

Energy Tidbits

December 15, 2024

Produced by: Dan Tsubouchi

AAV: WCSB Natural Gas Markets Likely Moving to Undersupply in H2/25 Driven by LNG Canada 1.8 bcf/d Phase 1 Start

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 1998 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. Advantage Energy reminds western Canada natural gas markets are expected to move to undersupply in H2/25 driven by the start up of LNG Canada 1.8 bcf/d Phase 1. [\[click here\]](#)
2. Kevin O'Leary plans world's largest AI data centre near Grande Prairie and will be powered by Alberta natural gas supply. [\[click here\]](#)
3. OPEC Dec MOMR reminds global oil demand will be seasonally down -1.37 mmb/d QoQ in Q1/25 vs Q4/24. [\[click here\]](#)
4. Upside wildcard to Q1/25 oil as Trump NSA pick Mike Waltz reminds "we have to constrain their [Iran] cash. We have to constrain their oil". [\[click here\]](#)
5. Cold temps led to HH +\$0.20 WoW to \$3.28, but NOAA still forecasts warmer than normal temps at Xmas to continue thru year end. [\[click here\]](#)
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: -190 bcf draw in US gas storage; now +67 bcf YoY

Last week, it was an Alberta Clipper bringing cold and snow to the US and this week it was an Arctic blast. So it has been cold the last two weeks in the Lower 48 and that led to largest storage draw this winter. This is now the fifth week of the traditional winter withdraw season, and the fourth consecutive week we have seen a draw, following a +42 bcf WoW build during the first week of Nov. For the week ending Dec 6, 2024, the EIA reported a -190 bcf draw [\[LINK\]](#). Total storage is now 3.747 tcf, representing a surplus of +67 bcf YoY compared to a surplus of +185 bcf last week. Since Feb, total storage had remained above the top end of the 5-yr range, until 1 month ago when storage dipped into the 5-yr range but two weeks ago we saw the storage once again rise above the max, but this week returned to below this figure. The week of Dec 6, 2024, saw storage come in -130 bcf below the previous 5-yr maximum of 3.877 tcf. Total storage is now +165 bcf above the 5-year average, below last week's +284 bcf surplus. Below is the EIA's storage table from its Weekly Natural Gas Storage report and a table showing the US gas storage over the last 8 weeks.

-190 bcf draw in US gas storage

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	12/06/24	11/29/24	net change	implied flow	Year ago (12/06/23)		5-year average (2019-23)	
					Bcf	% change	Bcf	% change
East	856	914	-58	-58	862	-0.7	859	-0.3
Midwest	1,055	1,115	-60	-60	1,063	-0.8	1,035	1.9
Mountain	282	289	-7	-7	244	15.6	212	33.0
Pacific	302	310	-8	-8	289	4.5	270	11.9
South Central	1,251	1,310	-59	-59	1,222	2.4	1,207	3.6
Salt	340	362	-22	-22	335	1.5	335	1.5
Nonsalt	911	948	-37	-37	886	2.8	872	4.5
Total	3,747	3,937	-190	-190	3,680	1.8	3,582	4.6

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

Source: EIA

Figure 2: Previous US Natural Gas Storage

Week Ended	Previous 8 weeks (Bcf)			
	Gas in Storage	Weekly Change	Y/Y Diff	Diff to 5 yr Avg
Oct/18	3,785	80	106	167
Oct/25	3,863	78	107	178
Nov/01	3,932	69	157	215
Nov/08	3,972	42	158	228
Nov/15	3,969	-3	141	239
Nov/22	3,967	-2	134	267
Nov/29	3,937	-30	185	284
Dec/06	3,747	-190	67	165

Source: EIA

Natural Gas: It was cold the week ended Dec 7

The big storage -190 bcf draw for storage the week ended Dec 6 was expected given the cold. On Monday, we posted [\[LINK\]](#) "HH #NatGas +\$.10 to \$.18 reflecting US heating degree days were 24 above normal for week ended Dec 7. The higher the HDDs = the more heat is required to heat at home. Look ahead, forecast is for 30 degree days below normal for

-190 bcf draw in US gas storage

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week ending Dec 14. Thx @business #OOTT.” Bloomberg had just reported on the NOAA heating degree days for the week ended Dec 7, which is one day different than the gas storage week. But it is indicative, and NOAA estimated HDDs were 189, which was +24 vs normal. And more HDDs means more heating demand.

Figure 3: NOAA estimated heating degree days for week ended Dec 7

Region	Dec. 7 Deviation	Dec. 7 HDD Total	Nov. 30 HDD Total
U.S.	24	189	151
New England	38	253	192
Middle Atlantic	34	233	178
South Atlantic	53	161	96
E N Central	48	276	216
W N Central	22	276	253
E S Central	70	211	134
W S Central	17	118	81
Mountain	-35	162	178
Pacific	-31	88	112

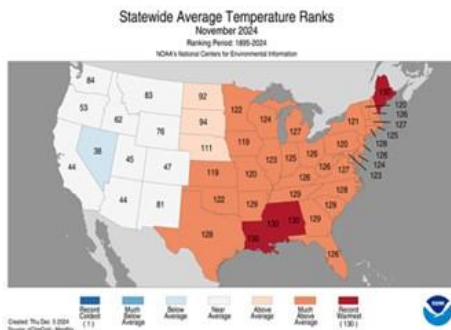
Source: Bloomberg, NOAA

Natural Gas: NOAA reported US Nov temperature was 6th hottest in last 130 years

HH was soft in Nov as it was really hot so not as much weather driven natural gas demand as normal. On Monday, the NOAA posted their Nov temperature recap for the U.S., which came in as the sixth warmest Nov in the 130 year record [LINK]. The average temperature was 45.3°F, which was +3.6°F above average. The NOAA wrote “The average temperature of the contiguous U.S. in November was 45.3°F, 3.6°F above average, ranking sixth warmest in the 130-year record. Generally, November temperatures were much-above average to record warm across much of the eastern half of the contiguous U.S. and near- to below average across large portions of the West. Louisiana, Mississippi, Alabama and Maine each ranked warmest on record with an additional 25 states ranking among their top-10 warmest November on record”. Below is a map of statewide average temperature ranks.

Nov was 6th hottest US on record

Figure 4: Statewide average temperature ranks



Source: NOAA

Natural Gas: NOAA forecasts warmer than normal temperatures over Xmas

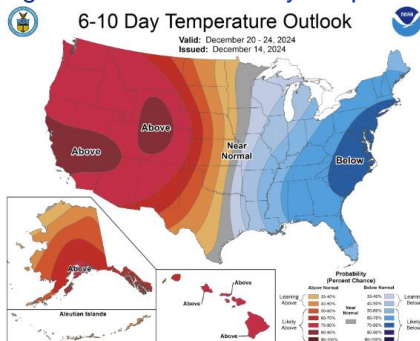
Winter temperatures are the largest driver, either positively or negatively to natural gas

Turning warmer than normal

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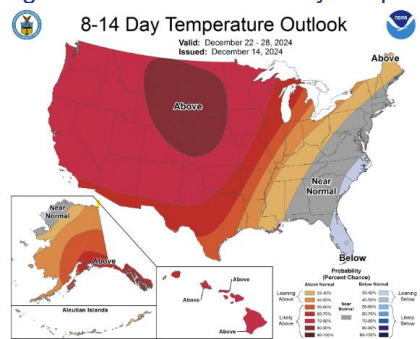
prices. It's been cold in the east and that moved HH natural gas prices +\$0.20 WoW to close at \$3.28 on Friday. And it looks like it is to turn warmer over Xmas in most of the Lower 48. Yesterday, we posted [LINK](#) "Not good for #NatGas if NOAA is right in forecasting warmer than normal temperatures over Xmas. @NOAA updated 6-10 & 8-14 day temperature forecast calls for warmer than normal temperatures across most of the Lower 48. #OOTT." Below are the NOAA Dec 7 updated 6-10 and 8-14 day temperature outlook maps that were attached to our post.

Figure 5: NOAA 6-10 day temperature forecast made Dec 14



Source: NOAA

Figure 6: NOAA 8-14 day temperature forecast made Dec 14



Source: NOAA

Natural Gas: Tough for HH prices to catch up if it's warm to end Dec/start Jan

Yesterday, we posted [LINK](#) "If @NOAA 's updated forecast for warmer than normal temperatures to end Dec turns out right, it's a reason to be cautious on #NatGas starting in a week or so. Other than 2022 when global #NatGas prices were driven up post RUS 02/24/22 UKR invasion, a warm Dec led to HH prices being seasonally weaker thru winter #OOTT." We were referring to NOAA's updated 6-10 and 8-14 day temperature forecasts that call for warmer than normal temperatures to end Jan. For years, we have warned on the risk to HH gas prices unless it's cold to start winter ie. in Nov/Dec. Unfortunately, that is what we have seen for the last five years other than when Russia invaded Ukraine in 2022. Here is the Bloomberg weekly graph as of the Friday Dec 13 close that shows the seasonal HH price

Risk to HH prices to end Dec

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moves. Russian invaded Ukraine on Feb 24, 2022 and that drove up global natural gas and LNG prices with Europe cutting off cheap Russia natural gas pipeline gas. Putting 2022 aside, all the other years have seen HH gas prices weaken in Dec when there was a warm start or even normal start to winter. The most important factor to natural gas prices is winter temperature. If NOAA's updated 6-10 & 8-14 day temperature forecasts are right, then we would expect to see the tone turn negative on natural gas prices over the next week or so. It just adds up to a reason to be cautious on natural gas.

