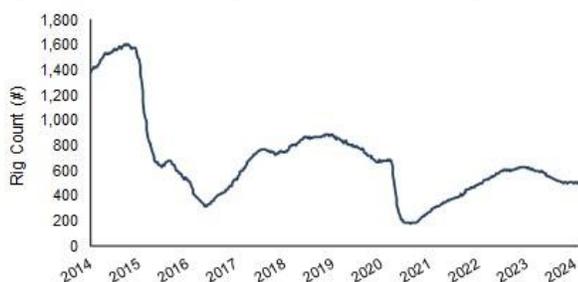
On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Total US oil rigs were flat again WoW at 499 oil rigs as of Feb 9. US oil rigs went below 520 rigs on Aug 25 and stayed there for 4 weeks and for the last 14 weeks have been between 494 and 507 oil rigs. (ii) The major basin changes for oil rigs were Permian +1 rig WoW to 307 oil rigs, Granite Wash +1 rig WoW to 2 oil rigs, Cana Woodford -2 rigs WoW to 22 oil rigs, DJ-

US oil rigs flat WoW

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Niobrara -1 rig WoW to 12 oil rigs, and Others +2 rigs WoW to 68 rigs. (iii) US gas rigs were up +4 rigs WoW to 121 gas rigs.

Figure 18: Baker Hughes Total US Oil Rigs



Source: Baker Hughes, SAF

Oil: Nabors survey: big operators to have flat YoY rigs activity at year end 2024

Nabors didn't forecast US oil production but its comments on the Q4 call on drilling activity seem to support that it will be challenging for US oil to have more than modest growth in 2024. Nabors survey of 17 big operators representing 46% of rigs expect to have flat YoY rigs in 2024. So the question is what about the others, including all the small players, be doing for rigs in 2024. On Wednesday, we tweeted [LINK](#) "Nabors Lower 48 survey of 17 operators w/ 46% of rigs: yr end 2024 to be "essentially in line" with yr end 2023. Flat YoY rigs, but these big players sb able to hold or modestly grow #Oil production. Key issue for US 2024 oil growth - can the remaining 54% do the same? #OOTT." Nabors held its Q4 call and mgmt. outlined the results of its normal survey for drilling activity. Mgmt said "We surveyed the largest lower 48 clients at the end of the fourth quarter. Our survey covers 17 operators, which account for approximately 46% of the working rigs at the end of the quarter. During the fourth quarter, consistent with the prior survey's results, this group added more than ten rigs. The latest survey indicates this group's year end 2024 rig count will be essentially in line with the year-end 2023. More than half of this group signals no change. The balance indicates minor additions or decreases. We believe that with the uncertainty in commodity prices, customers remain cautious about their plans for 2024."

Big operators to have flat YoY rigs

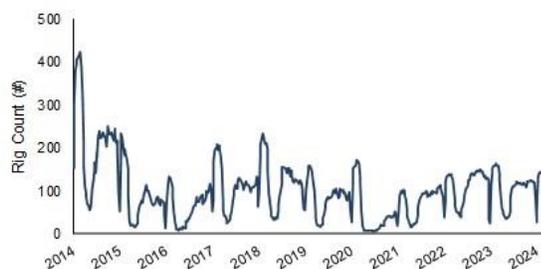
Oil: Total Cdn rigs unchanged WoW, risk road bans to start anytime now

Given the warm winter, other than a short recent cold spell, and the warm weather the last week in Alberta, we wouldn't be surprised if there is an early end to drilling season due to the start of road bans, and we could see a drop in rigs in the next week or two. For the week of Jan 26, total Cdn rigs were flat WoW at 232 rigs. There weren't any changes on a provincial basis. Cdn oil rigs stayed at 141 oil rigs and are down -20 rigs YoY. Cdn gas rigs stayed at 91 rigs, which is up +2 rigs YoY.

Cdn total rigs flat WoW

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Figure 19: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

Oil: US weekly oil production estimates up +0.300 mmb/d WoW

After the EIA slashed production estimates by -1.000 mmb/d two weeks ago in response to cold temperatures and production shut-ins, this week’s estimates looks to have brought back a portion of the cold weather shut-in production volume. On Jan 24, the EIA wrote “*This week’s domestic crude oil production estimate incorporates a decrease of 1 million barrels per day, representing an estimate of the impact of winter storms and extreme cold temperatures. We will report survey-based domestic production for January in the Petroleum Supply Monthly (PSM) at the end of March*”. So we will see how accurate they were when we see the actuals. The latest Form 914 (with November actuals) was +0.108 mmb/d higher than the weekly estimates of 13.200 mmb/d. This week, the EIA’s production estimates were up +0.300 mmb/d WoW to 13.300 mmb/d for the week ended February 2. Alaska was up +0.002 mmb/d WoW to 0.435 mmb/d. Below is a table of the EIA’s weekly oil production estimates.

US oil production up WoW

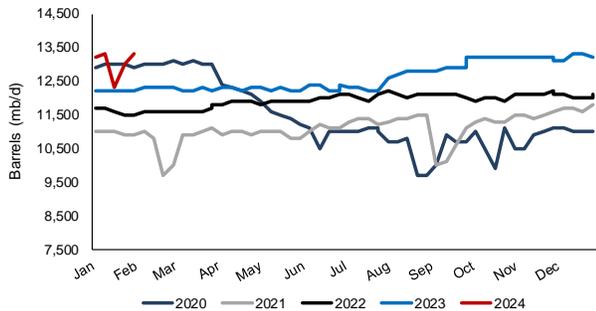
Figure 20: EIA’s Estimated Weekly US Field Oil Production

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	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	12,500	05/26	12,200		
2023-Jun	06/02	12,400	06/09	12,400	06/16	12,200	06/23	12,200	06/30	12,400
2023-Jul	07/07	12,300	07/14	12,300	07/21	12,200	07/28	12,200		
2023-Aug	08/04	12,600	08/11	12,700	08/18	12,800	08/25	12,800		
2023-Sep	09/01	12,800	09/08	12,900	09/15	12,900	09/22	12,900	09/29	12,900
2023-Oct	10/06	13,200	10/13	13,200	10/20	13,200	10/27	13,200		
2023-Nov	11/03	13,200	11/10	13,200	11/17	13,200	11/24	13,200		
2023-Dec	12/01	13,100	12/08	13,100	12/15	13,300	12/22	13,300	12/29	13,200
2024-Jan	01/05	13,200	01/12	13,300	01/19	12,300	01/26	13,000		
2024-Feb	02/02	13,300								

Source: EIA

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Figure 21: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

Oil: EIA Feb STEO forecasts exit 2024 oil production down 0.19 mmb/d YoY

On Tuesday, the EIA released its Short-Term Energy Outlook for February 2024 [LINK](#) and decreased its oil production forecasts for 2024 but increased its 2025 forecast. (i) The overlooked number is that the EIA forecasts exit 2024 US oil production down 0.19 mmb/d YoY vs exit 2023. (ii) The Feb STEO forecasts for 2024 US oil production estimates was revised down vs the last STEO in January. (iii) The February STEO estimate for 2023 was basically kept flat at 12.93 mmb/d from the January STEO of 12.92 mmb/d. The only quarterly revision was Q4/23 +0.07 mmb/d to 13.29 mmb/d from 13.22 mmb/d in the January 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 (v) . The Feb STEO forecasts for 2024 US oil production estimates was revised down vs the last STEO in January. The February STEO forecast for 2024 is down -0.60 mmb/d to 13.10 mmb/d from the January STEO of 13.21 mmb/d. The revisions by quarter were Q1/24 -0.24 mmb/d to 13.03 mmb/d, Q2/24 +0.10 mmb/d to 13.12 mmb/d, Q3/24 -0.09 mmb/d to 13.06 mmb/d, and Q4/24 exit -0.03 mmb/d to 13.18 mmb/d. (vi) The EIA also revised upwards their 2025 forecast. The EIA expects oil production to ramp up to 13.49 mmb/d over 2025, up +0.05 mmb/d from the January STEO. The revisions by quarter were Q1/25 +0.01 mmb/d to 13.37 mmb/d, Q2/25 +0.02 mmb/d to 13.46 mmb/d, Q3/25 +0.07 mmb/d to 13.50 mmb/d, and Q4/25 +0.11 mmb/d to 13.64 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

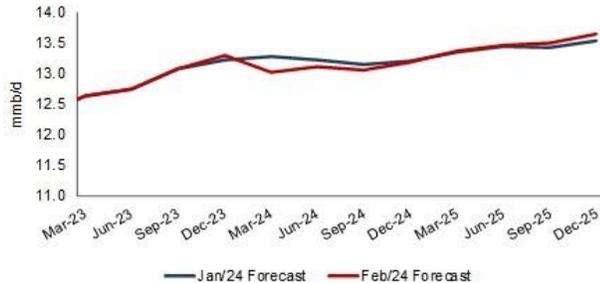
Figure 22: EIA STEO Oil Production Forecasts by Month

(million b/d)	2022	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
Feb-24	11.91	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	11.91	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	11.91	12.63	12.75	13.06	13.26	12.93	13.09	13.07	13.07	13.23	13.11					
Nov-23	11.91	12.63	12.75	13.07	13.17	12.90	13.06	13.06	13.11	13.35	13.15					
Oct-23	11.91	12.63	12.75	13.13	13.16	12.92	13.07	13.02	13.07	13.31	13.12					
Sep-23	11.91	12.63	12.71	12.86	12.94	12.78	13.03	13.09	13.15	13.36	13.16					
Aug-23	11.91	12.63	12.67	12.81	12.93	12.76	12.98	13.01	13.08	13.27	13.09					
Jul-23	11.89	12.61	12.55	12.46	12.63	12.56	12.67	12.71	12.88	13.13	12.85					
Jun-23	11.89	12.60	12.56	12.57	12.70	12.61	12.69	12.63	12.76	13.00	12.77					
May-23	11.89	12.54	12.61	12.46	12.61	12.53	12.63	12.58	12.68	12.85	12.69					
Apr-2023	11.88	12.54	12.50	12.50	12.61	12.54	12.69	12.71	12.77	12.83	12.75					
Mar-2023	11.88	12.31	12.43	12.46	12.54	12.44	12.58	12.58	12.64	12.71	12.63					
Feb-2023	11.90	12.44	12.46	12.49	12.56	12.49	12.63	12.62	12.65	12.70	12.65					
Jan-2023	11.86	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 23: Estimated US Crude Oil Productions by Forecast Month



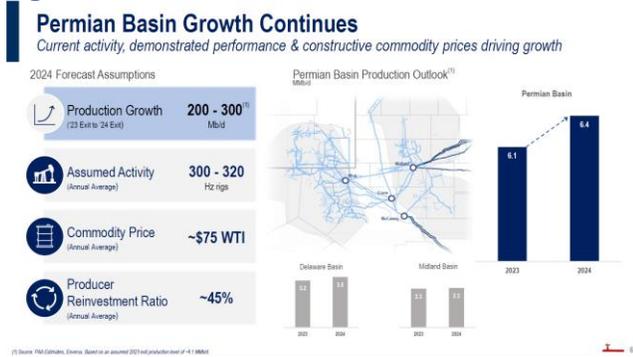
Source: EIA, STEO

Oil: Plains forecasts Permian oil production +200-300 mb/d exit 2024 vs exit 2023

On Friday, we tweeted [\[LINK\]](#) "Will total US #Oil production be fighting to stay flat or modestly grow in 2024 if Permian oil is only +200-300,000 b/d 23 exit to 24 exit as per Plains forecast. Reminder Plains is likely involved in half of Permian barrels. #OOTT." Plains had the below slide from their Q4 call on Friday, where Plains forecast Permian oil production to grow by 200,000 to 300,000 b/d exit 2023 to exit 2024. Our tweet reminded that Plains should have a good handle on Permian oil growth as they touch about half of the Permian oil barrels somewhere with their system On the Q4 call, Plains reminded that Permian oil production ramped up in Q4. In the Q&A, mgmt. replied "So I think Willie outlined the sources of the gathering growth. But specifically Midland versus Delaware, it's a function of activity. So if you look at the number of rigs working in the Delaware, it's probably 170 to 180. You have closer to 120 working in Midland. When you offset declines in new production, that's what yields the growth. You had significant growth in the fourth quarter of last year. So you would imagine it to be slower in the first half, stronger in the second half, which is what is consistent with some of the public E&Ps that have guided so far this year. So the Delaware basin growth is a function of activity. We do have a stronger position in the Delaware Basin, so that impacts us disproportionately. So I'd say that's that piece."

Plains Permian oil outlook

Figure 24: Permian Basin Oil Growth



Source: Plains All American

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Oil: bp CEO sees oil dipping to \$60 before he goes counter-cyclical to buy US shale

Bp held its Q4 call on Tuesday. In the Q&A, mgmt. was asked about using their balance sheet to add US shale. New CEO Auchincloss said it wasn't the time to buy US shale with oil at \$80 as he still thinks oil will dip back to \$60. We tweeted [LINK](#) *"#Oil demand continues to be very strong" BUT not time to add US shale oil "I'm sure oil will dip again to \$60 sometime in the future at some time I can't predict. And that's the time when you use the stronger balance sheet to go counter-cyclical" bp CEO. #OOTT.* Auchincloss said *"Yes, liquids, I think we've got 8 to 10 years of runway right now with infill drilling. I'll think countercyclically. So you'll do acreage swaps, which we're doing all the time in BPX I think we've done three big acreage swaps over the past few years that we don't talk about very much. So certainly they're focused on those types of things. things. But with oil around \$80, I'd wait till oil dipped before I did that. I'm sure oil will dip again to \$60 sometime in the future at some time, I can't predict. And that's the time when you use the stronger balance sheet to go counter-cyclical is how I think about it now. Thank you. Chris."*

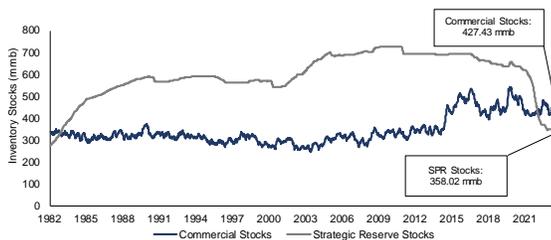
Plains Permian oil outlook

Oil: US SPR reserves now -69.415 mmb lower than commercial crude oil reserves

Oil in 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 Sept 16, 2022 week. The deficit widened this week after a build in commercial oil stocks of +5.520 mmb. The EIA's weekly oil data for February 2 [LINK](#) saw the SPR reserves increase +0.615 mmb WoW to 358.017 mmb, while commercial crude oil reserves increased +5.520 mmb to 427.432 mmb. There is now a -69.415 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles.

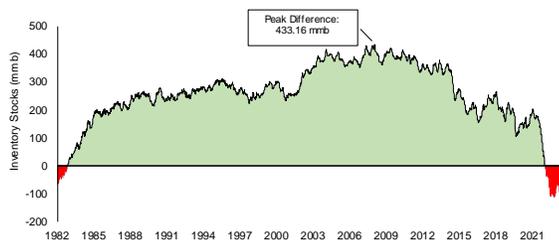
US SPR reserves

Figure 25: US Oil Inventories: Commercial & SPR



Source: EIA, SAF

Figure 26: US Oil Inventories: SPR Less Commercial



Source: EIA, SAF

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Oil: US gasoline prices +0.03 this week to \$3.18

US gasoline prices were holding around \$3.10 for the past several weeks on a national average, but have crept up the last two weeks to over \$3.15. It looks like the Whiting refinery going down is a key factor in the WoW increase. Yesterday, AAA reported that US national average prices were \$3.18, which is up \$0.03 WoW, up \$0.10 MoM and down \$0.25 YoY. As of yesterday, the California average gasoline prices was \$4.61, which was a \$1.43 premium to the national average gasoline price of \$3.18. Remember the big gasoline crisis in summer 2022 started to see US gasoline prices ease below \$4 in August 2022 and were helped in Q4/22 by the SPR releases.

US gasoline prices**Whiting refinery down led to big WoW increases to regional gasoline prices**

The US national average gasoline prices were only +\$0.03 WoW. But the regional gasoline prices near bp's 430,000 b/d Whiting (Indiana) refinery were up much more post the refinery going down. Illinois gasoline prices were +\$0.18 to \$3.37, Indiana gasoline prices were +\$0.24 WoW to \$3.13 and Wisconsin gasoline prices were +\$0.32 WoW to \$3.06.