Figure 7: HH gas prices seasonal comparison to Dec 13, 2024 close



Source: Bloomberg

Natural Gas: NOAA sees weak La Nina/normal conditions for winter 2024-25

On Thursday, the NOAA posted the updated monthly El Niño/La Niña outlook, which is issued on the 2nd Thurs of every month [\[LINK\]](#). NOAA continues to forecast La Niña/Normal conditions in Winter 2024-25. The takeaway from the November update is that there has been a slightly increased probability of a La Niña emergence this winter (up +2% to 59% from 57% in the previous forecast); the La Niña expected to begin in November - January and persist through March – May 2025. The probability forecast for Dec/Jan/Feb is 99% expectation for La Niña or normal conditions; NOAA wrote: “*The dynamical models in the IRI plume continue to predict a weak and a short duration La Niña, as indicated by the Niño-3.4 index values less than -0.5°C. This prediction is also reflected in the latest North American Multi-Model Ensemble (NMME), which continues to predict slightly cooler SSTs and weak La Niña conditions. The forecast team leaned toward predicting an eventual onset of weak and short-lived La Niña conditions, based on the model guidance and current atmospheric anomalies. Weak La Niña conditions would be less likely to result in conventional winter impacts, though predictable signals could still influence the forecast guidance (e.g., CPC’s seasonal outlooks). In summary, La Niña conditions are most likely to emerge in November 2024 - January 2025 (59% chance), with a transition to ENSO-neutral most likely by March-May 2025 (61% chance)*”.

**La Niña/Normal
forecast for winter
2024/25**

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Figure 8: NOAA El Nino probabilities

Official NOAA CPC ENSO Probabilities (issued December 2024)

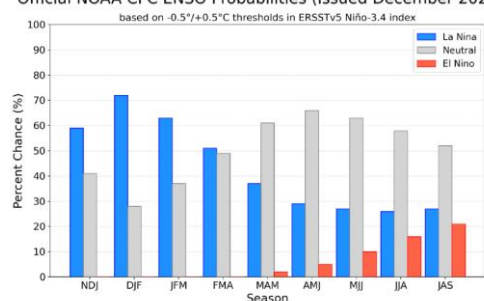


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-170°W). Figure updated 12 December 2024.

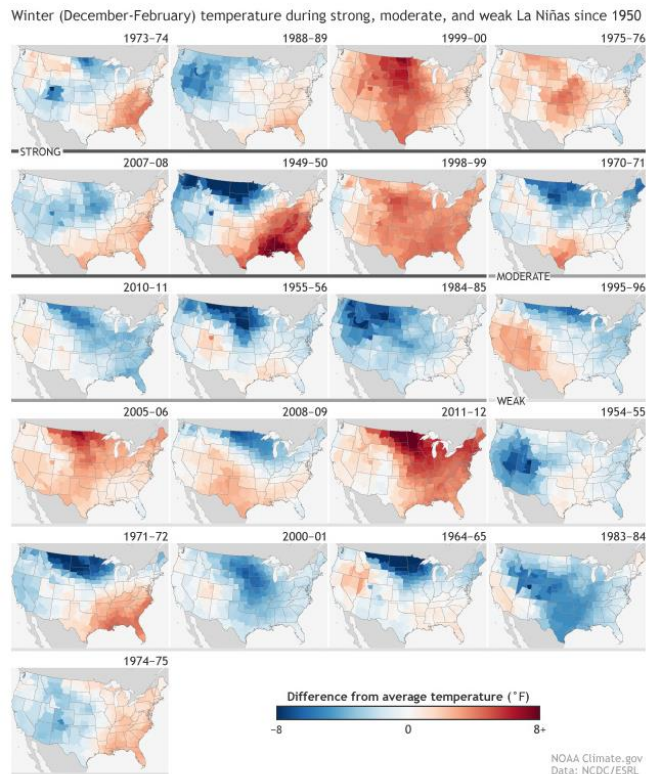
Source: NOAA

La Nina correlations to colder winters aren't perfect

La Nina winters are typically colder than normal in the northern U.S., but we remind of an October 6, 2017 NOAA brief: “*Temperature patterns during every La Niña winter since 1950*”. In this brief the NOAA looked at all El Niño winters since 1950, and classified them as strong, moderate or weak La Ninas while also showing the average winter (Dec thru Feb) temperature map. We checked this weekend and the link still works [\[LINK\]](#). NOAA wrote: “[the following] series of maps shows temperature patterns across the continental United States compared to the 1981-2010 average for every winter season—December through February—since 1950 that coincided with La Niña conditions in the equatorial Pacific Ocean. The years are ranked by how far below average the temperatures were in the central/eastern tropical Pacific: strong (at least -1.5° Celsius colder than average), moderate (between -1° and -1.5°C), and weak (between -0.5° and -1°C colder-than-average... In general, the stronger the La Niña, the more reliable the impacts on the United States. The typical U.S. impacts are warmer- and drier-than-average conditions across the southern tier of the United States, colder-than-average conditions across the north-central Plains, and wetter-than-average conditions in the Pacific Northwest stretching into northern California... However, as is evident in these maps, there is a great deal of variability even among strong La Niña events. For example, 8 of the 11 strong and moderate events show the cool conditions in the Northern Great Plains, which is most winters, but not all. This “failure” of the typical pattern occurs because La Niña is never the only thing that influences the climate over the United States during the winter. Other climate phenomena, such as the Arctic Oscillation or the Madden Julian Oscillation, as well as the random nature of weather can also play a large part in how a winter turns out”. It is important to note that in current forecast is for a weak and brief La Nina, which the NOAA notes above, is less correlated with significant impacts on conditions. Below are the La Nina maps from the NOAA brief.

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Figure 9: Winter (Dec-Feb) temp in strong, moderate and weak La Ninas since 1950



Source: NOAA

Natural Gas: EIA, Shale/tight gas production been flat 83-84 bcf/d for last 5 months

June marked the first month that the EIA stopped releasing its Drilling Productivity Report and began releasing shale/tight oil and natural gas data with the monthly Short Term Energy Outlook. (i) Please note this came with some major reporting changes, namely there are no longer monthly forecasts for tight gas production by basin. Previously, the EIA would provide an estimate of the current month tight/shale production (in this case November) and a forecast for the next month (in this case December). But now, the EIA only provides estimates for the just finished month for tight/shale. So, in the case of the new December report, there is only shale/tight for the just finished month, i.e., Nov. (ii) On Tuesday, the EIA released its monthly STEO for Dec 2024 [\[LINK\]](#). (iii) The key takeaway is that US shale/tight natural gas has been steady and strong the last four months around <84 bcf/d. July was 82.80 bcf/d, Aug was 83.09 bcf/d, Sept was 83.41 bcf/d, Oct was 83.69 bcf/d, and most recently, Nov was 83.78. (iv) Note that the EIA revised their data for shale/tight gas production back to 2020 from Oct’s STEO, and we have adjusted our table to reflect the updated data. For the last 12 months Nov 2023 thru Oct 2024, the EIA revises production figures each month, and the average revision for during the Nov STEO is +0.144 bcf/d. The

Shale/tight gas production

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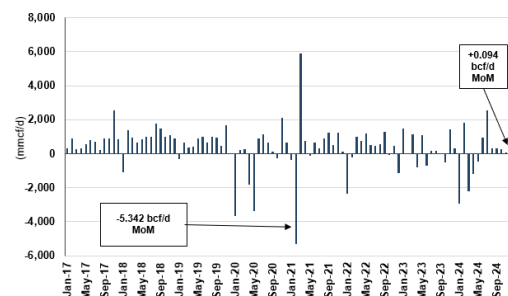
two areas with the most revisions are Woodford and Utica. Our Supplemental Documents package includes excerpts from the EIA STEO.