Oil: Crack spreads widened \$4.96 WoW to top \$30.03

There was a big widening of crack spreads this week. On Friday, we tweeted [LINK](#) "321 crack spreads hit \$30 today. normally \$30 spreads provides big incentives for refineries to keep up runs and first response is to drag up #Oil prices a bit. Thx @business #OOTT." 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 jump up to \$30 is a big incentive to refiners to want more crude and produce more product. This week, crack spreads were +\$4.96 WoW to \$30.03 on Feb 9, which followed \$25.07 on Feb 2, \$26.65 on Jan 26, \$24.47 on Jan 19, \$24.10 on Jan 12, \$21.71 on Jan 5, and \$23.57 on Dec 29. Crack spreads at \$30.03 are well above the high end of the more normal pre-Covid that was more like \$15-\$20, which is why we believe refineries are incentivized to take more oil in the normal seasonal ram up in refinery runs.

Crack spreads closed at \$30.03**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 \$30.03 as of the Friday Feb 9, 2024 close.

Figure 27: Cushing Oil 321 Crack Spread & WTI Feb 9, 2014 to Feb 9, 2024



Source: Bloomberg

Oil – Precision reminds Cdn heavy/medium oil growth is also Clearwater

It's been a great couple years for the small/mid cap Cdn oil producers as the drilling of the multi-leg no-frack wells in a range of plays has made these high oil growth plays available to them. This is not like the oil sands that is basically the domain of the big players. And this includes the hottest oil play in Canada in the last two years – the Clearwater. On Tuesday, we tweeted [\[LINK\]](#) “Reminder *ca* heavy oil growth isn't just #OilSands. Precision CEO “.... well suited for long-term conventional oil development in the oil sands and Clearwater formation” Trans Mountain 590,000 b/d TMX expansion will create Cdn heavy oil needs for more than oil sands. #OOTT”. The reminder from Precision is that it's not oil sands that that feeds the heavy oil market, it's also the Clearwater play. The Clearwater play has been the big hot play in western Canada in the past two years. Precision said “In the Canadian heavy oil market, we expect activity levels to remain strong as Canadian producers are benefiting from favorable oil pricing due to a weaker Canadian dollar exchange rate and improving heavy oil differentials. Precision's Super Single rigs are well suited for long-term conventional heavy oil development in the oil sands and Clearwater formation. We expect our Super Single pad-capable rigs to remain fully utilized throughout the year, supporting higher day rates.”

Precision on the Clearwater

Oil – Precision CEO sees WCS less WTI differentials narrowing to high single digits C\$

On Tuesday, Precision held its Q4 call and CEO Neveu reminded of the upcoming win for Cdn oil producers with the start-up of the 590,000 b/d Trans Mountain TMX expansion – WCS less WTI differentials should narrow. Neveu expects differentials to narrow high single-digit discounts, which is well below what we have traditionally referred to as a range of US\$15 to \$20. We tweeted [\[LINK\]](#) “Big 2024 upside is coming soon to Cdn #Oil. Precision CEO: discount for WCS ranged in C\$25-C\$40 below WTI range, and Trans Mountain TMX startup means “WCS discounts are expected to moderate to high single-digit discounts” #OOTT.” On the call, Neveu said “Now, for most of the last decade, the Canadian market has been constrained by hydrocarbon takeaway bottlenecks and constraints. As a result, the discount for Western Canada select oil has ranged in the CAD25 to CAD40 below WTI range. While the Alberta natural gas commodity price Nisku has been a function of highly cyclic seasonal weather patterns and regional market energy needs also limited by bottlenecks and

TMX should narrow WCS less WTI differentials

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takeaway capacity. Now, I think most of us know that later this year, two major transmission projects, the Trans Mountain oil pipe and the coastal gaslink natural gas pipe, will begin full operation and serve to fully alleviate the Canadian constraints. WCS discounts are expected to moderate to high single-digit discounts and LNG Canada exposes Canadian natural gas to the global LNG market.”

Big oil see TMX should lead to narrowing WCS less WTI differentials

We haven't seen many in industry give an actual number for where they see WCS less WTI differentials. But all the industry is expecting a narrowing of WCS less WTI differentials with the start-up of the 590,000 b/d TMX. Here is what we wrote in last week's (Feb 4, 2023) Energy Tidbits memo on Imperial Oil's view. *“Imperial Oil held its Q4 call on Friday and we then tweeted [LINK](#) “Imperial Oil CEO on Trans Mountain 590,000 b/d TMX expansion. re TMX 01/29 delay news, “still very optimistic that system will start up in the 2nd quarter” Also reminds TMX start up should lead to a narrowing of WCS less WTI differentials. #OOTT.” (i) IMO CEO is optimistic that TMX can still startup in Q2. In the Q&A, IMO CEO Brad Corson replied “We are quite excited about the startup of TMX, which we view as imminent and targeting sometime in the second quarter. Of course, there was recent news, the beginning of this week, about some delays, but we're still very optimistic that system will start up in the second quarter.” (ii) CEO Corson also reminded of the industry-wide benefit from TMX startup – it should lead to a narrowing of the WCS less WTI differential. In the Q&A, Corson replied “But more importantly is the broader impact the startup of TMX will have on the industry, providing significantly additional capacity for egress out of the basin. And that will have, we believe, as I commented, we believe that will result in a tightening of the WCS differential and will place higher value on WCS crudes, which of course, we're a major. You know, the biggest benefit for us is not the individual barrels we ship, but our view of the impact it will have on our crude value.”*

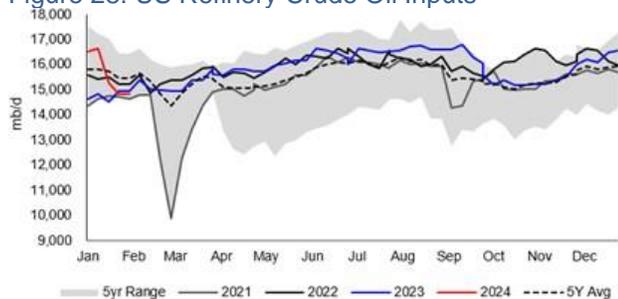
Oil: Refinery Inputs down -0.008 mmb/d WoW to 14.840 mmb/d

There will always be other items, but one item that should be seen refinery inputs down more this week will be the shut down of 435,000 /d Whiting (Indiana) refinery that takes Cdn crude. It went down on Feb 1 so didn't really impact the refinery input data for the week ended Feb 2. The EIA reports on crude oil inputs into refineries for the week ended February 2, which reflects the refineries that went offline two weeks ago due to the cold weather and power supply outages. It reminds that there are always unplanned issues that impact crude oil inputs into refineries, but refineries around the world follow seasonal patterns for their maintenance. US refineries have been in their normal seasonal winter ramp up until recently where storms and maintenance took capacity offline. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended February 2 [LINK](#). The EIA reported crude inputs to refineries were down -0.008 mmb/d this week to 14.840 mmb/d and are down -0.570 mmb/d YoY. Refinery utilization was down -50 bps WoW to 82.4%, which is -550 bps YoY.

**Refinery inputs
-0.008 mmb/d WoW**

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Figure 28: US Refinery Crude Oil Inputs



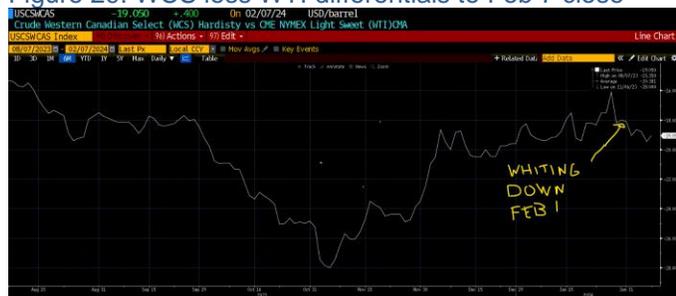
Source: EIA, SAF

Oil: bp 435,000 b/d Whiting refinery down impacts Cdn crude differentials

Earlier in the memo, we noted that the bp Whiting refinery going down is likely the reason for US gasoline prices up this week. On Wednesday night, we tweeted [\[LINK\]](#) “WCS less WTI diffs widened ~\$1 since bp Whiting 435,000 b/d refinery went down on Feb 1. Whiting takes Cdn crude via Enbridge. @Reuters reporting Whiting to be shut for up to 3 weeks. #OOTT. [\[LINK\]](#).” Out tweet included the Reuters report “BP Whiting, Indiana refinery to be shut up to three weeks – Sources. BP Plc plans to keep the 435,000 barrel-per-day (bpd) Whiting, Indiana refinery shut for up to three weeks for inspections of units and piping following a Feb. 1 plant-wide power outage, said people familiar with operations on Wednesday. The inspections could be completed in as short a time as two weeks, the sources said.” The Whiting runs almost all on Cdn crude oil from the Enbridge main line so it being down impacts Cdn oil differentials.

bp Whiting refinery

Figure 29: WCS less WTI differentials to Feb 7 close



Source: Bloomberg

Oil: US net oil imports +1.600 mmb/d WoW as oil imports up +1.302 mmb/d WoW

The EIA reported US “NET” imports were up +1.600 mmb/d to 3.311 mmb/d for the February 2 week. US imports were up +1.600 mmb/d to 3.311 mmb/d against exports which were -0.298 mmb/d WoW to 3.596 mmb/d. (j) 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.

US net oil imports

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Rather we need to make sure we go to the monthly data for oil imports. ii) The WoW increase in US imports was driven mostly by “Top 10”. Top 10 was up +0.519 mmb/d. Some items to note on the country data: (i) Canada was down -0.034 mmb/d to 3.539 mmb/d. (ii) Saudi Arabia was up +0.203 mmb/d to 0.353 mmb/d. (iii) Mexico was up +0.234 mmb/d to 0.661 mmb/d. (iv) Colombia was up +0.336 mmb/d to 0.415 mmb/d. (v) Iraq was down -0.205 mmb/d to 0.000 mmb/d. (vi) Ecuador was down -0.031 mmb/d to 0.072 mmb/d. (vii) Nigeria was down -0.109 mmb/d to 0.081 mmb/d.

Figure 30: US Weekly Preliminary Imports by Major Country

(Thousands b/d)	Nov 9/23	Nov 10/23	Nov 17/23	Nov 24/23	Dec 1/23	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	WoW
Canada	3,673	3,635	3,846	3,243	3,972	3,572	3,666	3,426	3,796	3,557	4,186	3,270	3,573	3,539	-34
Saudi Arabia	192	242	224	141	400	316	406	75	139	474	413	81	150	353	203
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	465	366	971	571	676	633	851	380	952	522	756	356	427	661	234
Colombia	364	316	217	143	299	214	215	157	129	220	212	72	79	415	336
Iraq	187	283	36	178	166	85	22	380	239	192	64	206	205	0	-205
Ecuador	61	36	126	112	252	233	49	142	83	30	150	3	103	72	-31
Nigeria	39	70	79	174	226	111	162	80	95	165	147	199	190	81	-109
Brazil	234	135	257	148	274	255	197	236	305	249	264	266	213	338	125
Libya	0	86	86	0	87	87	86	0	171	0	7	37	0	0	0
Top 10	5,415	5,369	5,842	4,710	6,542	5,506	5,674	4,880	5,909	5,409	6,201	4,490	4,940	5,459	519
Others	979	1,034	867	1,123	966	1,011	1,076	1,396	968	832	1,219	1,090	865	1,448	783
Total US	6,394	6,373	6,529	5,833	7,508	6,517	6,750	6,276	6,895	6,241	7,420	5,580	5,605	6,907	1,302

Source: EIA, SAF

Oil: Will 2024 election year stop Biden from stopping sanctions relief on Venezuela oil

The US elections are now eight months away and there is no question the politicians are working with that front and center in their decisions and actions. It’s why we still wonder if Biden can risk any negative impact on gasoline prices by enforcing oil sanctions on Iran and Russia and stopping sanctions relief on Venezuela oil. Gasoline prices are something that Biden can influence by allowing as much oil on the market as possible. Recall what he did in the run up to the 2022 mid-terms in implementing the sale of oil from the SPR. Biden may very well pull back on the sanctions relief on oil from Venezuela. But there is no question gasoline prices will be top of mind for him this summer. Later in the memo, we highlight BofA Institute head, Liz Everett Krisberg’s insights into why Americans say inflation is more of an issue in 2024 than in 2023 despite inflation coming down. Our Thursday tweet [\[LINK\]](#) started off “Election yr. Biden doesn’t want pump price jump so hard to enforce #Oil sanctions on Iran, RUS or resume on VEN.” She highlighted that the things top of mind for Americans are restaurant/bar, groceries and gasoline prices. And the one Biden can most influence is gasoline prices.

US sanctions on Venezuela oil

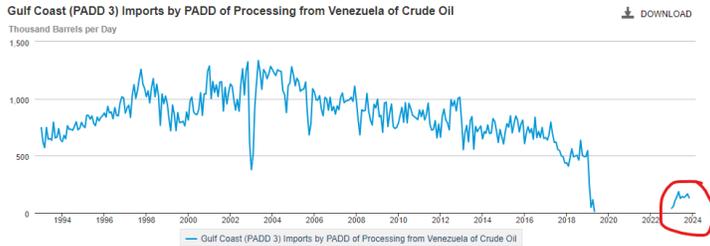
Bad timing for US Gulf Coast refineries if US pulls Venezuela oil licenses

Here is what we wrote in last week’s (Feb 4, 2024) Energy Tidbits memo. “Yesterday, we tweeted [\[LINK\]](#) “Bad timing for Gulf Coast refineries if Biden reimposes VEN sanctions . @EIAgov PADD 3 #Oil imports. ~150 kbd from VEN. some % of ~450 kbd imports from CAN at risk w/ Trans Mountain 590,000 b/d TMX startup. some % of ~600 kbd imports from MEX at risk / ~340 kbd Olmeca refinery ramp up. #OOTT.” We think Biden will do all he can to not reimpose sanctions on Venezuela oil. Surely the Biden Administration knows what is happening with TMX and Pemex’s Olmeca new refinery. And the last thing Biden wants is negative impact on gasoline or fuel oil, especially this summer, with the election now only nine months away. Our tweet reminded that the start up of Trans Mountain’s 590,000 TMX expansion will reduce Cdn medium oil to the Gulf Coast, and the startup of the new 340,000 b/d Olmeca refinery will reduce Mexico oil exports and that should include to the US. Gulf Coast

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PADD 3 currently imports ~150,000 b/d from Venezuela, ~450,000 b/d from Canada, and ~600,000 b/d from Mexico. So the timing of losing ~150,000 b/d of Venezuela oil into the Gulf Coast would be bad timing given TMX and Olmeca. Our tweet included the below EIA graphs for Gulf Coast oil imports from Venezuela, Canada and Mexico.”

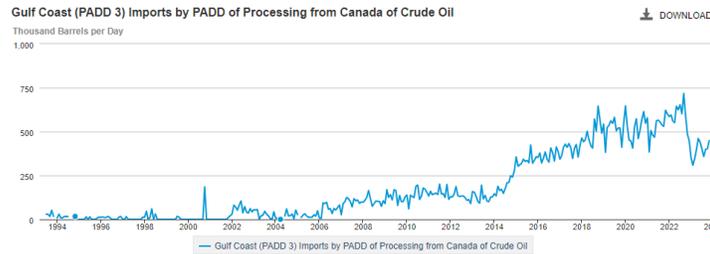
Figure 31: Gulf Coast PADD 3 crude oil imports from Venezuela



eia Data source: U.S. Energy Information Administration

Source: EIA

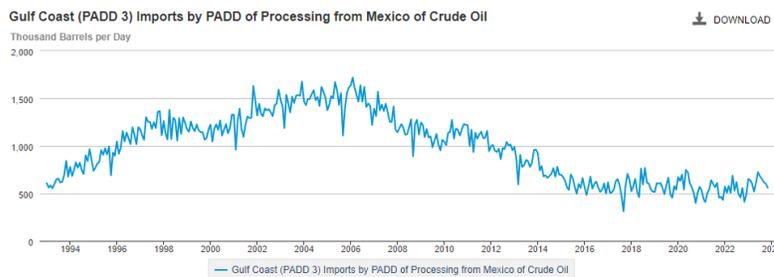
Figure 32: Gulf Coast PADD 3 crude oil imports from Canada



eia Data source: U.S. Energy Information Administration

Source: EIA

Figure 33: Gulf Coast PADD 3 crude oil imports from Mexico



eia Data source: U.S. Energy Information Administration

Source: EIA

Oil: Colombia oil production still below pre-Covid, December was 0.787 mmb/d

It’s hard to see how Colombia oil production ever sustainably rallies anywhere back to 1 mmb/d or even 900,000 b/d given Colombia’s goal to reduce oil and natural gas. Despite

Colombia oil production up in December

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stronger oil prices post Covid, Colombia oil production has been stuck below 800,000 b/d. The National Hydrocarbons Agency (ANH) reported [LINK](#) December's oil production was up +0.5% MoM to 0.783 mmb/d. This puts December's production up +0.3% YoY vs 0.784 mmb/d in December 2022, so essentially flat. December's data brings the average FY2023 production to 0.777 mmb/d, up +3.06% YoY from 2022's 0.754 mmb/d, but production remains -12.3% below pre-Covid levels of 0.886 mmb/d in 2019.

Figure 34: Colombia Oil Production

mmb/d	2016	2017	2018	2019	2020	2021	21/20	2022	22/21	2023	23/22
Jan	0.986	0.860	0.860	0.899	0.884	0.745	-15.7%	0.740	-0.7%	0.774	4.6%
Feb	0.955	0.864	0.823	0.893	0.878	0.746	-15.1%	0.740	-0.8%	0.759	2.6%
Mar	0.917	0.804	0.856	0.885	0.857	0.745	-13.0%	0.751	0.8%	0.771	2.6%
Apr	0.915	0.857	0.866	0.891	0.796	0.745	-6.4%	0.751	0.8%	0.782	4.1%
May	0.904	0.851	0.866	0.895	0.732	0.703	-3.9%	0.746	6.1%	0.774	3.8%
June	0.888	0.857	0.864	0.892	0.730	0.694	-4.9%	0.752	8.4%	0.778	3.4%
July	0.843	0.856	0.860	0.869	0.735	0.731	-0.5%	0.748	2.3%	0.782	4.5%
Aug	0.827	0.858	0.866	0.883	0.742	0.748	0.8%	0.749	0.1%	0.782	4.4%
Sept	0.859	0.851	0.869	0.879	0.749	0.744	-0.7%	0.754	1.3%	0.771	2.3%
Oct	0.846	0.864	0.879	0.883	0.751	0.740	-1.5%	0.757	2.3%	0.778	2.8%
Nov	0.855	0.851	0.883	0.880	0.761	0.747	-1.9%	0.771	3.2%	0.783	1.6%
Dec	0.837	0.870	0.889	0.882	0.759	0.745	-1.8%	0.784	5.2%	0.787	0.3%

Source: ANH, SAF, Bloomberg

Oil: Petrobras forecasts flat Brazil oil production in 2024 and 2025

On Tuesday morning, we tweeted [LINK](#) "One for the Oil bulls. Petrobras reminds its 11/23/23 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.

Flat YoY Brazil oil production

Figure 35: Petrobras oil forecast from Nov 23, 2023 2024-2028 Plan



Source: Petrobras

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

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.

Petrobras 10% annual decline**Oil: Has Norway oil production peaked w/ Johan Sverdrup field moving to decline?**

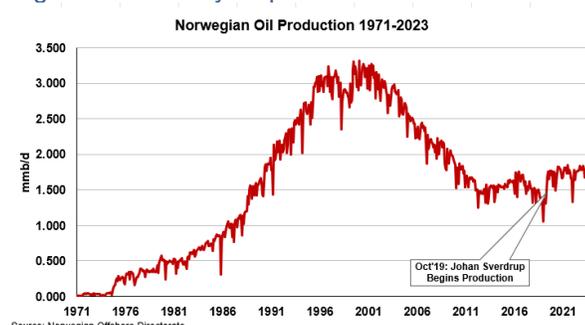
We have to believe Norway will be in a "show me" phase over the next 12 months. There was big news on Thursday, when Aker BP said Norway's biggest oil field, the 755,000 b/d Johan Sverdrup, is moving from plateau to decline in late 2024 or early 2025. There was no disclosure of how much it will decline 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 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

Johan Sverdrup moving to decline

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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 36: Norway oil production



Source: Norwegian Offshore Directorate

Figure 37: 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

Oil: Russian refineries processing oil down -135,000 b/d against Dec average

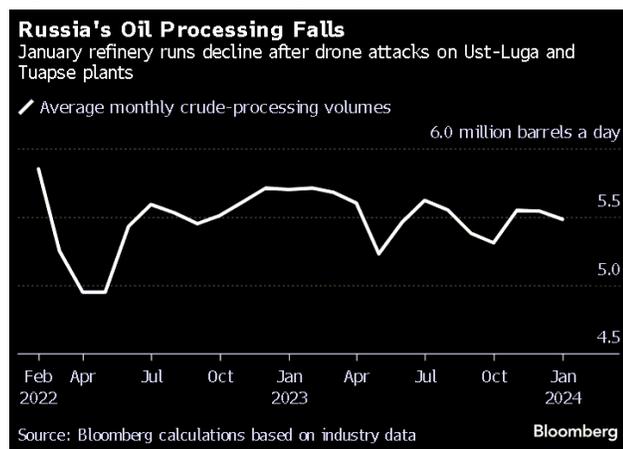
Ukraine drone attacks are the key reason why Russian refinery runs are down when normally they would be increasing crude run in the peak winter refining runs period. On Monday, Bloomberg reported that Russian refiners processed 5.410 mmb/d between Jan 24 and Jan 31. This is ~-135,000 b/d lower than the December average. This is uncharacteristic of Russian refinery seasonal fluctuations which typically see strong throughput in the winter as a lot of people use fuel oil and diesel for energy and heat, but last week there were total processing halts caused by drone strikes on two Novatek and Rosneft refineries, which account for a combined 5% of total Russian output. Their processing volume was 163,000 b/d in the Jan 24 week. While the Lukoil Norski refinery that reduced processing volumes due to unscheduled maintenance came back up last week, there was a fire caused by another

Russia oil refinery runs

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drone strike at the Volgograd plant on February 3, which will probably show up in next week's data. Our Supplemental documents package includes the Bloomberg report.

Figure 38: Russia refinery runs thru Jan 31 week



Source: Bloomberg

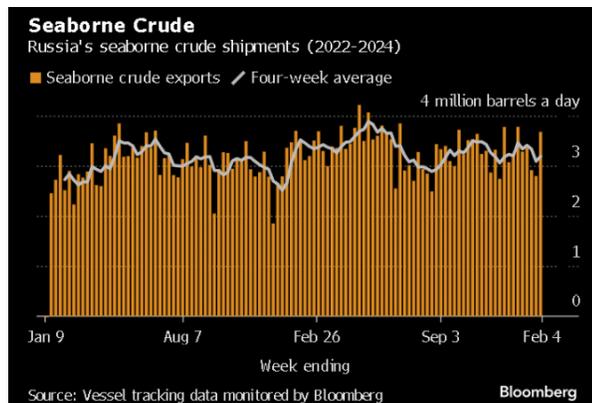
Oil: Russia's crude oil shipments for Feb 4 week are over pledged target

After some storms subsided in the Pacific, and with the completion of maintenance at Baltic terminals, Russia is again exceeding its pledged crude shipment cuts (on a seven-day basis). Bloomberg had reported *"Russia's seaborne crude shipments rebounded strongly from two weeks of disruptions, with record-equaling flows from the country's main export terminals. Eleven tankers completed loading of the country's ESPO crude at the Pacific port of Kozmino, recovering after a storm halved exports the week before and matching previous highs. Volumes from the Baltic port of Ust-Luga also gained in the week to Feb. 4, after maintenance work cut flows late last month, while shipments from Primorsk equaled the previous week's record. The bounce back saw weekly average shipments surge by about 880,000 barrels a day to the highest this year. That put flows 400,000 barrels a day above the level Moscow has pledged to its OPEC+ partners for the first quarter on a weekly basis, though 100,000 barrels a day below that target on a four-week measure, which helps to smooth out short-term factors."* Our Supplemental Documents package includes the Bloomberg report.

Russia oil shipments exceed commitment

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Figure 39: Russia's seaborne crude shipments thru Feb 4 week



Source: Bloomberg

Figure 40: Tankers loading crude at Russia Terminals for Feb 4 week

Week ending	Feb. 4	Jan. 28	Jan. 21
Primorsk (Baltic)	11	11	7
Ust-Luga (Baltic)	5	3	6
Novorossiysk (Black Sea)	2	3	2
Murmansk (Arctic)	3	1	2
Kozmino (Pacific)	11	4	8
De Kastri (Pacific)	1	3	2
Prigorodnoye (Pacific)	1	1	0
Total	34	26	27

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

Source: Bloomberg

Oil: Platts sees OPEC+ Jan supply -340,000 b/d MoM but short of pledges

OPEC posts its Monthly Oil Market Report on Tuesday and IEA posts its Oil Market Report on Thursday and we will see their estimates of OPEC+ production for January. On Friday, Platts posted its survey of OPEC+ production for Jan. Platts wrote "OPEC+ crude output fell 340,000 b/d in January, the steepest drop in six months, as some members implemented voluntary cuts and protesters shut down Libya's largest field for more than two weeks, the latest Platts survey from S&P Global Commodity Insights found. The production decline, however, was far less than the approximately 700,000 b/d in cuts pledged by the group for the first quarter of 2024, with Iraq well above its quota, while Kazakhstan, the UAE and Kuwait also missed their new targets, according to the survey. OPEC's 12 countries contributed the lion's share of the month-on-month production decline, with core group output

OPEC+ Jan production

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slipping 310,000 b/d. OPEC members pumped 26.49 million b/d of crude collectively, down from 26.80 million b/d in December, when Angolan production is removed. The West African country quit the group in January following a row over quota cuts. Meanwhile 10 Russia-led allies, who began coordinating with the producing group in 2016 to create OPEC+, saw their oil output fall 30,000 b/d month-on-month to 14.72 million b/d, driven by slight declines in Omani and Russian production, the survey found.. Our Supplemental Documents package includes the Platts report.

Figure 41: Platts Survey of OPEC+ January production

OPEC+ crude production (million b/d)					
	Jan-24	Change	Dec-23	Quota	Over/under
OPEC-10					
Algeria	0.91	-0.04	0.950	0.910	0.000
Congo-Brazzaville	0.26	0.00	0.260	0.280	-0.020
Equatorial Guinea	0.05	0.00	0.050	0.070	-0.020
Gabon	0.23	0.00	0.230	0.170	0.060
Iraq	4.27	-0.08	4.350	4.000	0.270
Kuwait	2.45	-0.10	2.550	2.410	0.040
Nigeria	1.48	-0.05	1.530	1.500	-0.020
Saudi Arabia	8.97	0.02	8.9500	8.980	-0.010
UAE	2.95	0.05	2.900	2.910	0.040
Total OPEC-10	21.57	-0.20	21.770	21.230	0.340
OPEC exempt					
Iran	3.11	0.01	3.10	—	—
Libya	1.02	-0.12	1.14	—	—
Venezuela	0.79	0.00	0.79	—	—
Total OPEC-13	26.49	-0.31	26.8	—	—
Non-OPEC with quotas					
Azerbaijan	0.48	0.00	0.48	0.551	-0.071
Bahrain	0.17	0.00	0.17	0.196	-0.026
Brunei	0.08	0.01	0.07	0.083	-0.003
Kazakhstan	1.56	0.00	1.56	1.468	0.092
Malaysia	0.37	0.00	0.37	0.401	-0.031
Oman	0.77	-0.03	0.80	0.759	0.011
Russia	9.42	-0.01	9.43	9.449	-0.029
Sudan	0.03	0.00	0.03	0.064	-0.034
South Sudan	0.15	0.00	0.15	0.124	0.026
Total Non-OPEC with quotas	13.03	-0.03	13.06	13.095	-0.065
Non-OPEC exempt					
Mexico	1.69	0.00	1.69	—	—
Total Non-OPEC	14.72	-0.03	14.75	—	—
OPEC+ members with quotas					
Total	34.60	-0.23	34.83	34.325	0.275
OPEC+					
Total	41.21	-0.34	41.55	—	—

Note: Quotas include voluntary extra cuts implemented by Saudi Arabia, Russia, Iraq, UAE, Kuwait, Kazakhstan, Algeria, Oman and Gabon

Source: Platts OPEC+ survey by S&P Global Commodity Insights

Source: Platts

Oil: US & Houthis continue back and forth attacks

It was another week of back and forth attacks by the US and the Houthis. The Houthis continue with missile and drone attacks on ships in the Red Sea/Bab el Mandeb. And the US continue to hit back hard. There was no sign of slow down by the Houthis despite the US having hit the Houthis hard. CENTCOM reported Houthi missile/drone attacks on Feb 5, 6, 7, 8 and 9. And CENTCOM noted the Feb 8 and 9 missile/drone attacks also included unmanned surface vessels. The US has been hitting the Houthis to try to discourage their fight and destroy their military capability. It's another week and, at least so far, the Houthis aren't giving up as long as Israel's war on Hamas is continuing.

Is US having any impact on Houthis?

Oil: Why US had to do more than just defend against Houthis attacks

We have to believe the military was frustrated when the Biden administration was only allowing it to defend against Houthi missiles and drones. But we were reminded this week of why just playing defense doesn't work. On Monday, we tweeted [\[LINK\]](#) "Houthis may not

Defense isn't deterrence.

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stop but big US bombing has to be hurting their attack capacity. Playing defense didn't work. "The problem is defense is not deterrence. It just tells your adversaries to keep trying until he gets one thru" @Norman_Roule to @FerroTV @lisaabramowicz1 @annmarie. #OOTT." Our tweet included the transcript we made from comments by Norman Roule (Senior Advisor, Transnational Threats Project for CSIS Center for Strategic & International Studies on Bloomberg Surveillance on Feb 5, 2024. Items in *"italics"* are SAF Group created transcript. At 4:21am MT, Roule *"The US has extraordinarily sophisticated capacity to defend its personnel from missile, drone and rocket attacks. We're seeing that from Yemen to Iraq but mistakes happen. A missile will get thru. This is a very high threat environment; we shouldn't downplay that. But we have considerable defensive capacity. And again, we have seen this displayed over and over again as we have put off these attacks. The problem is defense is not deterrence. It just tells your adversaries to keep trying until he gets one thru"*.

Oil: Houthis leader Yemeni are "natural fighters ...are morally & psychologically ready"

On Thursday, the Houthis leader made another speech to the people. Saba (Yemen news) reported [\[LINK\]](#) on his speech. The leader reinforced their naval operations continued this week and the movement of ships to Israel is almost non-existent. He also mocked the US and UK in the Red Sea saying *"The American and the British were both involved in the aggression against our country in their efforts to protect Israeli ships and the continued flow of goods to the enemy. They also do nothing for other countries and what they say about protecting international navigation is a lie, the real victim primarily from the operations in the Red Sea is the Israelis, along with the Americans and the British."* And they will continue their naval operations and the solution is still for Israel to stop the siege on Gaza and allow food and medicine in. He also reinforce the theme from his speech last week on the Yemeni people resilience. He said *"The Americans see a people who are natural fighters, armed, possess millions of weapons, and are morally and psychologically ready. They take into consideration the will of our people, their stance, their military preparedness, and their serious approach, the launch of a ballistic or winged missile is seen as an expression of an entire people, and if the situation of our people were different than it is today, the American response would be different from what is happening."* The leader also noted their military capabilities are developing at a rapid pace and there is progress in manufacturing. Bottom line is that there is no sign of the Houthis giving up. One of our concerns for the west has been the assumption that faced with and then experiencing the impact of the #1 missile attack force in the world, the Houthis would quickly give up. No question the US and UK can bomb the Houthis more effectively than the Saudis. But our reminder has been that the Saudis weren't able to convince the Houthis to give in despite several years of bombing. The people in Yemen have lived with a state of war or fighting for five decades. And the Houthis know that, like the Saudis, the US aren't going to send their troops on the ground to fight in Yemen. The leader reinforced that in his speech saying *"The American is arrogant. He is not accustomed to having his ships and battleships hit with missiles, then he responds with simple raids that have no effect. He did not dare, while targeting his ships and battleships, to invade Yemen. Rather, he is looking for someone to fight on his behalf on the ground."* Our Supplemental Documents package includes the Saba report.

Houthis leader speech

Oil: Added oil tanker days from avoiding Suez Canal and Panama Canal

Later in the memo, we note Maersk comments that they have no idea how long the Red Sea disruptions will last but they noted that *"the Red Sea disruption from a shipping perspective is*

Added oil tanker times

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a rerouting of cargo along a longer route. We see no sign of congestions or bottlenecks or shifts in demand.” Here is what we wrote in last week’s (Feb 4, 2024) Energy Tidbits memo. “We always love a good map. On Friday, we tweeted [\[LINK\]](#) “Great map courtesy of @EIAgov Josh Eiermann. Shows relative tanker travel times from US Gulf Coast to China. Via Panama Canal (27 days) Suez Canal (44 days) Cape of Good Hope (48 days) #OOTT.” We included the below EIA map, which shows a lot more than just tanker times from US Gulf Coast to China. It also shows the comparative times Rotterdam, Gulf Coast, Arabian Sea and China. For example, it notes the time from the Arabian Sea to Rotterdam is 19 days via the Suez Canal but 34 days via the Cape of Good Hope. On Wednesday, the EIA posted its blog “Red Sea attacks increase shipping times and freight rates” [\[LINK\]](#). Our tweet included the below EIA map. Note the EIA “voyage time is calculated for laden Suezmax tankers traveling at 14 knots without extended chokepoint delays”. Our Supplemental Documents package includes the EIA blog.”