Figure 10: EIA Major Shale/Tight Natural Gas Production

field	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Nov MoM%	Nov YoY%
Permian	16,852	17,200	17,518	16,759	17,486	17,914	17,984	17,822	18,322	18,598	18,814	18,918	18,994	19,021	0.1%	10.6%
Haynesville	14,415	14,320	13,856	13,774	13,971	13,300	12,463	11,978	11,835	11,971	12,510	12,590	12,800	12,780	-0.2%	-10.8%
Marcellus	25,386	26,341	26,484	25,841	25,663	23,904	23,948	23,522	24,121	26,288	25,809	25,890	25,911	26,053	0.3%	-1.1%
Utica	6,136	6,292	6,420	6,175	6,306	6,294	6,222	6,350	6,369	6,390	6,382	6,335	6,332	6,328	-0.1%	0.6%
Eagle Ford	4,488	4,470	4,451	4,337	4,400	4,428	4,290	4,505	4,497	4,468	4,471	4,473	4,476	4,479	0.1%	0.2%
Bakken	2,574	2,614	2,662	2,265	2,542	2,558	2,619	2,647	2,634	2,614	2,663	2,775	2,687	2,698	0.4%	3.2%
Barnett	1,779	1,784	1,765	1,690	1,716	1,703	1,680	1,667	1,730	1,681	1,659	1,650	1,640	1,630	-0.6%	-6.8%
Fayetteville	878	872	862	774	846	844	777	825	821	822	823	825	826	827	0.1%	-5.2%
Mississippi	2,416	2,383	2,457	2,383	2,516	2,365	2,383	2,355	2,305	2,304	2,303	2,302	2,301	2,300	0.0%	-3.5%
Niobrara-Codell	2,727	2,780	2,810	2,670	2,825	2,864	2,784	2,790	2,761	2,803	2,815	2,827	2,840	2,852	0.4%	2.6%
Woodford	2,663	2,633	2,673	2,497	2,646	2,580	2,612	2,675	2,675	2,674	2,673	2,673	2,672	2,672	0.0%	1.5%
Rest of U.S.	2,220	2,291	2,334	2,181	2,250	2,176	2,091	2,159	2,169	2,184	2,169	2,155	2,149	2,142	-0.3%	-6.5%
Total	82,534	83,980	84,292	81,336	83,167	80,950	79,753	79,295	80,239	82,797	83,087	83,413	83,688	83,762	0.1%	-0.2%

Source: EIA

Figure 11: MoM Change – Major Shale/Tight Natural Gas Production



Source: EIA

Natural Gas: EIA STEO decreases 2024-25 gas production forecast

On Tuesday, the EIA released its monthly Short Term Energy Outlook for December 2024 [\[LINK\]](#). (i) The EIA made a decrease to its 2024 US natural gas production estimate by -0.2 bcf/d to 103.2 bcf/d, which, on a full year average basis, now gives a YoY decline of -0.6 bcf/d from 2023. The key reason for the YoY decline is the decision by some major natural gas producers such as EQT to shut-in natural gas due to low prices. (ii) The EIA increased its 2024 HH price forecast +0.02/mcf to \$2.28/mcf (was \$2.26/mcf) and increased their 2025 forecast +\$0.05/mcf to \$3.06/mcf (from \$3.01/mcf). The EIA wrote “The U.S. benchmark Henry Hub natural gas spot price averaged just over \$2.00 per million British thermal units (MMBtu) in November, down slightly from \$2.20/MMBtu in October. With cold late November and early December weather over much of the eastern part of the country, spot prices rose. We forecast the Henry Hub spot price will average \$3.00/MMBtu for the rest of the winter heating season, which ends in March, and just under \$3.00/MMBtu in 2025”. (iii) The quarterly changes in Natural Gas production are as follows: Q1/24 flat at 104.0 bcf/d, Q2/24 flat at 102.0 bcf/d, Q3/24 -0.4 bcf/d to 103.2 bcf/d, and Q4/24 -0.4 bcf/d to 103.5 bcf/d. (iv) The EIA decreased its 2025 forecast -0.8 bcf/d to 103.7 bcf/d, which, on a full year average basis, would be up +0.5 bcf/d YoY. The EIA says the reasons for the YoY increase are driven by their increased HH gas price assumption, as well as increased production in the Permian and Eagle Ford regions, where natural gas production is directly correlated with oil production. The quarterly changes to 2025 are as follows: Q1/25 down -1.0

EIA US natural gas production forecast

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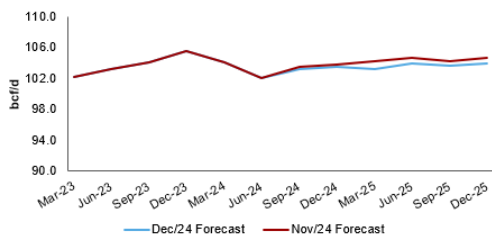
bcf/d to 103.2 bcf/d, Q2/25 -0.7 bcf/d to 104.0 bcf/d, Q3/25 -0.7 bcf/d at 103.6 bcf/d, and Q4/25 -0.7 bcf/d 103.7 bcf/d.

Figure 12: EIA STEO Dry Natural Gas Production Forecasts

bcf/d	Q1/23	Q2/23	Q3/23	Q4/23	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	Q1/25	Q2/25	Q3/25	Q4/25	2025
Dec-24	102.2	103.2	104.1	105.5	103.7	104	102.0	103.2	103.5	103.2	103.2	104	103.6	103.9	103.7
Nov-24	102.2	103.2	104.1	105.5	103.7	104	102.0	103.5	103.8	103.4	104.2	104.7	104.3	104.7	104.5
Oct-24	102.2	103.2	104.1	105.5	103.7	104.1	102.0	103.9	104.0	103.5	104.2	104.8	104.5	105.0	104.6
Sep-24	102.2	103.2	104.1	105.5	103.7	104.1	102.1	103.3	104.0	103.4	103.8	104.5	104.8	105.9	104.7
Aug-24	102.2	103.2	104.1	105.5	103.8	104.0	101.7	103.6	103.8	103.3	103.5	104.4	104.8	105.9	104.6
July-24	102.3	103.2	104.1	105.6	103.8	104.1	102.4	103.4	104.1	103.5	104.0	104.7	105.3	106.7	105.2
June-24	102.3	103.2	104.1	105.6	103.8	103.9	100.4	101.4	102.5	102.1	102.9	104.3	104.7	105.7	104.4
May-24	102.3	103.2	104.1	105.6	103.8	104.0	102.3	102.4	103.3	103.0	103.8	104.9	105.0	105.5	104.8
Apr-24	102.3	103.2	104.1	105.6	103.8	103.9	103.0	103.4	104.0	103.6	103.9	105.0	105.0	105.7	104.9
Mar-24	102.3	103.2	104.1	105.6	103.8	103.2	103.8	103.3	103.2	103.4	103.5	104.7	104.5	104.9	104.4
Feb-24	102.3	103.2	104.1	105.4	103.8	103.5	105.0	104.4	104.7	104.4	105.5	106.7	106.5	107.2	106.5
Jan-24	102.3	103.2	104.2	104.6	103.6	105.1	105.0	104.6	105.5	105.0	106.6	106.7	106.1	106.2	106.4
Dec-23	102.3	103.2	104.0	105.1	103.7	104.8	104.8	104.7	105.3	104.9					
Nov-23	102.3	103.2	104.1	105.1	103.7	105.1	104.8	104.7	105.9	105.1					
Oct-23	102.4	103.2	104.4	104.9	103.7	104.7	104.8	104.8	106.1	105.1					
Sep-23	102.1	102.8	102.7	103.1	102.7	104.3	104.7	104.9	105.9	104.9					
Aug-23	102.1	102.8	103.4	103.6	103.0	104.0	103.9	104.0	104.6	104.1					
July-23	102.0	102.2	103.0	102.2	102.4	101.8	101.5	102.5	103.7	102.4					
June-23	102.0	103.7	103.4	101.9	102.7	102.8	102.8	103.0	103.6	103.0					
May-23	102.1	101.9	99.9	100.4	101.1	102.7	101.1	101.4	101.8	101.2					
Apr-23	101.6	100.5	100.5	100.9	100.9	101.2	101.5	101.8	101.8	101.6					
Mar-23	101.0	100.2	100.6	101.0	100.7	101.4	101.4	102.0	102.0	101.7					
Feb-23	99.9	100.0	100.3	100.9	100.3	101.2	101.6	102.0	101.9	101.7					
Jan-23	100.8	99.9	100.1	100.6	100.3	101.1	101.8	102.7	103.6	102.3					

Source: EIA, STEO

Figure 13: EIA STEO Natural Gas Production Forecasts by Month



Source: EIA, STEO

Natural Gas: EIA STEO saw storage come in at 3.958 tcf at Nov 1/24, +216.0 bcf YoY

The EIA STEO also includes its forecast for US gas storage. (i) We typically note that our bias is to not pay much attention to gas storage forecasts past the start of winter 2024-25 until we get into Dec, and since we are now in the period, there is some greater near-term certainty to the start of winter temperatures. This is important because winter temperatures are the primary driving force for natural gas demand. (ii) EIA estimates US gas storage ended winter 2023/24 at 2.562 tcf at April 1, 2024, which was up +0.446 tcf YoY. (iii) As noted earlier, we remind that US gas storage would be a lot worse if producers like EQT hadn't shut-in natural gas production in response to low prices. The EIA reports that gas storage to start winter 2024/25, came in at 3.958 tcf at Nov 1, 2024, which is an increase of +216.0 bcf YoY. The December STEO is up vs the November STEO forecast of storage at 3.847 tcf at Nov 1, 2024. (iv) Ultimately winter temperatures will determine if storage coming out of winter is high or low. But, for now, the EIA forecasts gas storage to end winter 2024/25 in April at 2.177 tcf, which would be -385.0 bcf lower YoY. The key reason for less storage to end winter is that the EIA is assuming this winter is colder than last year's hot winter. The EIA assumes heating degree days will be +6% higher YoY during the upcoming winter. (v) There is even more uncertainty as you look out to winter 2025/26. The December STEO forecasts

EIA December STEO storage forecast

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winter 2025/26 storage to be 3.665 tcf at Nov 1, 2025, which would be a little lower than its forecast for Nov 1, 2024, at 3.958 tcf. Below is a table tracking the working gas inventory forecasts and actuals since 2016.