Figure 42: Selected commercial shipping routes, as of January 2024



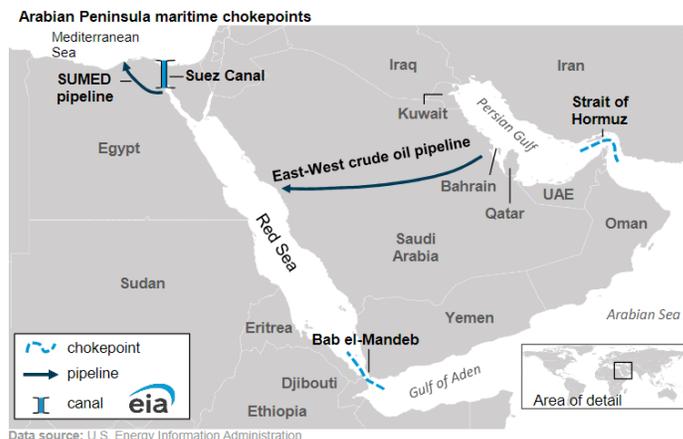
Source: EIA

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 43: Bab el-Mandeb Strait, a world oil chokepoint



Data source: U.S. Energy Information Administration

Source: EIA

Figure 44: 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 H23=first half of 2023

Source: EIA

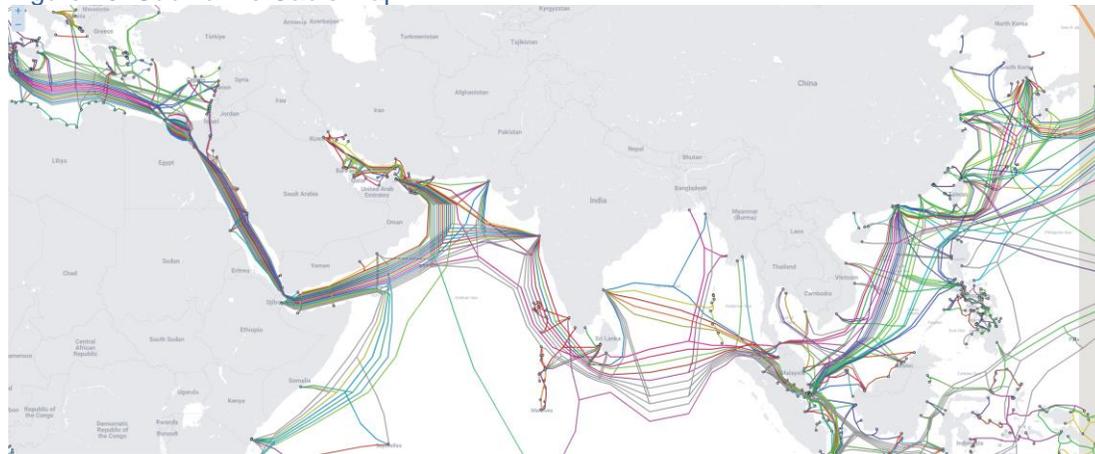
Oil: EU to Asia underwater communications cables run thru Houthis Bab el Mandeb

There was a good reminder that the Bab el Mandeb is more than a critical shipping chokepoint, it is also a critical choke point for global communications. On Monday, we tweeted [LINK](#) "Overlooked Houthis global risk. "we also have to make sure they never build the capacity to touch the underground sea cables that handle most of the internet traffic between EU and Asia that go thru the Bab el Mandeb" warns @Norman_Roule to @FerroTV @lisaabramowicz1 @annmarie See 📍 @TeleGeography map. #OOTT." This was a reminder from Norman Roule (Senior Advisor, Transnational Threats Project for CSIS Center for Strategic & International Studies on Bloomberg Surveillance). HE reminded that all of the major underwater cables for communications from Europe to Asia went thru the Bab el Mandeb. And that the Houthis could cause a major global economic hit if they damaged these underwater cables. Our prior writings on these underwater cables were on the risk in the South China Sea and not the Bab el Mandeb but the concept is the same. These underwater communications cables are at risk. Our tweet included the Submarine Cable Maps from TeleGeography that shows the major global underwater communications cables. Our Supplemental Documents package includes the Submarine Cable Maps.

Bab el Mandeb

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Figure 45: Submarine Cable Map



Source: GeoTrelegraphy

Oil: China appoints “Broker Butcher” as new head of China securities commission

On Tuesday morning, we tweeted [LINK](#) “China wants investors to know they are serious to “crack down on illicit conduct” in securities market. Censor didn’t bleep out @onlyyoontv to @FrankCNBC calling Wu Qing as the “Broker Butcher”, new securities commission head. He has reputation for harsh crack down on illegal securities operations. #OOTT.” CNBC’s Eunice Yoon was reporting live from Beijing on the Chinese state media report that “the Communist Party of China (CPC) Central Committee has made a decision to appoint Wu Qing as secretary of the Party committee of the China Securities Regulatory Commission (CSRC), replacing Yi Huiman. Meanwhile, the State Council made a decision to appoint Wu as chairman of the CSRC, replacing Yi.” When Yoon was live on CNBC Worldwide Exchange, there were no censor bleeps in her comments on Yi so it looks like China wanted the business world to know that Yi is a no nonsense person. If not they would have bleeped out Yoon calling him the Broker Butcher for being tough on securities violations. Our Supplemental Documents package includes the Global Times report on Yi’s appointment. [LINK](#)

New head
China
securities
commission

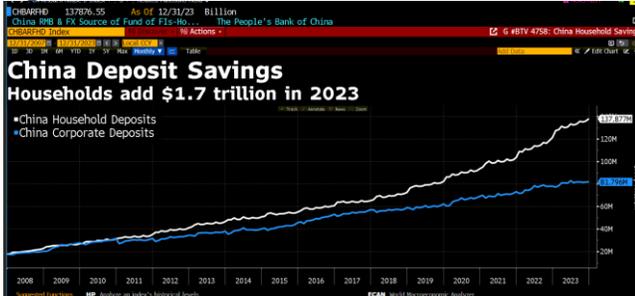
Oil: China declared 2024 as “the year of promoting consumption”

The Chinese consumer continues to sit on the sidelines. This is the lunar “Year of the Dragon” but, two weeks ago, China’s commerce ministry tried to rally Chinese to spend more in 2024. Our Energy Tidbits memos regularly highlight how Chinese households continue to increase savings as opposed to starting to accelerate spending. On Monday, we tweeted [LINK](#) “Will Chinese get back to spending instead of just saving? 01/26/24, China commerce ministry “declared 2024 the “year of promoting consumption” as it stressed the need to revitalize demand .. report @JDMayger @yujingliu_ @EngleTV. If so, should add support to #Oil in 2024. #OOTT.” Bloomberg wrote “China’s Ministry of Commerce declared 2024 the “year of promoting consumption” as it stressed the need to revitalize demand and attract more investment in the world’s second-largest economy.’ Our tweet included the below Bloomberg chart from Jan 29 night on China increasing household savings.

“Year of
promoting
consumption”
in China

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Figure 46: China Households add \$1.7 trillion 2023



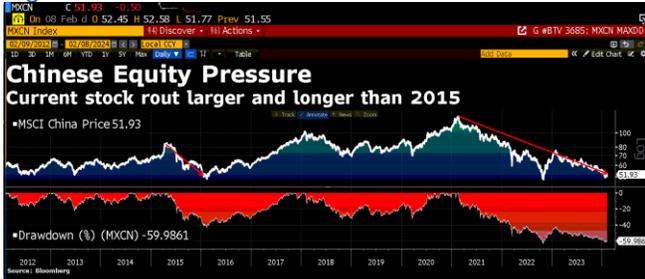
Source: Bloomberg

Oil: Chinese stock markets have been creamed in last three years

The challenge for China to make 2024 the “year of promoting consumption” a success has to depend upon the two biggest wealth factors for citizens – real estate and stock markets. It’s has to be hard for citizens to go into a saving wind-down mode if they are still worried about losing more wealth in their homes and stocks. On Friday, we tweeted [\[LINK\]](#) “No wonder Chinese have been saving, at least as opposed to investing in stock markets. China MSCI: -60% vs 2/17/21 peak, -31% vs recent 1/27/23 peak. For same periods, Hang Seng -49% vs 2/17/21, -31% vs 1/27/23. Thx @business. #OOTT.” Our tweet included the below Bloomberg TV chart on the MSCI being creamed and we added the Hang Seng graph.

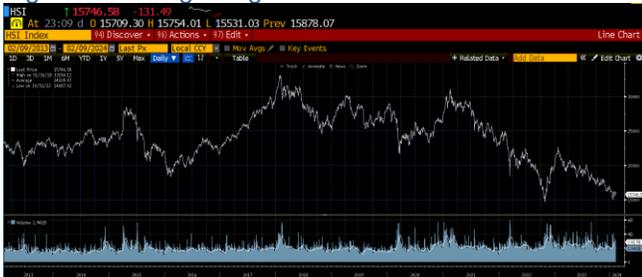
Big China stock market losses

Figure 47: China MSCI Index losses



Source: Bloomberg

Figure 48: Hang Seng Index



Source: Bloomberg

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Chinese new and resales home prices keep going down

We probably won't see updated monthly China new home prices data this week with Lunar New Year holidays. But here is what we wrote on the last monthly data in or Jan 21, 2024 Energy Tidbits memo. "One of the big negatives for Chinese households is that new and resale home prices keep going down. On Tuesday night, we tweeted [\[LINK\]](#) "China economy negative. New-home prices in 70 cities in Dec down 0.45% MoM, Nov was down 0.37% MoM. steepest drop since Feb 2015. 2nd hand market also weak, sliding 0.79% in Dec, same pace as Nov. Thx @business C. Zhu, E. Dong, @YvonneManTV @DavidInglesTV. #OOTT". Our tweet included the below Bloomberg TV graphs. Bloomberg also wrote "New-home prices in 70 cities, excluding state-subsidized housing, dropped 0.45% last month from November, when they declined 0.37%, National Bureau of Statistics figures showed Wednesday. The decrease was the steepest since February 2015. The second-hand market didn't fare any better, with prices sliding 0.79%, the same pace as the previous month. China's extended property downturn has been a major headwind for the economy."

Figure 49: China New Home Prices Fell for 7 straight months



Source: Bloomberg

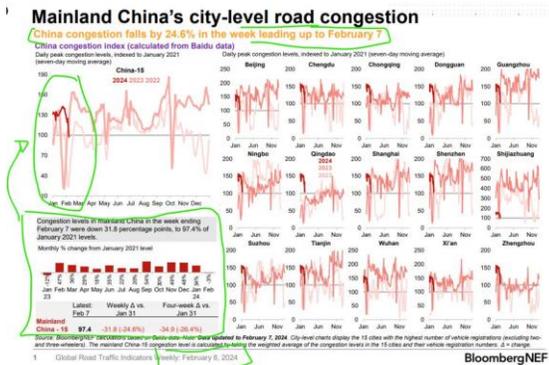
Oil: Baidu China city-level road congestion should plunge this week

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly Feb 8 report, which includes the Baidu city-level road congestion for the week ended Feb 7. (i) On Thursday, we tweeted [\[LINK\]](#) "World's largest annual human migration is on! China Baidu city-level road congestion -24.6% WoW for Feb 7 week. Lunar New Year is Feb 10 so rush to leave cities is still going higher. Thx @BloombergNEF. #OOTT." (ii) The BloombergNEF report was titled "China's congestion drops again ahead of Lunar New Year holiday" and its China slide was titled "China congestion falls by 24.6% in the week leading up to February 7". (iii) The city-level road congestion was -24.6% WoW to 97.4 of Jan 2021 levels. The WoW decline was the second week of the start of the 40-day Spring Festival travel rush. (iv) We should see another drop in city-level road congestion with Lunar New Year on Feb 10. Note the below graph shows steeper and earlier drops in city-level road congestion, which is due to the early Lunar New Year On Jan 22, 2023 and Feb 1, 2022.

China city-level
traffic congestion

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Figure 50: China city-level road congestion for the week ended Feb 7



Source: BloombergNEF

Spring Festival is “world’s largest annual human migration”

Here is what we wrote in our Jan 28, 2024 Energy Tidbits memo. “On Thursday, we tweeted [\[LINK\]](#) “Will we see more signs Chinese consumer is back to spending? “Spring Festival travel rush for 2024 - the world's largest annual human migration - officially starts on Friday, and is expected to set a new record of 9 billion passenger trips during the 40-day travel peak” #OOTT.” Our tweet included the Global Times (state media) report “China braces for Spring Festival travel rush with record 9 billion passenger trips expected.” “The chunyun or Spring Festival travel rush for 2024 - the world's largest annual human migration - officially starts on Friday, and is expected to set a new record of 9 billion passenger trips during the 40-day travel peak. From jam-packed transportation hubs to the hustle and bustle seen in markets nationwide, the anticipated booming Chinese New Year holidays are poised to continue the country's steady recovery while ushering in a lively 2024. The airport will see 7.2 million passenger trips during chunyun, a growth of more than 60 percent from the same period of 2023, the airport said on Thursday, adding that overseas passenger flow will reach 1.41 million passenger trips following the implementation of visa reciprocity policies between China and many countries.” Our Supplemental Documents package includes the Global Times report.

Oil: bp CEO says its based decline rate is 3% to 5%

We have always highlighted base decline rate of the existing production base as we believe it is an overlooked fundamental for oil growth. Bp held its Q4 call on Tuesday. We tweeted [\[LINK\]](#) “1st challenge to meet increasing #Oil demand, even IEA fcasts increase, is that existing production is always declining. most use ~5% base decline or 5 mmb/d for world to replace to stay flat. bp CEO says its base decline rate is 3% to 5% #OOTT.” On the Q4 call, new bp CEO Auchincloss said “We managed base decline between 3% to 5%, supported by high return investments and new well delivery and well work.” That is a significantly lower decline rate than the 10% noted earlier in the memo by Petrobras. As a results, bp only needs to add between 43,000 to 71,000 boe/d to keep its hydrocarbons production flat.

Bp CEO says its decline is 3-5%

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Aramco CEO global conventional + unconventional oil decline rate is 7%

The bp 3-5% base decline rate is low relative to an overall global decline rate. Here is what we wrote in our Dec 10, 2023 Energy Tidbits memo. *"We recognize that no one is really thinking about mid-term oil outlook given the oil price weakness now going into Q1/24. For months, we have been warning that the key factor driving why Saud would continue its voluntary 1 mmb/d cuts thru Q1/24 was that global oil demand is always seasonally down in Q1 every year vs the preceding Q4. That is the big problem, the normal seasonal decrease in oil demand in Q1 vs Q4 that is approx. 1.5 mmb/d. So no one is focused beyond 2024 but, for those that care, on Thursday, we tweeted [\[LINK\]](#) "For anyone looking at #Oil in 2025+. #Aramco CEO "If you look at existing fields today & the level of maturity that we're seeing in conventional and unconventional resources, you're looking at a 7% decline" ie. 7 mmbd has to be replaced each yr to stay flat. Thx @jcgana #OOTT." The headlines on the Platts story were "COP28: Saudi Aramco CEO says fossil fuel investment more viable than renewables to meet demand. HIGHLIGHTS Fossil fuel investment down 40% from 2014 levels: Nasser. Q4 2023 oil demand set to be higher than Q4 2019. Renewables, hydrogen not viable in the short term, he says." [\[LINK\]](#). But what caught our eye were Nasser's comments on global oil declines. Platts wrote "Saudi Aramco's chief called for more investment in fossil fuels while dismissing the short-term viability of renewables due to what he suggested were higher costs and low demand for clean energy. "I think we need more investment," Nasser said citing a 40% decline in investment in fossil fuels from 2014 levels. "If you look at existing fields today and the level of maturity that we're seeing in conventional and unconventional resources, you're looking at a 7% decline," he added." Nasser is reminding the combined global conventional + unconventional oil decline rate is 7%, which means that, on a combined global basis, if spending were to stop oil production would be down 7 mmb/d. The reminder is that the first challenge for the global oil industry is to do the work to replace 7 mmb/d just so global oil production can stay flat. That is why there is the first capital every year to basic production maintenance, development drilling, field extensions, etc to replace the 7% decline. The 7% is an average decline rate across the world, which takes into account the way higher decline rates in the 13 mmb/d of US production. Our Supplemental Documents package includes the Platts report. "*

Oil: Vortexa crude oil floating storage est 74.96 mmb at Feb 9, -8.63 mmb WoW

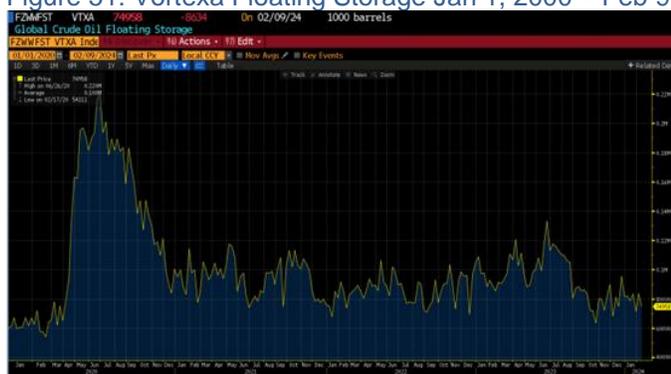
We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Feb 3 at 9am MT. (i) Yesterday, we tweeted [\[LINK\]](#) *"It took a few weeks, but it seems like longer tanker trips & use of oil in storage is sorting out impact of Red Sea diversions? #Oil floating storage at Feb 9 -8.63 mmb WoW to 74.96. But revisions +11.34 to Feb 2, +7.66 to Jan 26, +5.51 to Jan 19. Thx @Vortexa @business."* (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Feb 9 at 74.96 mmb, which is -8.63 mmb WoW vs revised up Feb 2 of 83.59 mmb. Note Feb 2 was revised +11.34 mmb vs 72.25 mmb originally posted at 9am on Feb 3. (iii) We have to wonder if oil shipping and the use of oil in storage has, to the most part, sorted out how it will

Vortexa floating storage

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handle the Red Sea diversions. We finally saw our expected larger revisions to floating storage for the past few weeks and they were upward revisions. Prior to these upward revisions, we saw record low floating storage, which we thought likely reflected using floating storage to make up for longer tanker voyages due to avoiding the Red Sea. But the upward revisions likely reflect the return of those barrels to floating storage now that the tankers taking the longer voyages have arrived. (iv) Revisions. As noted above, we saw large revisions to the last weeks, which we believe is likely due to the tankers arriving at their destinations from the longer than originally planned voyages that forced floating storage to be used to fill in while waiting for the tankers. Here are the revisions compared to the estimates originally posted on Bloomberg at 9am MT on Feb 3. Feb 2 revised +11.34 mmb. Jan 26 revised +7.66 mmb. Jan 19 revised +5.51 mmb. Jan 12 revised +1.78 mmb. Jan 5 revised +2.24 mmb. Dec 29 revised +1.15 mmb. Dec 22 revised -0.09 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 79.38 mmb vs last week's then seven-week average of 78.10 mmb. (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 now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (viii) Feb 9 estimate of 74.96 mmb is -14.17 mmb YoY vs Feb 10, 2023 of 89.13 mmb. (ix) Feb 9 estimate of 74.96 mmb is -145.35 mmb vs the Covid peak of 220.31 mmb on June 26, 2020. (x) Feb 2 estimate of 74.96 mmb is +9.35 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (xi) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Feb 10, 9am MT Feb 3, and 9am MT Jan 27.

Figure 51: Vortexa Floating Storage Jan 1, 2000 – Feb 9, 2024, posted Feb 10 at 9am MT



Source: Bloomberg, Vortexa

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Figure 52: Vortexa Estimates Posted 9am MT on Feb 10, Feb 3, and Jan 27

Posted Feb 10, 9am MT						Feb 3, 9am MT						Jan 27, 9am MT					
FZWWFST VTXA Inde						FZWWFST VTXA Inde						FZWWFST VTXA Inde					
ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y
Fr	02/09/2024				74958	Fr	02/02/2024				72247	Fr	01/26/2024				61064
Fr	02/02/2024				83592	Fr	01/26/2024				63698	Fr	01/19/2024				77542
Fr	01/26/2024				71362	Fr	01/19/2024				78024	Fr	01/12/2024				73796
Fr	01/19/2024				83525	Fr	01/12/2024				76953	Fr	01/05/2024				81873
Fr	01/12/2024				78727	Fr	01/05/2024				79667	Fr	12/29/2023				81657
Fr	01/05/2024				81907	Fr	12/29/2023				80464	Fr	12/22/2023				97378
Fr	12/29/2023				81610	Fr	12/22/2023				95667	Fr	12/15/2023				77156
Fr	12/22/2023				95584	Fr	12/15/2023				75840	Fr	12/08/2023				84601
Fr	12/15/2023				74921	Fr	12/08/2023				81473	Fr	12/01/2023				69306
Fr	12/08/2023				81346	Fr	12/01/2023				69303	Fr	11/24/2023				90436
Fr	12/01/2023				68265	Fr	11/24/2023				90926	Fr	11/17/2023				86704

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Bloomberg also posts the Vortexa crude oil floating storage in key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the “Other” or rest of world. (i) As noted above, Feb 2, in total, was revised +11.34 mmb. The main revisions in a region vs the originally posted (as of 9am Feb 3) floating oil storage for Feb 2 were Asia revised +7.14 mmb, Other revised +3.13 mmb, and West Africa revised +2.41 mmb. (ii) The major WoW changes by region were Middle East +6.48 mmb WoW, Asia -3.74 mmb WoW, US Gulf Coast -3.43 mmb WoW, and Other -3.43 mmb WoW. (iii) Feb 9 at 74.96 mmb is -58.91 mmb vs the summer June 23, 2023 peak of 133.15 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 -36.56 mmb and Other -25.20 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 Feb 2 that was posted on Bloomberg at 9am MT on Feb 3.

Vortexa floating storage by region

Figure 53: Vortexa crude oil floating by region

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Feb 9/24	Feb 2/24	WoW	Feb 2/24	Jun 23/23	Feb 9 vs Jun 23
Asia	37.27	41.01	-3.74	33.87	73.83	-36.56
Europe	2.23	4.27	-2.04	4.51	6.44	-4.21
Middle East	15.44	8.96	6.48	10.10	6.76	8.68
West Africa	7.37	9.84	-2.47	7.43	7.62	-0.25
US Gulf Coast	0.40	3.83	-3.43	3.79	1.05	-0.65
Other	12.25	15.68	-3.43	12.55	37.45	-25.20
Global Total	74.96	83.59	-8.63	72.25	133.15	-58.19

Vortexa crude oil floating storage posted on Bloomberg 9am MT on Feb 10

Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

Oil: BNEF – global oil and product stocks deficit widens to -37.9 mmb

Please note that the BloombergNEF global oil and products stocks estimate are for the week ending Jan 26, which is a week earlier than the normal EIA US oil inventory data that is for the week ending Feb 2 which was a build of +5.5 mmb. On Tuesday, BloombergNEF posted its “Oil Price Indicators” weekly, which provides good charts depicting near-term global oil demand and supply indicators. (i) Note BloombergNEF uses different periods to determine the surplus/deficit, sometimes using a four-year average for 2017-2019 + 2022-2023, and

Global oil and products stocks

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other times using a five-year average 2017-2019 + 2022-2023. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products deficit widened from -14.5 mmb to -37.9 mmb deficit for the week ending Jan 26. (iii) Total crude inventories (incl. floating) decreased by -3.2% WoW to 597.3 mmb, while the stockpile deficit widened from -20.5 mmb to -39.2 mmb. (iv) Land crude oil inventories decreased by -1.0% WoW to 529.8 mmb, widening the deficit to -40.2 mmb against the five-year average (2017-2019 + 2022-23). (v) The gas, oil, and middle distillate stocks decreased by -1.1% WoW to 164.2 mmb, with the deficit against the four-year average widening from -17.1 mmb to -18.5 mmb. Jet fuel consumption by international departures for the week of Feb 12 is set to increase by 33,100 b/d WoW, while consumption by domestic passenger departures is forecast to increase by +20,700 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 54: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF, US EIA, PAK, & Singapore, FEEDCON/Platts, PAJ, Vortex, Genesee. Note: As of the week ending January 26, 2024.

Source: BloombergNEF

Oil: Bloomberg Oil Demand Monitor “China’s Supply Chain Signals Subdued Usage”

The Bloomberg Terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. The major focus in this month’s report is on whether China is going to make a big comeback in 2024 and drive oil demand growth. Unfortunately, preliminary signs are not looking good. Crude and fuel feedstock inputs to Shandong and Tianjin, which have big refineries, fell by over 20% MoM in January, and tanker data for oil shipments to China from the MENA region and Brazil all dropped last month. China is facing high unemployment, deflation, a declining population, and a looming real estate debt crisis. The bright spot in Asian oil markets is actually India, which saw their oil consumption increase +8% during January, and they seem to be taking full advantage of cheap Russian crude for their refinery feedstocks. This week, in a separate item Bloomberg reported India had received shipments of Russia’s Sokol crude for the first time in a while. Sokol crude is a heavy grade which is normally bound for East Asian (Korean, Japanese) markets but have recently piled up (millions of barrels) in idle tankers after payment issues arose. If the Indians make a habit of buying this extra stock again, demand could grow even further. The Oil Demand Monitor also points out that the Saudi decision to bin output capacity expansion plans potentially indicates another negative view on the demand outlook. We will see, but most of the major projections (STEO, IEA, MOMR) for global consumptions have demand growth driven by China and India. Looking at consumption indicators, the demand monitor showed that global flights continued to track comfortably above both 2023 and 2022 levels during the week of Feb 5,

Bloomberg oil demand monitor

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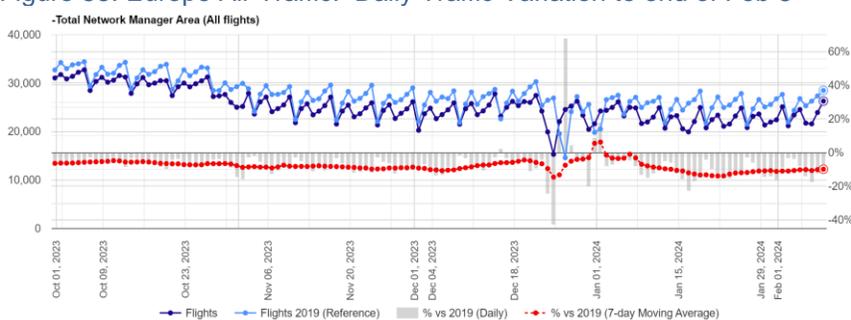
and were up +8.2% on a MoM basis. For January, Diesel and Gasoline sales in India were up +3.5% and +9.7% YoY, respectively, while on a MoM basis Diesel sales were down -2.4% MoM and Gasoline sales were up +3.7% MoM. Refinery utilization in the US as of Feb 2 was down -1050 bps MoM and -550 bps YoY at 82.4%. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor and the Sokol shipment article. Below are Chinese refinery run rates.

Oil: Europe airports daily traffic 7-day average is -9.9% 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 then end of Feb 8 is -9.9% below pre-Covid 2019 levels. Eurocontrol updates this data daily and it is found at [LINK](#)

Europe airports daily traffic

Figure 55: Europe Air Traffic: Daily Traffic Variation to end of Feb 8



Source: Eurocontrol

Oil & Natural Gas: Set up for an early & abrupt end to Cdn winter drilling in Feb/Mar

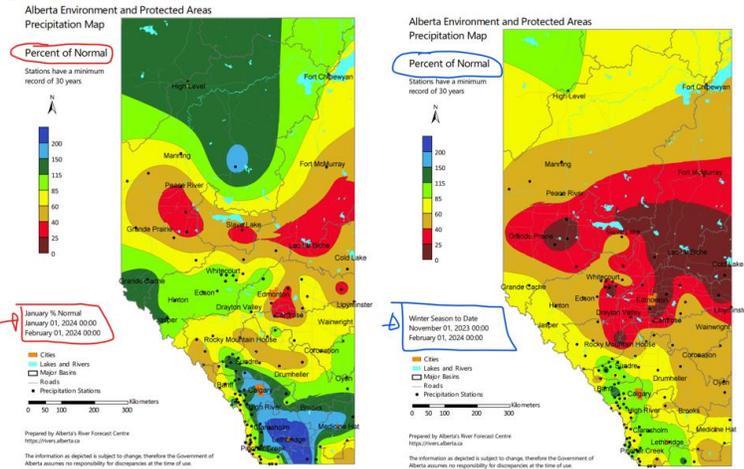
On Wednesday night, we tweeted [LINK](#) “More snow in Jan in Alberta BUT still a brutal lack of snow this winter Nov 1-Jan 31. Risk for early & abrupt end to winter drilling. Big negative for 2024 wildfire season & crops. Way less snow vs last winter. #OOTT.” There was some snow and there was some cold, but it doesn’t change the fact that it has been a warm winter with a severe lack of snow. So it doesn’t change our warning that we are seeing the set up for an early and abrupt end to the Cdn winter drilling season as its been warmer than normal and accumulated snowfall has been much less than normal. And as noted later in the memo, Precision noted that warm weather in Jan already caused some small road bans. So we won’t be surprised to see road bans and an early end to conventional winter drilling in late Feb/early March. Why? The ideal conditions for a long winter drilling season is good sustained cold weather in Nov/early Dec before the snow hits. Good sustained cold will then make sure there is a deep freeze in the ground. The ideal world is to get a good deep freeze first and then lots of snow over the winter. If you get lots of snow, it will act as an insulating blanket to keep the deep freeze in the ground for longer once it gets to end of Feb/early March and frozen ground allows a longer winter drilling season. Conversely, the negative is that you don’t have good sustained cold and so you don’t get a good deep freeze in the ground. And then you get the snow and that acts as an insulating blanked from any cold in Jan from getting deep int eh ground for a deep freeze. Recall the concept of how you see documentaries on survival in Alaska and how they keep themselves warm by digging out a snow cave. So the problem is that there isn’t a deep freeze so when it starts to get warm in

Risk for abrupt end to winter drilling

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late Feb/early March, the snow melts and there isn't a deep freeze and there is an abrupt end to winter drilling season. And the problem is if there isn't much snow, it melts quickly and the ground gets exposed quickly. This week, Alberta posted the accumulated snowfall for Jan and the updated Nov 1 thru Jan 31 winter maps. Our tweet included the below Alberta precipitation maps for the month of Jan and Nov 1 thru Jan 31.

Figure 56: Alberta % of Normal Precipitation For Jan 2024 and Nov 1/23 thru Jan 31/24



Source: Alberta River Forecast Centre

Oil & Natural Gas: Low water levels can also impact water usage by oil and gas

We remind that any water shortages will also impact oil and gas operations. We have seen this in NE BC when low water levels led to some restrictions on water usage by the oil and gas sector. It is still early but we won't be surprised if there are some water restrictions this summer if we keep seeing the low precipitation for the rest of the winter.

Low water levels can impact oil and gas

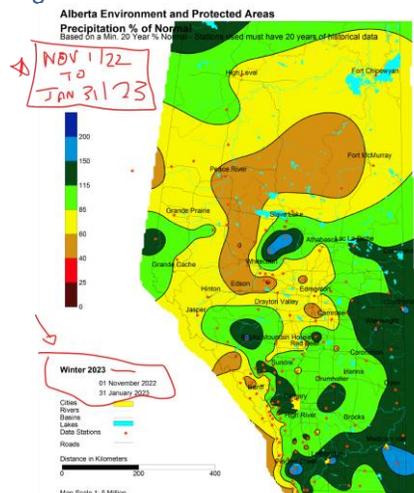
Oil & Natural Gas: Lack of precipitation is a big negative for 2024 wildfires & crops

Our tweet on snowfall also said "Big negative for 2024 wildfire season & crops. Way less snow vs last winter." And we included the accumulated precipitation for last winter's Nov 1/22 thru Jan 31/23. Last year was a brutal year for wildfires and a tough crop year. And the concern is that amount of winter snowfall is way less than last winter. The lack of moisture in the ground will create an even higher risk for wildfires in the summer and also be a negative for agriculture. There is no doubt that we need a lot more snowfall in the rest of Feb and March in Alberta.