Figure 14: EIA STEO US Natural Gas in Storage (2016-2025)

		US Working Natural Gas in Storage (billion cubic feet)						
		Storage		2016-2025				
		Level	Low	High	Range	Average	Deviation	
Mar 2016	4/1/2016	2,486.3	1,184.9	2,562.4	1,377.6	1,873.7	32.7%	
Oct 2016	11/1/2016	4,012.7	3,236.3	4,012.7	776.4	3,624.5	10.7%	
Mar 2017	4/1/2017	2,062.5	1,184.9	2,562.4	1,377.6	1,873.7	10.1%	
Oct 2017	11/1/2017	3,816.5	3,236.3	4,012.7	776.4	3,624.5	5.3%	
Mar 2018	4/1/2018	1,184.9	1,184.9	2,029.4	844.5	1,653.4	(28.3%)	
Oct 2018	11/1/2018	3,236.3	3,236.3	4,012.7	776.4	3,624.5	(10.7%)	
Mar 2019	4/1/2019	1,559.4	1,559.4	2,332.5	773.1	1,919.0	(18.7%)	
Oct 2019	11/1/2019	3,610.0	3,501.1	3,931.6	430.6	3,663.5	(1.5%)	
Mar 2020	4/1/2020	2,332.5	1,559.4	2,332.5	773.1	1,919.0	21.5%	
Oct 2020	11/1/2020	3,931.6	3,501.1	3,931.6	430.6	3,663.5	7.3%	
Mar 2021	4/1/2021	1,975.0	1,559.4	2,332.5	773.1	1,919.0	2.9%	
Oct 2021	11/1/2021	3,532.8	3,501.1	3,931.6	430.6	3,663.5	(3.6%)	
Mar 2022	4/1/2022	1,611.8	1,559.4	2,332.5	773.1	1,919.0	(16.0%)	
Oct 2022	11/1/2022	3,501.1	3,501.1	3,931.6	430.6	3,663.5	(4.4%)	
Mar 2023	4/1/2023	2,116.5	1,559.4	2,332.5	773.1	1,919.0	10.3%	
Oct 2023	11/1/2023	3,742.2	3,501.1	3,931.6	430.6	3,663.5	2.1%	
Mar 2024	4/1/2024	2,562.4	1,559.4	2,332.5	773.1	1,919.0	33.5%	
Oct 2024	11/1/2024	3,958.2	3,501.1	3,931.6	430.6	3,663.5	8.0%	
Mar 2025	4/1/2025	2,177.4	1,559.4	2,332.5	773.1	1,919.0	13.5%	
Oct 2025	11/1/2025	3,665.4	3,501.1	3,931.6	430.6	3,663.5	0.1%	

Source: EIA, STEO

Natural Gas: AAV, WCSB gas markets undersupplied in H2/25 w/ LNG Canada Phase 1

We were surprised by the number of people who were surprised by our Tuesday post [LINK](#) on Advantage Energy calling for the WCSB gas markets being natural gas undersupplied in H2/25 driven primarily by the expected start of commercial LNG cargoes from LNG Canada 1.8 bcf/d Phase 1. We posted “Long awaited positive AECO #NatGas basis tightening is soon to happen in H2/25 says \$AAV. “WCSB gas markets likely to become undersupplied from 2H25 to 2027” Key driver is startup of #LNGCanada 1.8 bcf/d Phase 1 but also intra Alberta demand growth ie. oil sands, petrochemicals. #OTT.” Our surprise is that either forgot about or didn’t believe LNG Canada 1.8 bcf/d Phase 1 would be moving into commercial LNG cargoes. Advantage posted a new investor slide deck with the below chart on WCSB gas markets moving to undersupply in H2/25 for a period of 18 months. And then Advantage highlights the mid-longer term natural gas demand factors that should lead to increased call on WCSB natural gas.

WCSB gas markets move to undersupply in H2/25

Figure 15: WCSB Natural Gas Markets to move to undersupply



Source: Advantage Energy

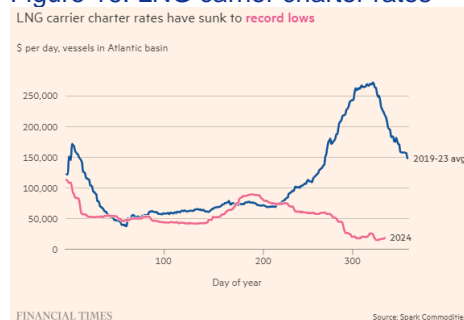
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Natural Gas: LNG tankers rates hit record low

Earlier this morning, we posted [LINK](#) “Need sustained cold temps. Another indicator NG buyers don't have big worry for #LNG winter supply or urgency to crank up LNG imports. LNG freight rates have hit record lows. New tankers amidst LNG supply delays. LNG exports volumes likely only +1% YoY in 2024 vs normal 6-8%. Thx @FT Shotaro Tani #OOTT #NatGas [LINK](#).” Yesterday, the FT posted its report “LNG freight rates plummet as sector grapples with glut of ships.” They included the below graph and highlighted how new LNG tankers have been added to the fleet in 2024 at a time where there have been delays in the timing for new LNG supply. And this has happened in a period when LNG export volumes in 2024 are only expected to be +1% YoY whereas the norm is around 6-8%. And FT notes “Additionally, Europe has not imported as much LNG as in previous years due to the high level of gas left in storage after last winter proved milder than normal, limiting the use of such vessels.” Later in the memo, we include our regular item on how LNG imports into NW Europe are -563 bcf YoY thru Dec 8. We look at the record low LNG tanker rates are another indicator that buyers are not worried about LNG supply this winter. Below is the FT chart.

LNG tanker rates hit record low

Figure 16: LNG carrier charter rates



Source: FT

Natural Gas: Santos signs 0.05 bcf/d (at plateau) 12-year LNG deal with Shizuoka Gas

On Thursday, Santos announced it signed a long-term 12-year LNG sales agreement with Shizuoka Gas for 0.05 bcf/d (at plateau) for 12 years beginning in 2032 [LINK](#). The LNG is to be delivered on Ex-Ship terms, the press release reported: “The long-term SPA will supply between 0.35 and 0.4 million tonnes per annum of LNG at plateau. The contract term is 12 years, commencing in 2032 on Delivered Ex-Ship (DES) terms”. Kevin Gallagher, MD and CEO of Santos said “This SPA builds upon Santos’ equity LNG portfolio and establishes a long-term relationship with Shizuoka, a Japanese gas utility providing natural gas within the Shizuoka region of Japan. The agreement underscores Santos’ commitment to providing reliable, cost competitive energy within the Asia-Pacific region. Additionally, we look forward to future discussions on Santos’ carbon capture and storage, and synthetic gas opportunities”. Our Supplemental Documents Package includes the Santos press release.

Santos / Shizuoka Gas sign 12-yr LNG supply deal

There have been 27.64 bcf/d of long-term LNG supply deals since July 1, 2021

The abrupt big wave of LNG deals started in July 2021, and we highlighted this 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 continue to update that table, which now shows 27.64 bcf/d of long-term LNG deals

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since July 1, 2021. 65% 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 (i.e. Chevron, Shell, etc.) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 43% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and European LNG buyers new long-term supply deals since July 1, 2021.