Bad for wildfires and crops

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Figure 57: Alberta % of Normal Precipitation For Nov 1/22 thru Jan 31/23



Source: Alberta River Forecast Centre

Oil & Natural Gas – sector/play/market insights from Q4 calls

This is our favorite time each time of each quarter as it is quarterly reporting and this is when we get the best insights into a range of oil and gas themes/trends, sectors and plays. As a reminder, our Energy Tidbits memo does not get into the quarterly results, forecasts, or valuation. Rather the purpose of highlighting a company is to note themes/trends and plays that will help shape a reader's investment thesis to the energy sector. In the conference calls, we also tend to find the best insights from the Q&A portion as opposed to the prepared remarks. Plus, we tend to get the best E&P sector insights from services, pipelines, refineries, and utilities

**Sector insights
from Q4 calls**

Bp: Moving to pragmatic approach in navigating the energy transition

bp held its Q4 call on Tuesday. (i) Earlier in the memo, we noted bp sees oil dipping back to \$60 and that would be when they would look at buying Permian. (ii) Earlier in the memo, we noted their low base decline rate of 3-5%. (iii) Later in the memo, we note new CEO's move to a pragmatic approach to how they navigate the energy transition. (iv) Natural gas – "feel okay" about natural gas right now. and no reason to buy natural gas as they have a lot unless things get super cheap. Mgmt said "Natural gas we feel okay about right now, but a cold snap in the winter in one of the years changes the position on natural gas as well." Then later in the Q&A when asked about buying US shale gas, mgmt. said "I'm very counter cyclical. That's why you saw us do light source BP when we did, because it was a nice counter cyclical opportunity. So I'm very, and TA as well. So I'm very focused on when you can do counter cyclical opportunities. So I am sympathetic to that. But there's just only so much the corporation can absorb at once and get the systems right, the processes right, the culture right. That's what's so critical for us. Natural gas in the US. , let's see where gas prices go. Certainly there's the chance that gas prices get suppressed. Would you think about doing something counter cyclical and gas if an

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opportunity came up? Maybe, but I've got 22 TCF of natural ECF of natural gas inside BPX right now between the Haynesville and the Eagle Ford. So it would almost have to be super cheap or free for me to contemplate that, given that we've got so many years of development ahead of us with natural gas, with the resources we have in the best place in the United States right now. So I believe in countercyclical. That's what we've done. We're probably getting close to the limit of what we can do to effectively integrate it, and that's what's the driving consideration in my mind as I think about slowing down a little bit moving forward. I hope that helps, Al.” (v). Trading delivering about a 4% uplift to returns. (vi) Reinforced they will only look at renewables (ie wind) if they can link into an entire value chain so they can incorporate trading or get an uplift. They walked away from the Equinor NE US offshore wind that weren't able to be linked into a trading uplift. They noted this in the Q&A “I guess maybe I'll tackle both of those. On the East Coast venture with Equinor, over time, what we've decided is that integrated delivery models are much more important for us than a PPA-like model. Empire really is a PPA model. So it was time to divorce ourselves, let Equinor carry forward with that. They want to do that. And for ourselves, we'll step away from that one. “ And they confirmed the same concepts on value uplift form unlevered returns. Mgmt said ‘And on offshore wind, as we've said before, our returns hurdles on offshore wind are 6% to 8% unlevered. But by the time you lever it up, by the time you farm it down and bring in a partner, by the time you integrate it into our business, you're well into double-digit returns. And that competes well with the rest of our business. So we're happy with our strategy.” (vii) Reaffirmed the thesis of why they went big into convenience stores, they have captive battery charging customers who have nothing to do while charging. It's like anything, the more people browse, the more they buy something. . Although they don't say it specifically. Whereas, there really isn't spare time for gas filling customers to kill Mgmt said “Importantly, our charging customers in the UK are spending more in our shops than our fuel customers. this gives us further confidence in our fast on-the-go business model.” (viii) Focus is blue hydrogen and see about green hydrogen next decade. Mgmt said “Our focus this decade is on blue hydrogen and decarbonization of our refineries while laying the foundation for green hydrogen production towards the end of the decade.”

Maersk: Red Sea disruption, no sign of congestion, bottleneck or demand shift

Maersk held its Q4 call on Thursday. (i) Later in the memo, we note how the impossibility of Maersk reaching its green fuel aspirations. (ii) On the call, CEO Vincent Clerc went thru their perspective on the Red Sea disruption. They can't predict whether it will last a quarter or a year and acknowledge the impact to their customers has been significant with longer trips, additional charges and lower schedule reliability. But the big picture is also “*the Red Sea disruption from a shipping perspective is a rerouting of cargo along a longer route. We see no sign of congestions or bottlenecks or shifts in demand. The global supply chain remains fluid and demand and supply steady. This is because there are levers today to absorb the impact without further disruption by using the capacity that was underemployed at the end of 2023, by accelerating the service speed that has been slowed down during 2023, and by gradually plugging new tonnage into the existing rotations. To regain balance and sail all impacted service through the Cape of Good Hope at a similar*

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service speed to what we had in the Q4 of 2023 2023 SUSUIS, we estimate that about 6% to 7% of the global container fleet will be required. As illustrated on the chart on the left side, a combination of the mobilization of existing excess capacity of about 2% and sailing the global fleet at faster service speed has so far mostly cushioned the impact of the disruption. New builds will gradually phase in at 2% to 3% net growth per quarter and fill in the missing positions before the seasonal q3 peak seasons". There was much more in Clerc's comments on the Red Sea disruption. Our Supplemental Documents package includes Clerc's Red Sea commentary.

Precision: "unusually warm weather in late Jan: caused well access issues

Precision held its Q4 call on Tuesday. (i) Earlier in the memo, we noted Precision's comments that seemed to point to Coastal GasLink potentially starting up this summer. (ii) Earlier in the memo, we noted Precision's reminder that Cdn heavy oil is not just oil sands, but also includes the Clearwater. (iii) Earlier in the memo, we noted Precisions view that the startup of TMX should see WCS less WTI differential narrow to high single digit. (iv) Precisions also warned that warm weather in Jan caused some drilling restrictions. This has been our concern on winter – lack of snow and warm temps will lead to an early and abrupt end to winter drilling and that companies won't complete all of their winter programs. Precision noted that the warm Jan already caused a loss of activity "Now we experienced a roller coaster of weather, first losing activity in mid-January due to extremely cold weather conditions in Western Canada. And then things turned be warm, causing some intermittent road bans and with the unusually warm weather in late January making some well locations inaccessible again negatively impacting the activity." (v) Precision also highlighted they are seeing more long term 2-3 year contracts for rigs with the imminent start of LNG Canada.

Energy Transition: New bp CEO pragmatic in how navigate the energy transition

We don't see how anyone can listen to new bp CEO Auchincloss and not see bp believes the energy transition is not happening as fast as expected. He may not directly say it, but his comments about being pragmatic in how they navigate the energy transition effectively say it. Here was his opening on the Q4 call "Our destination is unchanged, IOC to IEC, International Oil Company to Integrated Energy Company We're confident in our strategy to deliver this, but are going to do so as a simpler, more focused, and higher value company, providing energy solutions for our customers who are asking us to help, contributing to the energy transition, all the while remaining pragmatic and adapting in line with demand, as you saw with the update to our strategy this time 12 months ago. So what does it practically mean to transition from IOC to IEC? Over 100 years ago, we started to create our first value chain, oil fields attached to refineries with products sold in service stations and airports. we're now introducing biofuels, sustainable aviation fuel and biodiesel, to the customer." We can't help feel he is trying to sound like new Shell CEO did a year ago. Auchincloss also said "We will be relentlessly value and returns-focused with our investments, focused on growing value and returns from our oil and gas portfolio, leveraging our high-quality resource base and driving efficiency and reliability, as we laid out in our update in Denver last year, and growing value from our transition businesses as we invest with discipline in the pipeline we have developed, and by creating even more value through integration. We will continue to be

**Bp to be
pragmatic in
energy transition**

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proactive. continue to be pragmatic in our approach to how we navigate this energy transition. Yes, we want to help scale lower carbon energy value chains and position ourselves to profit from them but we must remain flexible adjusting in line with changing demands and societal needs as you saw us do in February last year.”

Energy Transition: FirstEnergy to use coal for longer, drops interim Scope 1 target

No one should be surprised to see more and more reality checks on the energy transition that are leading to a big push back in the ability of renewable/clean energy to provide the required energy for utilities to provide 24/7 reliable, affordable and available electricity. On Thursday night, electric utility FirstEnergy indicated it would be using coal for longer because it’s prior 2030 interim goal to reduce scope 1 emissions raised “resources adequacy concerns.” FirstEnergy, electric utility, reported Q4 on Thursday after markets and held its Q4 call on Friday morning. On Friday, we tweeted [LINK](#) “Reality check: Coal power needed for longer! FirstEnergy eliminates interim 2030 Scope 1 emissions reduction target. Its Fort Martin (2035) & Harrison (2040) coal plants needed for longer. Shares +3.7% today #OOTT #NatGas.” FirstEnergy Shares ended up being +4.3% on Friday. FirstEnergy really had no choice but to eliminate its interim 2030 target to reduce emissions by 30% vs 2019 when they forecasting more coal thru 2035. Mgmt said “In the updated Climate Strategy published to our Corporate Responsibility website yesterday, we are providing an update to our greenhouse gas emissions goals. In 2020, we set a goal of achieving net carbon neutrality by 2050 with an interim goal of reducing our Scope 1 greenhouse gas emissions by 30% by 2030. Achieving the 2030 interim goal was predicated on meaningful emissions reductions at our Fort Martin and Harrison power plants in West Virginia, which account for approximately 99% of our greenhouse gas emissions. We’ve identified several challenges to our ability to meet that interim goal, including resource adequacy concerns in the PJM region and state energy policy initiatives. Given these challenges, we have decided to remove our 2030 interim goal. Through regulatory filings in West Virginia, we are forecasting end of the useful life of Fort Martin in 2035 and for Harrison in 2040. We remain focused on achieving our aspirational goal of net carbon neutrality by 2050.”

FirstEnergy using coal for longer

Figure 58: FirstEnergy Strategic Updates



Source: FirstEnergy

Energy Transition: Can wind/solar power 24/7 needs from data centers/AI growth

There was a great CNBC reminder on Tuesday about how data centers and AI are going to drive a massive power need and we think that is an overlooked positive for natural gas. This

Data centers need 24/7 power

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is especially so since data centers run 24/7. We tweeted [\[LINK\]](#) “Data centers/AI growth = massive need for power. Data centers don't run less when the sun goes down or the wind isn't blowing. Looks like a lot more #NatGas power will be needed. 🙌 @PippaStevens13 on massive power needs, especially in US, are just ramping up. #OOTT.” Our tweet included a clip of a portion of the CNBC report that noted how the IEA forecasts data centers electricity demand to double by 2026 and that would be equal to Japan's electricity use. That is a huge number. We only have one friend who is a modest data center owner in the US and he reiterated his biggest concern looking forward over the next decade is how to ensure reliable, affordable electricity if he is forced to go renewable and storage. The big issue for 24/7 electricity consumers is when the sun doesn't shine or the wind doesn't blow. And this is even moreso if it's a few days of low sun and wind.

Figure 59: Data Center Electricity Use



Source: CNBC

Data center electricity consumption ramp up is happening now

The reason why we highlight natural gas or even coal for data centers is that the growth in data centers electricity demand is happening quickly. We had suggestions or reminders of nuclear power for this data center demand. We are big fans of mini-nukes for power but this is not happening until sometime in the 2030s. On Friday, we tweeted [\[LINK\]](#) “Agreed! US has to push SMR nuclear now so it can be a rapidly increasing power source post 2030. For the 2020s for this added electricity needs 1st wave of AI/data centers, 24/7 power has to fall on #NatGas, maybe even some #Coal.” The other option is storage but storage still isn't available for long send-out. So the only significant 24/7 power sources now are natural gas and coal.

Energy Transition: Ford surprised average income buyer won't pay premium for EVs

It isn't often we are shocked by what an industry leader says about one of their major initiatives costing billions of dollars but we were by Ford CEO Farley on Tuesday's earning call on EVs sales once you move beyond the high-income early adopters. On Tuesday, we tweeted [\[LINK\]](#) “Shocked this is an AHA moment for Ford - mass market won't pay big premium for #EVs. “you move into the early majority customer, they are not willing to pay a significant premium for EVs. This was a huge moment for us.” Ford CEO. #Oil #Gasoline is needed for way longer. #OOTT.” We were shocked that Ford seemed surprised that the normal American consumer wasn't prepared to pay a significant premium for EVs as opposed to the higher income early adopters. Here is what CEO Farley said “As the COVID shock retreated, we learned that as you scale EVs to 5,000 to 7,000 units a month and you move

**Average income
won't pay
premium for EVs**

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into the early majority customer, they are not willing to pay a significant premium for EVs. This was a huge moment for us. What we've seen, because we offer everything, is pricing quickly converged to hybrids after any benefit from subsidies. Now Tesla found out this first, but we were right behind that, and they were very exposed to the early majority, but we learned very quickly and I want to say that no one will be immune to this reality.” Our Supplemental Documents package includes excerpts from the Ford Q4 call transcript and slides.

Ford pulling back on EV plans, there was a “seismic change” in EVs in H2/23

The headlines from Ford’s Q4 call on Tuesday were on its clear pull back on its EV plans and timetable. There were many mgmt. comments on this pull back but here are just a few. *“been a seismic change in the last six months of last year” in EV market”. “Now the catalyst for that seismic change is a combination of EV manufacturers cutting their price by 20% across all major geographies”. “we’re going to spend less capital on larger EVs” “also adjusting our capital, switching more focus into smaller EV products”. “the ultimate competition is going to be the affordable Tesla and the Chinese OEMs”. “We will also align production and inventory for customer demands.”* The last comment is the way saying that demand for EVs isn’t there so supply will be cut. Mgmt also said *“The most obvious indicator of this reality is looking at total revenue, not units for EVs. Look at the U.S. market. EV total revenue was down in the second half of last year versus Q2. If you look at unit volumes, they were up. That is a really important insight we learned in being a first mover. The same thing happened in China, same thing happened in Europe. Our data shows that EVs are a clear destination for many customers based on their unique duty cycle. It’s going to take time, more than we expected 18 months ago, but we are seeing big adoption variances by geography and that’s why the power of choice at Ford is so important and a big advantage for us. We’re betting that choice and flexible manufacturing is going to get us successfully through this transition.”*

Ford to increase hybrids, multiple positives on hybrids

There were multiple positives on hybrids in the Ford Q4 call. Ford is increasing capital allocation for more hybrids, they can shift production to hybrids to give customers more choice and hybrid margins are closer to ICE margins. Here are some of mgmt. comments. *“Look at the best-selling vehicle in the United States, the F-150. We have a Lightning, we have a hybrid in high volume and an ICE choice. In Q4, in California, our mix was 50% hybrid and EV F-150 and 50% ICE. A thousand miles away in Dallas, it was only 15% hybrid and EV, 85% ICE. You go around the world, you’ll see same variations. Hybrids will play increasingly important role in our industry’s transition, and will be here for the long run. Hybrid just fits specific customer use cases. On Maverick pickup truck, our hybrid is focused on mileage and efficiency and they do the math very clearly, and they don’t have to change the behaviors.”* *“On F-150 hybrid, they get the same benefits even when they’re towing on fuel efficiency, but we throw in pro-power on board on top of that to displace a very expensive generator cost. In margins on hybrids are closer to ICE, much higher than EV margins. The journey on EVs is inevitable in our eyes and we have a bright future in EVs. We’re adjusting our capital and we’re giving customers choice”* *“The second thing is, we have manufacturing flexibility between ICE and EV and hybrid.*

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So we want to make sure that they understand that we're in probably better shape than any other brand in this transition." "Our global hybrid sales were up 20% last year and we expect them to be up 40% this year. We're now the number one and number two best-selling hybrid selling hybrid trucks in the US"

Energy Transition: South Korea EV sales flat YoY in 2023

The Korean car makers have been having strong success and reviews with their EVs in North America, but also in their home country, where EVs have gone through very rapid growth to roughly 40% of new car sales. But that rapid growth rate came to a halt in the data for 2023 EV and car sales and EV sales ended up basically flat YoY in 2023. On Monday, we tweeted [\[LINK\]](#) *"More slowing #EVs growth EVs sales -0.1% YoY to 157,823 EVs in South Korea, key factors holding back are safety concerns on fires in a crash or during charging, & lack of fast chargers. @Business Heejin Kim. Peak #Oil demand will be further out than IEA forecasts. #OOTT."* Bloomberg reported on the Korea Automobile Manufacturers Association 2023 data that said *"Yet EV sales slipped last year for the first time since 2017 — dipping 0.1% to 157,823 units."* Bloomberg also reported *"According to a survey conducted by the Korea Transportation Safety Authority published in November, around half of EV owners said their biggest safety concern is a fire caused by a car crash, or during charging. Several high-profile incidents have stoked that worry. In 2022, an electric van that had finished charging but remained plugged in caught fire in the parking lot of an apartment building in Busan, quickly spreading to four other vehicles, according to a report from the National Fire Agency. In 2020, a passenger in a chauffeur-driven EV died when the car caught fire after crashing into the wall of an underground parking lot. That case resonates with Koreans, many of whom live in high-rise residential apartments. Fires at chargers in underground parking areas — a closed space where flames can spread quickly and fire trucks can have difficulty accessing make drivers even more nervous."* Our Supplemental Documents package includes the Bloomberg report.

South Korea EV sales flat YoY

EV sales were ~40% of 2023 car sales, no make up ~1.5% of Korea vehicles

Our second tweet on Monday was [\[LINK\]](#) *"#EVs make up ~1.5% of total South Korea registered vehicles. See 📌 @CEICData1. EVs are going to grow at strong rates in most countries but the rate of growth is turning out slower than built into Peak Oil Demand forecasts. #Oil #Gasoline will be needed for longer. #OOTT. IT looks like South Korea EV sales are ~40% of 2023 South Korea registered vehicle sales and now make up ~1.5% of South Korea's 26 million registered vehicles. Our tweet included the below graph of CEIC data for South Korea's number of registered vehicles that reached 29.95 million in Dec 2023.*

Figure 60: South Korea Number of Registered Vehicles



Source: CEIC

Energy Transition: German going big on natural gas w/ hydrogen conversion potential

There was a very clear reality check from the German government that the Energy Transition will not be ready for prime time this decade. There is no other takeaway other than the Germany's Energy Transition will take a lot longer, will cost a lot more and be a bumpy/rocky road. And the other reality is that if Europe's largest economy, Germany, is nowhere on track, then Europe will be nowhere on track. Germany has made a big backtrack and needs to add significant natural gas power generation. On Monday, we tweeted [LINK](#) "Germany doesn't see peak #NatGas demand. Approved adding 10 GW of #NatGas generation for baseload power. But will decide by 2032 if will converted to hydrogen 2035-2040. Reality check. #NatGas #LNG needed for longer! Thx @derspiegel #OOTT." There was a big reality check in Germany with the government approving a big expansion in natural gas power generation although they couched it with the caveat that the natural gas power generation would have the capability to be converted to hydrogen generation after 2035. And they plan to make a decision on when to convert the natural gas to hydrogen by 2032 with the target to actually convert in the 2035-2040. But they did not say that was a firm timetable to convert. In other words, they will be using natural gas generation for at least a decade. Our tweet included the Der Spiegel report [LINK](#) said "Construction is to take place as soon as possible, and the builders are to receive funding for this. According to SPIEGEL information, the government wants to promote both construction investments (Capex) and the subsequent operation of the plants (Opex). And "Since the electricity production of solar and wind farms fluctuates, there is a need for some power plants that can flexibly produce electricity at any time. The government wants to replace the climate-damaging coal-fired power plants that have been doing this so far with hydrogen-capable gas-fired power plants. A good 28 gigawatts of secured, always available power have to be compensated. The traffic light coalition had agreed to "ideally" bring forward the coal phase-out to 2030. The Greens, in particular, are pushing for this date." Bloomberg reported "The government agreed to go ahead with four short-term tenders for up to 10 gigawatts, translating to about 15 to 20 new plants. It requires developers to upgrade stations to burn hydrogen sometime between 2035 and 2040, and also leaves open room for carbon capturing and storage technologies, according to a statement Monday. The decision — which comes almost a year after the proposal was first unveiled — follows weeks of intense talks between Chancellor Olaf Scholz and his two coalition parties. The measure will cost between €15 billion (\$16.1 billion) and €20 billion over the next 20 years, according to people familiar with the matter, and includes subsidies for investment and operational costs." Our Supplemental Documents package includes the Der Spiegel report.

Germany to crank up natural gas power

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Is Germany hoping for a future that includes the return of Russia natural gas?

We have been surprised by Germany's steadfast support of the US push to avoid Russian natural gas in the face of their economy being hit. So when we saw the announcement of the big expansion in natural gas for the near term, we have to wonder if Germany is hoping for a future that sees them being able to take Russian pipeline natural gas as opposed to having to rely on more LNG. The reality is that it's been two years now and the longer Russia/Ukraine keeps going, there is an increased risk/probability for the west to stay united in financially/militarily support Ukraine. Without this support, Ukraine can't keep fighting.

Energy Transition: Orsted cuts its wind power additions by 24-30% to 2030

On Wednesday, there was a big blow this week to offshore wind power generation plans to 2030 when Orsted reported its Q4 results. We tweeted [LINK](#) "WOW! Orsted, a global leader in Wind, cut its renewable energy capacity ambition to 2030 by 24-30% & its investment by 43%. How can the IEA & others not push back peak #NatGas demand timing. #Oil #NatGas will be needed for longer. #OOTT." Orsted's comments were that it was the global leader in wind so this was a big negative to the timing of offshore wind power generation. In the Q4, Orsted made a massive reduction in their revised plan to 2030 vs what they laid out in June 2023 capital markets day. Orsted laid it out without any confusion. Vs its June 2023 capital markets day plan, Orsted was cutting its investment to 2030 by 43%, from 475 billion Danish Krone to 270 billion. Using a conversion of one Danish Krone = \$0.15 USD, that is a reduction from \$71 to \$41 billion. Orsted also highlighted "Project cancellations and phasing of capital expenditure across the portfolio will result in approx. DKK 35 billion of capital expenditure relief in 2024-2026 compared to the numbers presented at the Capital Markets Day in June 2023." That is \$5.3 billion. And that means they are cutting their renewable wind generation capacity addition by 24% to 30%. And as part of that they are exiting their projects in several countries including Norway, Portugal and Spain. This is a big blow to the assumptions on how fast offshore wind would add capacity to 2030. Unfortunately, it fits our several year view that the Energy Transition plans were too optimistic and would mean the energy transition would take a lot longer, cost a lot more and be a bumpy/rocky road. That doesn't benefit society to have a chaotic energy transition. But it does benefit oil and natural gas. Our Supplemental Documents package includes the Orsted release and excerpts from the Q4/23 call slides.

Big pull back by Orsted on wind power additions

Figure 61: Orsted Q4/23 Feb 7/24 Revised Plan vs June 2023 Plan



Source: Orsted

Critical success factors for Net Zero aren't working as hoped

The big cut by Orsted to its offshore wind capacity additions by 2030 is a reminder that another of the critical success factors for the energy transition is not working anywhere near as fast as hoped/planned. Here is what we wrote in our Oct 29, 2023 Energy Tidbits prior to COP28. Note that we never wrote the blog. *“We expect to post a long overdue blog ahead of COP28, which runs from Nov 30 to Dec 1 in the UAE. Our view on the Energy Transition is unchanged for the past several years – it’s happening but it will take way longer, cost way more and be a bumpy/rocky road. It is very hard to predict what will happen at COP28 but we would hope that everyone doesn’t fool themselves with their starting point – all of the major items for the energy transition aren’t working as planned. For the past few years, we have placed a priority for tracking the major items of the energy transition because their progress, or lack thereof, relative to their plans/aspirations is the most important factor for oil and natural gas for the next decade. It’s why we have said for years that oil and natural gas will be needed for longer and therefore there will be cash flow value for the next decade. Our memos have highlighted the major energy transition items being well behind plans and aspirations. (i) EVs. The major oil consumption impact is forecast to come from EVs replacing ICE. So far, our focus has been on how EVs aren’t displacing ICE mileage as much as assumed as forecasts like the IEA assume that every new EV replaces the miles driven by an ICE. It’s like they assume that every EV sold means an ICE gets junked or stopped driving. So the IEA demand forecasts assume way too much demand destruction from new EV sales. But, as noted later in the memo, we expect to see forecasters reduce their assumption for EV adoption as they move to not assume the rate of growth in EVs isn’t as fast as EVs move to lower and middle income. (ii) Sustainable aviation fuel. Sustainable aviation fuel is the key item for the airline industry to reach its Net Zero targets. The problem with SAF is that it is very expensive relative to jet fuel and there won’t be enough supply. Climate change side has been trumpeting that there is a huge growth in SAF. That is correct, it is a huge growth, the amount of SAF tripled in 2022 but the IATA highlighted SAF*

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supplied only 0.1% of total 2022 jet fuel consumption. We expect to see the reality of SAF potential to be reflected in new forecasts. (iii) Offshore wind is having a huge pause. This has been the big news item over the past six months – offshore wind projects in the US and Europe are being paused or trying to be renegotiated due to insufficient returns to developers. This is pause has been now going on for six months or so, and will need to be addressed as they are projects that were approved by governments so assumed to be happening. Best case scenario is a pause of a year. So it pushes back assumed startup of wind. (iv) Hydrogen costs too much so no buyers will step up. Hydrogen is expected to be a key fuel for energy intensive uses. The problem is that it is too expensive and there haven't been any large buyers step up to commit to long term hydrogen such that hydrogen suppliers can commit the billions for large commercial supply. We expect to see more reflect a significant reduction in their hydrogen penetration forecasts.”

Fits our 2022 Prediction leaders to admit energy transition isn't working

Here is another item from our Oct 29, 2023 Energy Tidbits memo. “We don't expect to see many western leaders come out and directly say the energy transition isn't working but we do expect to see their actions reflect that conclusion. Our #1 prediction for 2022 was on this concept. We were probably 6 to 12 months early but it is unfolding. Here is what we wrote in our Dec 12, 2021 Energy Tidbits memo. “Its December and so analysts will soon be coming out with 2022 predictions, so we thought we would beat them with one of our main 2022 predictions. On Thursday, we tweeted [\[LINK\]](#) “Time for #2022Predictions. My #1 is more #EnergyTransition #NetZero leaders come out of closet, have a #MacronMoment ie. have "transition" not self inflicted shortage so 2021 energy crisis isn't every year. A return to #EnergySecurity = #Oil #NatGas #LNG strong thru 2030. #OOTT.” This should not surprise readers as we have been noting the start of energy transition leaders starting to admit, in a politician's manner, that the energy transition isn't working as per aspirations and energy costs will be a lot higher than aspired. We have said for years that the energy transition will happen, but it will take longer, be bumpy road and cost more than the aspirations. Last week's (Dec 5, 2021) Energy Tidbits wrote on the ADNOC CEO speech There was much more in the speech, which is why we tweeted [\[LINK\]](#) “If more leaders have a "Macron Moment" in 2022, maybe COP28 UAE in 2023 can be catalyst for getting down to work on practical, commercial, sustainable energy solutions: pro climate/pro growth? See SAF Group transcript of @SultanAhmedalj8 #ADIPEC keynote. #EnergyTransition #OOTT.” We do wonder if we will see more world leaders accept that the energy transition isn't working according to their aspirations and that there is an increasing risk of a decade of energy crisis like seen in Europe in H2/21 unless the world puts in an achievable energy transition plan.” We think COP26 will turn out to be turning point, but a turning point to force energy transition leaders into changing their plan. It why we think we will more of the energy transition leaders come out of the closet and admit this in 2022. But what got us to tweet this week was after seeing Saudi Aramco CEO Nasser speech at the WPC in Houston. Nasser said “There is one more thing that can no longer remain unsaid. A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private. They should say it publicly too. I understand their

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dilemma. Publicly admitting that oil and gas will play an essential and significant role, during the transition and beyond, will be hard for some.” So our #1 2022 Prediction is that we will see leaders come out of the close and admit, in a politician’s way, that the energy transition plan needs to be changed. The key result will be that fossil fuels are needed for way longer and the outlook for oil, natural gas and LNG will be stronger thru 2030 and beyond.“

Energy Transition: UK Labour Party cuts green investment plans by half

There was another big reminder this week that western leaders are accepting the reality that the energy transition is nowhere near on track. Earlier this morning, we tweeted [\[LINK\]](#) “ICYMI. UK Labour cuts £28bn green investment plan to £15bn. Blames interest rates increasing interest cost on govt debt. So that means cuts to plans like green are needed for proper fiscal spending. Less green investment = #Oil #NatGas will be needed for longer. #OOTT [\[LINK\]](#)” The UK election has still not been called but the general election poll tracker [\[LINK\]](#) still shows a huge lead by Labour at 45% vs the ruling Conservatives at 25%. That gap has been pretty steady the past four months. So, at least for now, it looks like Labour’s Keir Starmer is set to replace Sunak as PM. This week, the Labour Party made a massive change to their green investment plans in what looks like a fit to our above prediction about western leaders having to admit they are nowhere near their energy transition plans.. although they don’t say that. Rather like the Labour Party they blame interest rates as why they have to cut their green investment plan by half. The Guardian wrote [\[LINK\]](#) “Labour has cut its green investment plans by half, ending weeks of speculation and confirming the biggest and most controversial U-turn of Keir Starmer’s leadership. In a move that prompted an angry response from environmental groups, unions and some in the energy sector, Starmer and Rachel Reeves, the shadow chancellor, jointly announced they would slash the green prosperity plan from £28bn a year to under £15bn – only a third of which would be new money.” And “He added: “We announced the £28bn two and a half years or so ago, when interest rates were very, very low. Since then, Liz Truss crashed the economy and other damage has been done. [Interest rates] are now very, very high – interest on government debt is already tens of billions of pounds a year. “We’ve always said we have to be within the fiscal rules and fiscal rules come first.” Labour announced the £28bn spending plan in 2021, as Reeves promised to be the UK’s “first green chancellor”. She said at the time the money would be spent on battery manufacturing, hydrogen power, offshore wind, tree planting, flood defences and home insulation.” Our Supplemental Documents includes The Guardian report.

UK Labour party cuts green plan \$ in half

Energy Transition: Reminder warm winter in Europe = more wind generation in Europe

On Tuesday, we tweeted [\[LINK\]](#) “Europe Wind Generation 101. EU #NatGas prices down 8% this week driven by strong wind generation. It’s warm in Europe = more wind generation in winter. See 📌 12/06/23 post. Thx @BloombergNEF Adriana Martins, Andreas Gandolfo #OOTT.” Our prior Dec 6, 2023 tweet was on how there is a direct correlation in Europe of wind generation to winter temperature. So when its cold in Europe in the winter, that normally bring less wind generation and, conversely, if its warm in Europe in the winter, it normally brings more wind generation. Below is what we wrote in our Dec 10, 2023 Energy Tidbits memo.

Strong Europe wind generation

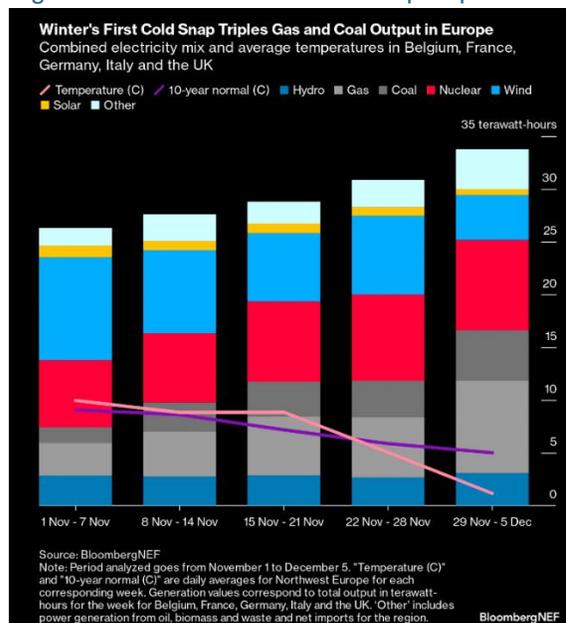
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Cold winter temps in EU typically bring decreasing wind generation

Here is what we wrote in our Dec 10, 2023 Energy Tidbits memo. “On Wednesday, we tweeted [LINK](#) “Europe wind generation 101. Winter: positive correlation. as temps drop, so does wind generation. #NatGaS has been saving the day this week. Good thing for people cold spell is ending & a warm winter is expected. Thx @BloombergNEF Adriana Martins, Andreas Gandolfo #OOTT.” BloombergBNEF posted a reported “Winter Cold Snap Triples European Coal and Gas Generation: BNEF.” Natural gas and coal have saved the day in Europe with the cold weather. BNEF wrote “The first cold week of the 2023/24 winter saw gas and coal output in Belgium, France, Germany, Italy and the UK rise sharply. Temperatures dropped to under 2C — almost 4C below the 10-year average — for the week commencing Nov. 29. This led to a week-on-week rise in electricity demand of 5%, and an accumulated 27% increase since temperatures started dropping at the beginning of November.” Besides the tripling of European coal and gas generation, nuclear generation was up 36%, BNEF also noted “nuclear output over the same period rose by 36%, meeting some of the increase in demand.” What we also noted was what we called Europe wind generation 101, when BNEF wrote “However, the cold spell also brought with it a halving of output from renewables. As temperatures dropped, wind speeds around Europe dipped. The correlation between wind output and temperature during the winter months — contrary to the summer seasons — is positive. This means as temperatures reduce, wind output is also expected to drop.” So getting colder in Europe in the winter typically means less wind electricity generation. Note also they warn about the summer in Europe that when it gets hotter in the summer, it typically means wind generation gets lower. Our Supplemental Documents package includes the BNEF report.”