Figure 17: 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	Start	Date	Buyer	Seller	Country	Volume (bcfd)	Duration	Start	End	
Asian LNG Deals															
Jul 7, 2021	CHNOC	Petronas	China / Canada	0.30	10.0	2022	2032								
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.18	10.0	2022	2037								
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034								
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045								
Sep 29, 2021	CHNOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037								
Oct 7, 2021	Shenzhen	China / US		0.04	10.0	2023	2032								
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035								
Nov 4, 2021	Unipeq	Venture Global LNG	China / US	0.46	20.0	2023	2043								
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043								
Nov 5, 2021	Sinopec	China / US		0.04	10.0	2023	2032								
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043								
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034								
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037								
Dec 10, 2021	Suzhen Oilfield Energy	QatarEnergy	China / Qatar	0.13	10.0	2022	2037								
Dec 15, 2021	SPIC Guangzhou	BP	China / US	0.03	10.0	2023	2033								
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043								
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032								
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035								
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039								
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053								
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046								
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046								
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.28	20.0	n.a.	n.a.								
Apr 6, 2022	ENN	NextDecade	China / US	0.20	20.0	2026	2046								
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043								
May 2, 2022	Gurur Singapore Pte	Energy Transfer	Singapore / US	0.26	20.0	2026	2046								
May 2, 2022	SK Gas Trading LLC	Energy Transfer	Korea / US	0.05	18.0	2026	2042								
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.								
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.18	20.0	n.a.	n.a.								
May 24, 2022	Harwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039								
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036								
Jun 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051								
Jun 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047								
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050								
Jul 26, 2022	PIT Global	Cheniere	Thailand / US	0.13	20.0	2024	2046								
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046								
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046								
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053								
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.								
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035								
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.								
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.								
Feb 23, 2023	China LNG Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.								
Mar 6, 2023	Gurur Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042								
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.								
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 Bangladesh	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	Petronas	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	Gurur Singapore Pte	Energy Transfer	Singapore / US	0.10	15.0	2026	2041								
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	Kai Lisims LNG	Singapore / Canada	0.26	20.0	2027	2047								
Jan 11, 2024	Exocoil	Mexico Pacific Ltd	Singapore / Mexico	0.13	20.0	2024	2044								
Jan 29, 2024	Exocoil	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								
Feb 19, 2024	Deepak Fertilisers	Equinor	India / Norway	0.09	15.0	2026	2041								
Feb 28, 2024	Kogas	Woodside	Korea / Australia	0.07	10.5	2026	2037								
Feb 29, 2024	Sembcorp	TotalEnergies	Singapore / France	0.11	16.0	2027	2043								
Apr 29, 2024	Kogas	BP	Korea / Singapore	0.12	11.0	2026	2037								
May 26, 2024	AMNS	Shell	India / Canada	0.05	10.0	2027	2037								
May 28, 2024	Hokkaido	Santos	Japan / Australia	0.05	10.0	2027	2037								
Jun 4, 2024	IOCL	TotalEnergies	India / France	0.11	10.0	2026	2036								
Jun 5, 2024	CPC	QatarEnergy	Taiwan / Qatar	0.53	27.0	2025	2052								
Jul 11, 2024	CPC	Woodside	Taiwan / Australia	0.79	10.0	2024	2034								
Aug 6, 2024	Osaka Gas	ADNOC	Japan / UAE	0.11	10.0	2028	2038								
Aug 26, 2024	KPC	QatarEnergy	Kuwait / Qatar	0.39	15.0	2025	2040								
Aug 26, 2024	POSCO International	Mexico Pacific Ltd	Korea / Mexico	0.09	20.0	2027	2047								
Sep 2, 2024	BOTAS	Shell	Turkey / UAE	0.39	10.0	2027	2037								
Sep 2, 2024	Indian Oil	ADNOC	India / UAE	0.13	15.0	2028	2043								
Sep 17, 2024	JERA	Woodside Energy	JERA / Woodside	0.05	10.0	2026	2036								
Sep 18, 2024	BOTAS	TotalEnergies	Turkey / France	0.15	10.0	2027	2037								
Nov 4, 2024	Sinopec	TotalEnergies	China / France	0.26	15.0	2028	2043								
Nov 4, 2024	Sinopec	TotalEnergies	China / France	0.26	15.0	2028	2043								
Nov 14, 2024	GAIL	ADNOC	India / UAE	0.07	10.0	2026	2036								
Dec 2, 2024	Shell	QatarEnergy	China / Qatar	0.39	n.a.	2025	n.a.								
Dec 2, 2024	Petronas	ADNOC	Malaysia / UAE	0.13	15.0	2028	2043								
Dec 5, 2024	Chevron	Sembcorp	Singapore / Singapore	0.09	10.0	2028	2038								
Dec 5, 2024	Shizuoka Gas	Santos	Japan / Australia	0.05	12.0	2032	2044								
Total Asian LNG Buyers New Long Term Contracts Since Jul21							17.96								
Non-Asian LNG Deals															
Jul 28, 2021	PGNIG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043								
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041								
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044								
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043								
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043								
May 17, 2022	PGNIG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.								
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.								
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041								
Jun 21, 2022	Engie	NextDecade	France / US	0.34	15.0	2026	2046								
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047								
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.								
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042								
Jul 13, 2022	Vitol	Venture Global LNG	US / Mexico	0.26	20.0	2022	2042								
Aug 9, 2022	Centrica	UK / US		0.07	15.0	n.a.	n.a.								
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046								
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.25	20.0	2022	2042								
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.								
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.								
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035								
Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU/US	0.13	20.0	2027	2047								
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035								
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046								
Apr 24, 2023	Hartree Partners LP	Delin Midstream	US / US	0.08	20.0	n.a.	n.a.								
Apr 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042								
Jun 22, 2023	SEFE	Venture Global LNG	EU/US	0.30	20.0	2026	2046								
Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036								
Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040								
Jul 28, 2023	OMV	BP	Australia/UK	0.13	10.0	2026	2036								
Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045								
Aug 22, 2023	BASF	Cheniere	Germany / UK	0.10	17.0	2026	2043								
Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035								
Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053								
Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qatar	0.46	27.0	2026	2053								
Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053								
Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043								
Nov 29, 2023	OMV	Cheniere	Netherlands / US	0.11	15.0	2029	2044								
Dec 5, 2023	Woodside Energy	Mexico Pacific Ltd	Australia / Mexico	0.17	20.0	2024	2044								
Mar 18, 2024	SEFE	ADNOC	Germany / UAE	0.13	20.0	2024	2044								
Apr 17, 2024	Shell	Oman LNG	US / Oman	0.21	10.0	2025	2035								
Apr 22, 2024	TotalEnergies	Oman LNG	France / Oman	0.11	10.0	2025	2035								
May 8, 2024	EnBW	ADNOC	Germany / UAE	0.08	15.0	2028	2043								
June 13, 2024	Saudi Aramco	NextDecade	Saudi Arabia / US	0.16	20.0	2028	2048								
June 26, 2024	Saudi Aramco	Sempra Infrastructure	Saudi Arabia / US	0.66	20.0	2029	2049								
July 23, 2024	Fluxys	ConocoPhillips	Belgium / US	0.10	18.0	2027	2045								
Aug 5, 2024	Galp	Cheniere	Portugal / US	0.07	20.0	2030	2050								
Sep 19, 2024	Uniper	ConocoPhillips	Germany / US	0.10	10.0	2026	2036								
Sep 19, 2024	Glencore	Commonwealth LNG	Switzerland / US	0.26	20.0	2026	2046								
Sep 23, 2024	SEFE	ConocoPhillips	US / European	0.09	10.0	2025	2035								
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul21							9.69								
Total New Long Term LNG Contracts since Jul21														27.64	
<small>*Excludes Asian short term/spot deals</small>															
<small>**For Dec 29, 2021 CHNOC agreed to buy an additional 0.13 bcfd from Venture Global for an undisclosed shorter period</small>															
<small>Source: Bloomberg, Company Reports</small>															
<small>Prepared by SAF Group. https://safgroup.com/news-insights/</small>															

Source: SAF

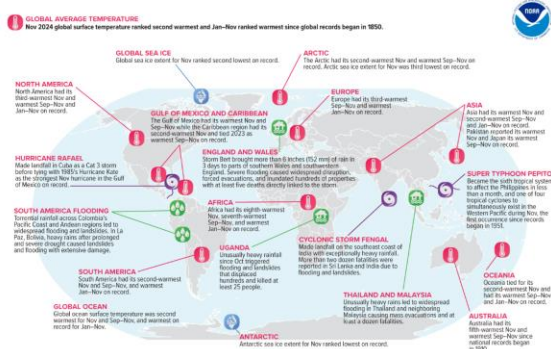
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Natural Gas: NOAA, second warmest November globally in the last 175 years

In November we typically begin to see a pickup in winter temperature driven natural gas demand season. On Thursday, the NOAA posted their November recap for the global climate, which came in as the second warmest November in the last 175 years [\[LINK\]](#). The NOAA wrote “*The November global surface temperature was 1.34°C (2.41°F) above the 20th-century average of 12.9°C (55.2°F), making it the second-warmest November on record. This was 0.05°C (0.09°F) below last year’s record warm month. November 2024 marked the 48th consecutive November (since 1977) with temperatures at least nominally above the 20th-century average*”. Below is a map of selected significant climate anomalies and events from November, as well as the land & ocean temperature percentiles for November 2024.

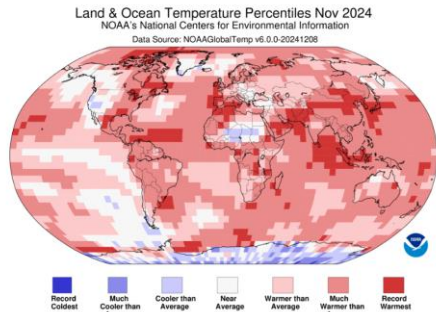
Second warmest November on record globally

Figure 18: Selected Significant Temperature Anomalies for November 2024



Source: NOAA

Figure 19: Land & Ocean Temperature Percentiles for November 2024



Source: NOAA

Natural Gas: India November natural gas production down -1.3% MoM, down -2.3% YoY

India domestic natural gas production peaked in 2010 at 4.60 bcf/d, and then ultimately declined to average 2.80 bcf/d in 2020-2021. India returned to modest growth in 2021/2022, which was followed by several months of relatively flat production but modest production growth returned in 2023. Recently it has been back from flat to modestly down in 2024. On Friday, December 13, India’s Petroleum Planning and Analysis Cell released their monthly report for November’s natural gas and oil statistics [\[LINK\]](#). India’s domestic natural gas

India natural gas production down MoM, down YoY

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production for November was 3.50 bcf/d, which was down -1.3% MoM from 3.54 bcf/d in October. On a YoY basis, natural gas production was down -2.3% from 3.58 bcf/d in November 2023. Our Supplemental Documents package includes excerpts from the PPAC monthly.

Natural Gas: India LNG imports up +3.7% MoM to 3.46 bcf/d in Nov, up +25.9% YoY

For the past several years, India has increased LNG imports whenever domestic natural gas production was flat or decreased. The overriding factor for India tends to be price; if price is high, India pulls back on LNG imports and will normally turn to coal. If prices are low, like was seen this year, then India tends to pick up spot cargoes. India is an opportunistic LNG spot buyer. On Friday, December 13, 2024, India's Petroleum Planning and Analysis Cell released their monthly report for November's natural gas and oil statistics [\[LINK\]](#). Over the past 3 years, India's LNG imports have declined from a 2020-2021 peak of 3.84 bcf/d in Oct 2020 to just 2.85 bcf/d in Jan 2021 and lower in 2022. November's 2024 LNG imports were 3.46 bcf/d, which is up +3.7% MoM from 3.34 bcf/d in October. LNG imports are now up +25.9% YoY from 2.75 bcf/d in November 2023. Our Supplemental Documents package includes excerpts from the PPAC monthly.

India LNG imports up MoM, up YoY

Natural Gas: JMA forecasts see colder than normal temps in Japan in Dec and Jan

In Japan, the weather has turned to winter temperatures and the JMA forecasts colder than normal temperatures for the rest of Dec, and the first two weeks of Jan. On Thursday, the Japan Meteorological Agency updated it's temperature forecast for the next 30 days, Dec 14 - Jan 13, in Japan [\[LINK\]](#). There is no JMA commentary on the forecast. JMA is calling colder than normal temperatures during the period, with a 50% probability of below-normal temperature occurrences forecasted everywhere, except Hokkaido, which is forecasted to have a 60% probability of a below-normal temperature occurrence. During the first 10 days of January, the JMA forecasts that there is a +40% probability of above normal temperature occurrence everywhere. In the last week of December, the forecast expects a near-normal temperature occurrences everywhere except Hokkaido, which is forecasted to have a 40% probability of a below-normal temperature occurrence. It is important to note that last week marked a turn to colder temperature forecasts in Japan. We checked AccuWeather for Tokyo and for the period there are forecasted daily highs in the 9-12C range and overnight lows from 1-3C. This has the potential to drive a little bit of electricity heating demand during the day, and more during the nights. Below is the JMA temperature forecast for Dec 14 – Jan 13.

JMA temperature forecast for next 30 days

Figure 20: JMA Average Temperature Outlook for Dec 14 – Jan 13



Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks up WoW and down YoY; down against to 5-yr avg

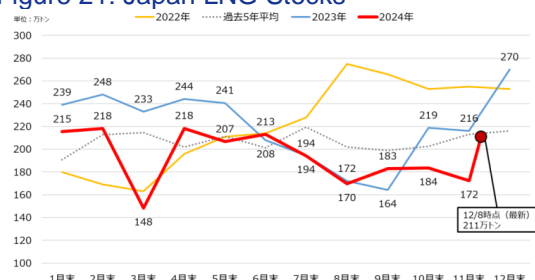
Japan's LNG stocks are up WoW, down YoY, and are down when compared to the 5-year

Japan LNG stocks up WoW

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average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK](#). LNG stocks on December 8, were 101.3 bcf, up +11.6% WoW from December 1, figures of 90.8 bcf, and down -21.9% from 129.7 bcf from a year ago. Stocks are down compared to the 5-year average of 103.7 bcf. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 21: Japan LNG Stocks



Source: METI

Natural Gas: China Nov natural gas imports up +6.1% MoM, down -1.4% YoY

We typically highlight that, where possible, China favors imports of cheaper natural gas from pipelines over more expensive LNG imports but will take advantage of lower LNG spot pricing when possible, however, this week we only have the Bloomberg report which does not have the split between LNG and natural gas via pipeline; once the GACC publishes the full data set in the next week we will be able to report on the split. In November, China saw natural gas imports rise +6.1% to 17.3 bcf/d from 16.3 bcf/d in October and fall -1.4% YoY from 17.5 bcf/d. Our Supplemental Documents package includes the Bloomberg report.

China natural gas imports

Natural Gas: Russia continues to ship NatGas despite Ukraine control of Sudzha

It's been over a few months since Ukraine invaded the Russian region of Kursk and took over control of the Sudzha natural gas intake station in Russia for transport on the last remaining open natural gas intake station in Russia for transport on the last remaining open natural gas pipeline allowed to export Russian natural gas to central European countries. Europe TTF gas prices were up 5% when Ukraine took over Sudzha on fears of supply interruption. However, at least so far, Gazprom has confirmed almost daily, if not daily, that there has been no interruption in natural gas supplies. Bloomberg reports on the Gazprom volumes most days and the latest confirmation we saw was on Friday Dec 13 that Gazprom continues to ship the same volume of natural gas of 1.50 bcf/d via Sudzha. And then yesterday morning, TASS reported [LINK](#) "Gazprom supplies gas for Europe through Ukraine in the volume of 42.4 million cubic meters (mcm) per day to the Sudzha gas pumping station in Russia's Kursk Region, a Gazprom representative told reporters on Saturday, adding that the request for pumping through the Sokhranovka gas station had been rejected by the Ukrainian side. "Gazprom supplies Russian gas for transit through Ukrainian territory in the volume confirmed by the Ukrainian side via the Sudzha gas pumping station of 42.4 million cubic meters as of December 14. The request for the Sokhranovka gas pumping station has been rejected," he said. On the previous day, the pumping also equaled 42.4 million cubic meters." Below is a 2018 map from Oxford Institute for Energy Studies showing Sudzha.

Russia still shipping gas

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Figure 22: The Ukrainian pipeline system



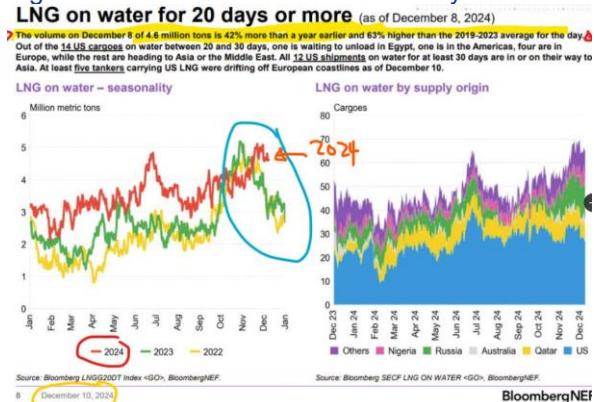
Source: OIES
Source: Oxford Institute for Energy Studies

Natural Gas: LNG cargoes drifting off Europe, LNG on water >20 days not declining

On Tuesday, we posted [\[LINK\]](#) “Another indicator need some sustained colder temps in EU & Asia. LNG on water for >20 days is not having normal Dec decline and is +42% YoY and +63% vs 2019-23 average. US LNG cargoes drifting off EU coast. Thx @BloombergNEF #OOTT.” LNG on water >20 days is just one indicator of a well supplied market but it jumped out at us that LNG on water >20 days has not been declining as normally happens at the end of Nov/beginning of Dec. And our posted included a BloombergNEF report “Europe is seeing US LNG cargoes drift off its coasts: BNEF Chart. At least five US liquefied natural gas shipments were drifting off European coastlines as of Dec 10. Three of them have been in transit for at least 20 days as of Dec 8. This coincided with a weekly drop in deliveries from Dec 2-8 into Northwest Europe and Italy by 0.6 million metric tons from its 2024 peak a week earlier.”

LNG cargoes drifting off Europe

Figure 23: LNG on water for 20 days or more



Source: Bloomberg LNG5202T Index +GD, BloombergNEF
December 10, 2024

Natural Gas: NW Europe LNG imports down big YoY, down ~563 bcf, -1.64 bcf/d YTD

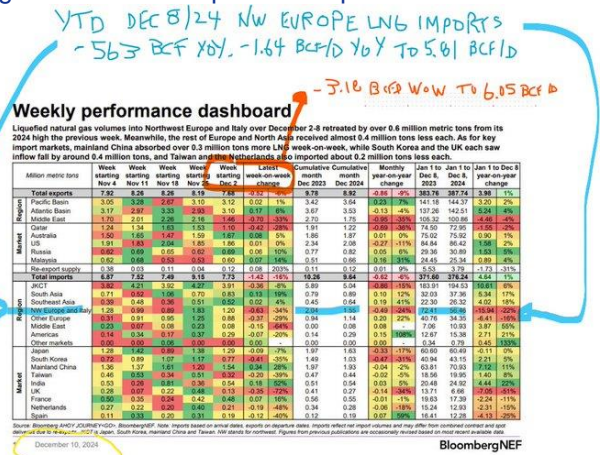
On Tuesday, we posted [\[LINK\]](#) “Need sustained colder weather in EU Any urgency to get more LNG imports into NW Europe only lasted a week. NW EU #LNG imports -3.18 bcf/d WoW to 6.05 bcf/d for Dec 2-8. YTD Dec 8/24, NW EU LNG imports -563 bcf YoY or -1.64

Europe LNG imports down big in 2024

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bcfd YoY to 5.81 bcfd. Thx @BloombergNEF #OOTT". It's been a solid Dec for Europe TTF natural gas prices driven by some colder temperatures and low wind generation. And there continues to be the wildcard of escalated attacks by Russia and Ukraine. But with the colder weather and low wind, gas storage is down. Europe's gas storage would have been way worse coming into the winter if it hadn't significantly reduced LNG imports over Q2 and Q3 due to the possibility of storage being full early. LNG imports into NW Europe are down big YoY in 2024. On Tuesday, BloombergNEF posted its LNG Trade Weekly. BloombergNEF estimates NW Europe LNG imports were -3.18 bcfd WoW to 6.05 bcfd for the Dec 2-8 week. NW Europe LNG imports that are down -563 bcf YoY or -1.64 bcfd YoY for YTD Dec 8. Our tweet included the below BloombergNEF chart.