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Figure 62: Winter's First Cold Snap Triples Gas and Coal Output in Europe



Source: BloombergNEF

Energy Transition: Maersk needs 5 mmt of green fuels, global production is 0.1 mmt

No one should be surprised to have seen the Maersk Chair and the CEO warning that there are nowhere enough green fuels for Maersk, let alone the shipping industry, reach green pledges. And it has to mean that another major area, shipping, is nowhere near being on track to deliver emissions cuts that are planned/assumed in the Energy Transition side's (including the IEA) views on emissions cuts. On Thursday, we tweeted [\[LINK\]](#) 'Shipping won't be any real help to reach IEA Peak #Oil Demand by 2030 "By 2030, A.P. Moller - Maersk alone will need up to 5 million tonnes of green fuels to deliver on our green pledges, while current global production of green methanol is under 100,000 tonnes" Maersk. #OOTT.' Maersk posted its "Letter from the Chair and the CEO" [\[LINK\]](#). They wrote "In 2023, we marked a noteworthy achievement in our efforts to decarbonise the logistics industry by introducing the world's first green fuel-enabled vessel – Laura Mærsk. As a pioneering force in decarbonising the industry, we are acutely aware that we heavily rely on the partnership and support from the industry, from regulations and, fundamentally, from our customers. To transition away from fossil fuels, collaboration across sectors is crucial. By 2030, A.P. Moller - Maersk alone will need up to 5 million tonnes of green fuels to deliver on our green pledges, while current global production of green methanol is under 100,000 tonnes. The need for green fuels in shipping is immense and the challenge to provide it is too big a task for any one company or investor to manage alone." Our Supplemental Documents package includes the Letter from the Chair and the CEO.

Maersk green fuels target

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Capital Markets: US govt debt service costs now more than defense spending

Early Thursday morning, we were flipping, as usual, between CNBC Squawk Box and Bloomberg Surveillance. Surveillance led off with noting how interest service costs on US debt had just reached the highest levels since 1940 and for the first time exceed defense spending. And to end that brief discussion Bloomberg's Jon Ferro came up with a great line that led us to tweet [\[LINK\]](#) "Sad but true line of the day. "so we can rely on people down in Washington DC to fix this" @FerroTV to @lisaabramowicz1 @annmarie re interest on US govt debt now highest % of GDP since WWII 1940, and now more than defense spending. #OOTT."

Interest on US govt debt highest since 1940

Capital Markets: Americans see inflation more of an issue in 2024 than 2023

On Thursday, Liz Everett Krisberg (head of Bank of America Institute) was on CNBC Squawk Box and gave a good reminder on why Americans still see inflation more of an issue in 2024 than 2023 despite inflation coming down. We tweeted [\[LINK\]](#) "Election yr. Biden doesn't want pump price jump so hard to enforce #Oil sanctions on Iran, RUS or resume on VEN. 🇺🇸 BofA Liz Everett Krisberg Americans say inflation more of an issue in 2024 as Big 3 (restaurants/bars, groceries, gas) "continue to be significantly higher". #OOTT @SquawkCNBC." Our tweet included a 1:19 min clip of her explanation on the conundrum that inflation is coming down but consumer confidence is not great and Americans see inflation more of an issue in 2024 than 2023. She said "what surprised me a bit was the majority of respondents said that inflation was going to be more of an issue in 2024 than in 2023. So that surprised me a bit because inflation is coming down." She then explained why. "think about what makes up inflation. It's a lot of different types of categories, right. But you're not purchasing something in every category every day or every month. What are the three categories consumers are purchasing the most. Our transaction data says it's restaurants and bars. It's groceries and it's gas. And if you look at those three categories, those three categories continue to be significantly higher. So inflation, the pace may have come down but the prices in those three categories are 25% higher than they were before the pandemic. So there is a sticker shock component to the consumer that I think is impacting their psyche."

Americans worry about inflation

Capital Markets: Isn't it inevitable that pension ages have to rise in OECD countries?

For decades, we have highlighted how demographics provide predictable medium and long range decision factors. It was a key to our early 2000's call for oil to be over \$50 (before the famous Goldman super spike call) as we used the China move from rural to urban areas as the basis for our call that China was emerging as an economic superpower. But other capital markets inevitabilities of an aging population in the west is increased health care and an inevitable shortfall in pensions. And for pensions, we have to believe the inevitable is that pension ages and retirement ages have to go higher. There has to be more people working relative to the number of people drawing from pensions and this is getting worse by longer life spans and especially in countries, like most in the west, that have declining birth rates. One of our surprises on the forthcoming pension crisis is that younger voters have made this an issue for governments to deal with so they will have pension benefits in 40 or so years. We were reminded of this by the Monday report by The Guardian "UK state pension age will soon need to rise to 71, say experts". The Guardian wrote "The retirement age will have to rise to 71 for middle-aged workers across the UK, according to research into the impact of growing life expectancy and falling birthrates on the state pension. The UK pension age of 66 is set to rise to 67 between May 2026 and March 2028. From 2044, it is expected to rise to

Warning on UK state pension

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68. But the research suggests that this is not enough, and that anyone born after April 1970 may have to work until they are 71 before claiming their pension.” It’s worth a read because it reminds that this is an issue that will have to be addressed in all western countries. Our Supplemental Documents package includes The Guardian report.

Capital Markets: UN FAO Food Price Index -1.0% MoM in January, -10.4% YoY

Other than two small blips in April and August 2023, the UN Food Price Index had declined for the past 16 months. But a decline in commodity food prices really hasn’t translated into a proportional decline in grocery food prices, or anywhere near that as the UN FAO Food Price index is a commodities measure and not a grocery store price measure. But it’s good news that food commodity prices continue to ease and hopefully these will ultimately work their way thru the added costs in the supply chain before they get to grocery stores prices. The UN global food price index was down MoM in January 2024. Last Friday, the UN posted its monthly update of its FAO Food Price Index [\[LINK\]](#) titled “FAO Food Price fell further in January mainly on lower wheat and maize prices”. Note that the index is calculated on a Real Price basis. The FFPI averaged 118.0 points in January, down -1.0% MoM from 119.2 points in December, and down -10.4% YoY. The FFPI reported mixed movements for most of its sub-indices in January. The Vegetable Oil Index was basically flat at +0.2% MoM after an decrease last month. The Dairy Price Index was also unchanged MoM, after three consecutive MoM increases, but is still down -12.8% YoY. The Cereal Price Index was down -2.2% MoM which is -18.6% YoY. The Meat Price Index was down -1.4% MoM and -1.2% YoY. The Sugar Price Index was up +1.1% MoM and still up 15.9% YoY. Overall, indicators are still trending downwards but there remains spots of resistance in the index.

UN food price index down MoM

Figure 63: UN FAO Food Price Index



Source: UN Food and Agricultural Organization

Q3/23 call, Loblaw says “grocers are not the reason for high food prices”

On Nov 15, Loblaw held its Q3 call and made sure they reminded investors that grocers aren’t the reason for high food prices, it’s the suppliers and other aspects of the supply chain. Loblaw’s Galen Weston said “Overall affordability remains a pressing issue on Canadians’ minds, and lower food prices remain a top priority for us throughout the business, from our stores to our supply chain, to our suppliers. And it’s important to reiterate that grocers are not the reason for high food prices, and so we are unable to resolve inflationary pressures on our own. Over the last two

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months, we have participated actively in discussions with government, shared ideas and have provided them with the details of the specific actions we have taken.” Loblaw CFO Dufresne emphasized they were reducing margins to help keep pricing down and that it was the suppliers who were still increasing price. Dufresne said “Our internal food inflation number was lower than food CPI. In fact, our actual inflation on food items as measured at our checkouts was significantly lower than food CPI, clearly demonstrating the role we are playing to help stabilize food prices for our customers. Since January, food inflation in Canada has been falling rapidly and consistently. While Canada continues to see lower food inflation than most of the world, we know that rising food prices have a real impact on Canadians and their families. Loblaw continues to invest to keep prices lower in our stores. The decrease in our food margin is evidence that our costs continue to grow faster than our prices. As we continue to do our part to fight inflation, we remain concerned about the level of commitment to this cause from some of our suppliers. Without the support of suppliers, it will be difficult for the industry to sustain the current momentum of falling food inflation. With lower supplier costs, we can lower prices on the shelf for customers. Unfortunately, several large global suppliers are still coming with higher-than-expected cost increases for next year.”

Demographic: Chinese “experts” think Year of Dragon will bring a mini-baby boom

Yesterday, we tweeted [LINK](#) “Wishful thinking to stop population decline? “Chinese people have a special preference for the zodiac sign “dragon,” and during the previous Year of the Dragon in 2012, there was a baby boom. expected that the birth rate in 2024 will see a significant increase” #OOTT.” China’s population has had two consecutive years of decline and it needs to see a big increase in birth rates. Our tweet included a Global Times (state media) report yesterday “Chinese experts forecast minor baby boom in the Year of Dragon due to cultural influence, post-pandemic rebound and policy support.” [LINK](#) Global Times wrote “Zhai Zhenwu, president of the China Population Association and a professor at Renmin University of China, has previously told media that Chinese people have a special preference for the zodiac sign “dragon,” and during the previous Year of the Dragon in 2012, there was a baby boom. Considering these factors, it is expected that the birth rate in 2024 will see a significant increase. China’s population decreased by 2.08 million people in 2023 to 1.40967 billion, the National Bureau of Statistics (NBS) data showed in January. In 2023, 9.02 million babies were born, resulting in a birth rate of 6.39 per thousand people.” Our Supplemental Documents package includes the Global Times report.

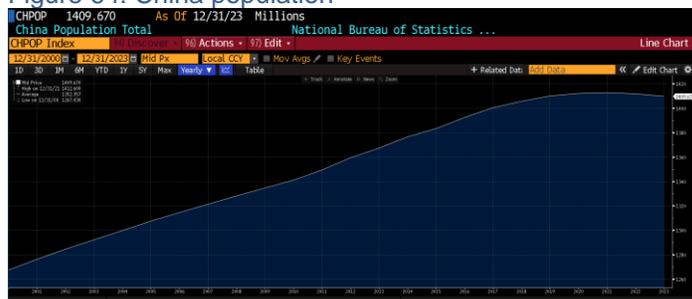
China births during Year of Dragon

China’s population shrinks for the 2nd year in a row

Here is what we wrote in our Jan 21, 2024 Energy Tidbits memo on China’s 2023 population statistics. “On Tuesday night, we tweeted [LINK](#) on the breaking news “China population down 2.08 million YoY to 1.40967b at 12/31/23. Population declined for 2nd consecutive year. In 2022, was down 0.85 million YoY to 1.41175b at 12/31/22. Peak population was 12/31/21 at 1.41260b. National Bureau of Statistics data courtesy of @business. #OOTT.” Bloomberg TV put on the screen the just released China National Bureau of Statistics data for population as of the end of 2022. And it was the second consecutive year of declining China population. China population peaked in 2021 at 1.4126 billion, declined by 0.85 million in 2022 to 1.41175 billion and declined a further 2.08 million in 2023 to 1.40967 billion.”

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Figure 64: China population



Source: Bloomberg, China National Bureau of Statistics

Global Times provided more color on the 2022 population detail

Here is another item from our Jan 21, 2024 Energy Tidbits memo. “Shortly after the numbers were released, *Global Times* (China state media) posted its report “China’s population decreases by 2.08 million in 2023 to 1.40967 billion” [\[LINK\]](#) that included more detail on the population changes. “In 2023, 9.02 million babies were born, resulting in a birth rate of 6.39 per thousand people. Meanwhile, 11.1 million people died in 2023, equal to a death rate of 7.87 per thousand people, the data showed.” Aging population: “In terms of age, the working-age population (aged 16-59) stood at 864.81 million, making up 61.3 percent of the total population. The population aged 60 and above was 296.97 million, accounting for 21.1 percent of the total population, with population aged 65 and above being 216.76 million, making up 15.4 percent of the total.” Continued shift of people from rural to urban areas: “Regarding urban-rural composition, the urban population was 932.67 million in 2023, an increase of 11.96 million compared to the previous year, while the rural population was 477.00 million, a decrease of 14.04 million. The urban population accounted for 66.16 percent of the total population, which increased by 0.94 percentage points compared to the previous year, according to the data”. There is more insights in the *Global Times* report. Our Supplemental Documents package includes the *Global Times* report.”

Demographics: North American retirees are “unretiring” to work

Korn Ferry posted a blog [\[LINK\]](#) ‘Unretiring’ to Work”, which said “For a growing number of older workers, retirement is turning out to be short-lived. In what is no longer just a trend but rather a permanent feature of the new world of work, more people are “unretiring” and returning to the workforce. According to a new survey, 12% of retirees aged 62 to 85 plan to go back to work this year, while one-quarter have already done so. Experts say unretiring is gaining momentum because it solves problems for both employees and employers. “Sixty-five isn’t as old as it used to be,” says John Long, North America retail sector leader at Korn Ferry, referring to the view from both sides of the hiring table. To be sure, just because retired people are looking for work doesn’t mean they’re going to find it—despite strong hiring figures.” We know many people who retired, most in their 50s, that have looked at coming back and the biggest challenge when potential employers drill down is that these individuals have been out of the work force during a period of big change. Korn Ferry didn’t get into the reasons for the decision to unretire. But the most common reason we see is no longer enough money to continue their planned retirement. Unfortunately, some were spooked by Covid and haven’t participated in the strong post Covid market returns. But other different

Retirees are unretiring

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factors are way higher cost inflation in home and warm weather climates and increasing cost to support longer living parents. Regardless, it something that is being explored by more retirees. There are some areas that we are seeing companies go after older people that have certain experience. Our Supplemental Documents package includes the Korn Ferry blog.

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

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

**@Energy_Tidbits
on Twitter**

LinkedIn: Look for quick energy items from me on LinkedIn

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

**Look for energy
items on LinkedIn**

Misc Facts and Figures.

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

Cdn Nick Taylor inlead for final 30 holes at WM Phoenix Open

It's going to be long day for Cdn glf star Nick Taylor today who is in the lead at the WM Phoenix Open. But with the weather this week in Phoenix, Taylor is only thru the 6th hole from the 3rd round. So, weather permitting, he will have to play 28 holes today to get the full 72 holes done. One of the weather issues has been they have had to wait to tee off in the mornings due to frost delays. Taylor is at -13 thru 6th hole of the 3rd round. There are currently 18 golfers within 5 strokes so he will have to keep playing well to win. The one negative will be a big drop in TV viewers. The Super Bowl kickoff is 4:30pm MT and the expectation is that the Phoenix Open will be running as long as it can, which has been around 7:15pm MT.

Americans to eat 1.45 billion chicken wings today

It's Super Bowl day so that means it's chicken wing day in the US. The National Chicken Council's 2024 Wing Report predicts Americans will eat 1.45 billion chicken wings today. The National Chicken Council wrote "*This year's projection is flat compared to 2023, with USDA reporting chicken production levels are slightly down from last year and wing stocks in cold storage down 13% in November compared to the year prior. This could explain the higher demand and thus the higher wholesale prices we are seeing on wings. At the retail level, fresh chicken wing prices are down approximately 5%, and frozen wing prices are down 11% compared to January of*

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2023, according to Circana data.” They also include some visuals on what 1.45 billion wings would represent such as “*If laid end-to-end, 1.45 billion wings would stretch 1/3 of the way to the moon.*” Our Supplemental Documents package includes the National Chicken Council report. [\[LINK\]](#)

7-Eleven sees “fresh foods” the key to getting US customers

We don’t think we are alone in thinking fast foods that have been under the heat lamp for a long time when we think about going to a 7-Eleven for something to eat. But, on Tuesday night, we were watching Bloomberg Markets Asia Open and saw their interview with the CEO of the parent company and we tweeted [\[LINK\]](#) “*On US growth, 7-Eleven CEO to @EngleTV. Need to change model from relying on gasoline & cigarettes to one "customers choose us based on our products .. key to this change is fresh food. "Hope he includes their rice ball (onigiri) expertise to NA.* [\[LINK\]](#)” We didn’t appreciate how 7-Eleven has been successful in fresh foods success in Japan, and is now selling over 2 billion rice balls (onigiri) a year. But they also serve other fresh foods. And now the CEO wants to bring the fresh foods success to the US and he sees that as the key to US growth. But, obviously, not rice balls but what fresh food is right for the different regions in the US. Onigiri are called rice balls but the more common form of onigiri sold in Japanese to-go is in the form of a triangle.

Why pre-packaged onigiri (rice balls) are sold in triangles - To keep nori crisp

To Japanese foodies, one of the big technology developments was when a machine was invented in the 1980’s to pre-package up onigiri for to-go. Prior to this, onigiri were made and wrapped in plastic wrap and the nori would be a little soggy as it was in contact with the rice. The new machine allowed onigiri to have its rice & stuffing, separate from the nori, but then be unwrapped in a manner that allowed the nori to be properly wrapped around the rice. As a result, the perfect triangle shape became the standard for pre-packaged onigiri and the nori is crisp when eaten.

Figure 65: Unwrapping a pre-packaged onigiri



Source: Bloomberg