Figure 24: NW Europe LNG Imports Dec 8



Source: BloombergNEF

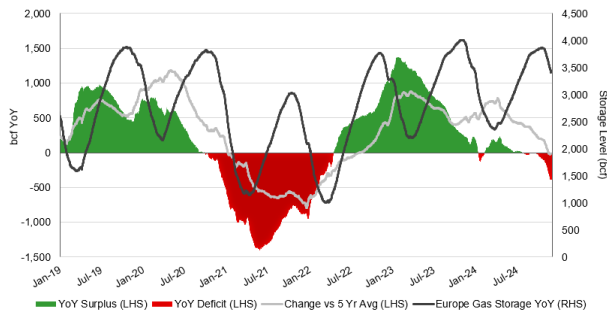
Natural Gas: Europe storage down -3.4% WoW to 80.2% full, down -10.3% YoY

There have been gas storage draws in Europe with the recent colder temperatures and the low wind generation last week. The good news for Europe was that storage was fairly full to start the winter and the forecasts are for warmer weather this week. Europe gas storage would have been effectively full if they hadn't cut back on LNG imports in Q2 and Q3. We have been highlighting that a big LNG theme in Q2 and Q3 was how NW Europe reduced LNG imports because storage was very high YoY leaving winter 2023/24. It got to +95% full, which we have been saying was what we considered to be effectively full. This week, on December 11, Europe storage was down -3.4% WoW to 80.2% vs 83.6% on December 4. Recall that winter 2023/24 was one of the hottest winters in Europe. Storage is now down -10.3% from last year's levels of 90.4% on December 11, 2023, and down against the 5-year average of 82.7%. Below is our graph of European Gas Storage Level.

Europe gas storage

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Figure 25: European Gas Storage Level



Source: Bloomberg, SAF

Ukraine storage is currently ~7% of total Europe gas storage volume

We have been breaking out Ukraine gas storage levels since the Mar/Apr Russian bombing of the Ukraine natural gas storage, which only impacted some above ground natural gas infrastructure. But it also reminded of the risk to Europe gas storage from Russia attacks. We broke out the Ukraine storage data from the above Europe data we monitor weekly from the GIE AGSI website [\[LINK\]](#), and, on December 11, 2024, natural gas in Ukraine storage was at 21.7% of its total capacity, down compared to 21.9% of its total capacity on December 4. Last year, Ukraine storage started the winter on Nov 1, 2023, at 39.38%. Right now, Ukraine makes up ~7% of Europe’s natural gas in storage and, at the beginning of winter 2023/24, it was ~10% of Europe’s natural gas in storage. Below is a map of Ukraine’s major gas storage facilities.

Figure 26: Ukraine Gas Storage Facilities as of June 2023



Source: Bloomberg

Oil: U.S. oil rigs surprisingly flat WoW and down -19 rigs YoY to 482 oil rigs

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note Baker

US oil rigs flat WoW

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Hughes no longer breaks out the basin changes by oil vs gas rig type. (ii) Total U.S. oil rigs were flat WoW at 482 oil rigs as of Dec 13, 2024. The flat rig count was a surprise, as we expected US rigs would decline after Thanksgiving and continue this decline until just past Xmas as this is what has happened every year. U.S. oil rigs are now down -19 oil rigs YoY. The smaller YoY difference is because, in 2023, US oil rigs went below 520 rigs on Aug 25, 2023 and then were lower in the 490-510 rigs for several months. But then dropped down to 477 on July 19, 2024, which was the lowest oil rig count since Dec 2021. U.S. Oil rigs are currently down -19 YoY to 482 rigs, which is slightly above the recent lows of July 2024 (iii) Note we can see the basin changes but not by type of rig; the WoW changes at the major basins were as follows; Eagle Ford -2 rigs, Granite Wash +1 rig, Haynesville +1 rig WoW, and Marcellus -1 rig WoW. (iv) The overlooked U.S. rig theme is the YoY declines, which have begun to taper as Q4 2023 saw activity leveling off, however, it is still important to note the YoY change. Total U.S. gas and oil rigs are down -35 rigs YoY to 585 rigs including US oil rigs -19 oil rigs YoY to 482 oil rigs. And for the key basins, the Permian is -6 rigs YoY, Haynesville is -12 rigs YoY, DJ Niobrara is -7 rigs YoY, Marcellus -4 rigs YoY, Williston up +4 rigs YoY, Arkoma Woodford flat YoY, Granite Wash is up +6 rigs YoY, Eagle Ford is down -7 rigs YoY, Barnett up +1 rig YoY, Ardmore Woodford was -1 rig YoY, and Cana Woodford -1 rig YoY. (v) US gas rigs were up +1 rig this week to 103 gas rigs. It is important to note that U.S. gas rigs will need to increase over the next several months as more U.S. LNG capacity comes onstream in 2025. Lastly, U.S. miscellaneous rigs are down -1 rig WoW, and up +1 rig YoY.

Figure 27: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

Oil: Total Cdn oil rigs down -4 WoW on Friday, with gas rigs up +1 rig WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. This week's total oil and gas rig count was down -3 rigs WoW to 191 rigs on Dec 13. Every year, Canadian rigs typically increase until mid-Oct, where they remain relatively flat until late Nov when they begin ramping up until the end of Dec; however, last week, primarily driven by weak oil prices, we saw a fall WoW. We suspect that WTI below \$70 led to some pulling back of Cdn rigs, this week we saw relatively flat rigs, and should start seeing the normal X-Mas slowdown. Total rigs were down -3 rigs WoW this week to 191 rigs and are up +6 rigs YoY. Oil rigs are down -4 rigs WoW to 120, and up +2 rigs YoY. Gas rigs are up +1 rig WoW to 71 rigs and are up +4 rigs YoY, and miscellaneous rigs are flat WoW and flat YoY at 0 rigs total. As a reminder Baker Hughes changed their reporting format which does not allow us to see the provincial breakouts.

**Cdn oil rigs -4
WoW**

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Figure 28: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes

Oil: US weekly oil production up +0.118 mmb/d WoW to 13.631 mmb/d, up YoY

We don't place as much emphasis on the EIA weekly oil supply estimates as others do because we recognize the near impossibility for anyone to post an accurate estimate on a Wednesday for the totality of US oil production for the week ended the prior Friday [\[LINK\]](#). We have to give the EIA credit for putting out weekly oil supply estimates for the prior week—that can't be easy so no one should be surprised that the EIA weekly oil supply estimates, based on the Form 914 actuals, will regularly require re-benchmarking; sometimes the re-benchmarking can be significant and other times, it is relatively small. The EIA's weekly oil supply estimates had been essentially unchanged for the last nine months ranging from 13.100 to 13.300 mmb/d with the weekly estimates in July all at 13.300 mmb/d. This week's estimate came in above the previous range, up +0.118 mmb/d WoW to 13.631 mmb/d for the week ending Dec 6. This is up +0.531 mmb/d YoY from 13.631 mmb/d for the week ended December 8, 2023. The November STEO forecast was posted on December 10 and slightly increased its US crude expectations for 2024 by +0.010 mmb/d to 13.240 mmb/d which will exceed the Q4/19 peak of 12.880 mmb/d, with all quarters in 2024 expected to exceed 13.200 mmb/d, other than Q1/24 at 12.940 mmb/d. 2025 estimates were revised downwards to 13.520 mmb/d, with all quarters exceeding 13.400 mmb/d and reaching a peak of 13.580 mmb/d in Q4/25. The EIA is no longer releasing a DPR, so we no longer have MoM expectations. This week, the EIA's production estimates were up +0.118 mmb/d WoW to 13.631 mmb/d for the week ended Dec 6. Alaska production figures were down -0.005 WoW to 0.441 mmb/d, compared to 0.446 mmb/d last week. Below is a table of the EIA's weekly oil production estimates.

US weekly oil production

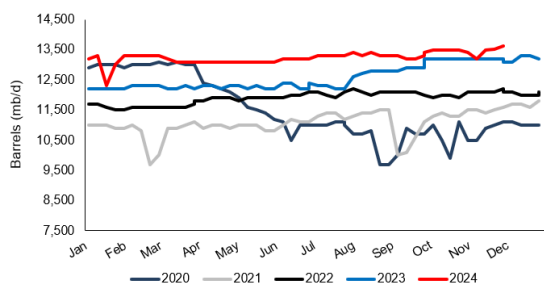
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Figure 29: EIA's Estimated Weekly US Field Oil Production (mb/d)

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
2023-Jan	01/06	12,200	01/13	12,200	01/20	12,200	01/27	12,200		
2023-Feb	02/03	12,300	02/10	12,300	02/17	12,300	02/24	12,300		
2023-Mar	03/03	12,200	03/10	12,200	03/17	12,300	03/24	12,200	03/31	12,200
2023-Apr	04/07	12,300	04/14	12,300	04/21	12,300	04/28	12,300		
2023-May	05/05	12,300	05/12	12,300	05/19	12,300	05/26	12,300		
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	13,300	11/24	13,200		
2023-Dec	12/01	13,100	12/08	13,100	12/15	13,300	12/22	13,300	12/29	13,200
2024-Jan	01/05	13,200	01/12	13,300	01/19	12,300	01/26	13,000		
2024-Feb	02/02	13,300	02/09	13,300	02/16	13,300	02/23	13,300		
2024-Mar	03/01	13,200	03/08	13,100	03/15	13,100	03/22	13,100	03/29	13,100
2024-Apr	04/05	13,100	04/12	13,100	04/19	13,100	04/26	13,100		
2024-May	05/03	13,100	05/10	13,100	05/17	13,100	05/24	13,100	05/31	13,100
2024-Jun	06/07	13,200	06/14	13,200	06/21	13,300	06/28	13,200		
2024-Jul	07/05	13,300	07/12	13,300	07/19	13,300	07/26	13,300		
2024-Aug	08/02	13,400	08/09	13,300	08/16	13,400	08/23	13,300	08/30	13,300
2024-Sep	09/06	13,300	09/13	13,200	09/20	13,200	09/27	13,300		
2024-Oct	10/04	13,400	10/11	13,500	10/18	13,500	10/25	13,500		
2024-Nov	11/01	13,500	11/08	13,400	11/15	13,201	11/22	13,493	11/29	13,913
2024-Dec	12/06	13,631								

Source: EIA

Figure 30: EIA's Estimated Weekly US Oil Production



Source: EIA

Oil: US shale/tight oil production relatively flat for the last 9 months

As mentioned earlier, the EIA combined its prior shale/tight oil information with its STEO, which was released on Tuesday, December 10, 2024 [\[LINK\]](#). (i) The EIA stopped forecasting future oil production by region and has updated their data for oil production from the major shale/tight oil and gas plays up to November. (ii) Note that the EIA revises their data for shale/tight oil production back to 2020 from November's STEO, and we have adjusted our table to reflect the updated data. However, the revisions for the last 12 months were a mix of small ups and downs with the average revision for the past 12 months being up +0.136 mmb/d. (iii) Shale/tight oil production in November was 8.799 mmb/d, basically flat MoM from October and down -1% YoY. October marks the 10th consecutive month of shale/tight oil above ~8.700 mmb/d, and this is down from ~8.890 mmb/d in Nov/Dec 2023. Note that shale/tight oil is approx. ~75% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running STEO estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production.

Shale/tight oil production

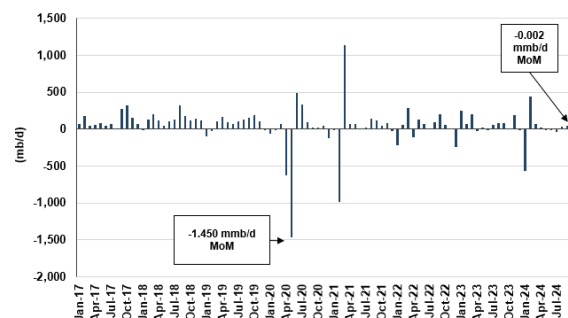
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Figure 31: US Major Shale/Tight Oil Production

Thousand b/d	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Nov MoM%	Nov YoY%
Austin Chalk + Eagle Ford	1,108	1,096	1,054	1,013	1,065	1,088	1,128	1,160	1,155	1,146	1,143	1,140	1,138	1,135	-0.3%	4%
Bakken	1,268	1,293	1,288	1,116	1,270	1,249	1,262	1,219	1,206	1,189	1,205	1,262	1,202	1,200	-0.2%	-7%
Mississippian + Woodford	224	226	224	200	215	210	214	209	201	200	199	197	196	193	-1.5%	-15%
Niobrara	468	480	492	448	472	474	456	460	446	446	446	446	446	446	0.0%	-7%
Permian	5,298	5,465	5,501	5,232	5,428	5,495	5,480	5,468	5,492	5,498	5,501	5,505	5,512	5,517	0.1%	1%
Rest of US L48	319	320	316	298	301	301	299	314	315	298	316	305	305	306	0.3%	-4%
Total	8,685	8,880	8,875	8,307	8,751	8,817	8,839	8,830	8,815	8,777	8,810	8,855	8,799	8,797	0.0%	-1%

Source: EIA, SAF

Figure 32: MoM Changes in US Major Shale/Tight Oil Production



Source: EIA, SAF

Oil: EIA DUCs flat MoM in November, DUCs down -8% YoY

We have been warning that we see a key risk to how much US oil production can sustainably grow in 2024 and 2025 is the need to increase rig counts (not have less frac spreads) to replenish the inventory of drilled uncompleted wells at higher levels and the challenge for oilfield services to add capacity to increase frac spreads and completions. The EIA’s STEO [\[LINK\]](#) now contains the estimate of drilled uncompleted wells. (i) The EIA estimates DUCs were flat MoM, and down -8% YoY in November at 5,221 DUCs. Note that the EIA may revise their data for DUC wells back to 2020 in each STEO, and each month we adjust our table to reflect any updated data. (ii) To put the DUC figures in perspective, there were 9,757 DUCs in the height of the Covid slowdown in June 2020 when US production was approx. 10.6 mmb/d, 6,489 DUCs in November 2021 when US production was approx. 11.9 mmb/d, 6,016 DUCs in November 2022 when US production was approx. 12.5 mmb/d, 5,694 in November 2023 when US production was approx. 13.3 mmb/d, and now 5,221 DUCs in November 2024 with US production approx. 13.5 mmb/d. (iv) The largest YoY November DUCs declines are the Eagle Ford, down -42% YoY, and Bakken -20% YoY. (v) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DUC Wells.

DUCs flat MoM in November

Figure 33: Estimated Drilled Uncomplete Wells in 2023/24

DUCs	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Nov MoM%	Nov YoY%
Appalachia region	804	816	830	839	834	830	826	824	817	802	795	784	773	765	-1%	-6%
Bakken region	403	391	386	408	404	405	392	365	355	346	337	328	319	311	-3%	-20%
Eagle Ford region	526	505	528	499	463	431	402	378	364	335	321	303	296	291	-2%	-42%
Haynesville region	743	740	745	750	748	736	730	730	730	736	734	733	734	735	0%	-1%
Permian region	849	875	910	907	874	889	833	826	839	828	833	847	858	871	2%	0%
Rest of Lower 48 States, excluding GOM	2,331	2,367	2,377	2,394	2,390	2,384	2,382	2,373	2,335	2,307	2,281	2,266	2,258	2,248	0%	-5%
Total	5,686	5,694	5,776	5,797	5,715	5,687	5,571	5,496	5,440	5,354	5,301	5,261	5,238	5,221	0%	-8%

Source: EIA, SAF

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EIA STEO US oil production

Oil: EIA Dec STEO immaterial changes to 2024 and 2025 US oil production forecast

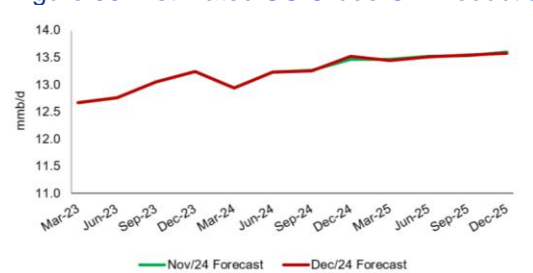
On Tuesday, the EIA released its Short-Term Energy Outlook for December 2024 [\[LINK\]](#), which included a small increase to its 2024 and a small decrease to its 2025 oil production forecasts. (i) The December STEO forecasts for 2024 were immaterially increased and immaterially decreased for 2025 US oil production estimates vs the November STEO which was immaterially changed from October. (ii) The lookback to 2023 was unchanged with the December STEO estimate for 2023 held flat at 12.93 mmb/d from the November STEO. Recall the big +140,000 b/d revision in October 2023's STEO from the September 2023 STEO's forecast of 12.78 mmb/d, as the EIA had to play catch-up with higher oil production actuals being reported over weekly estimates. (iii) The December STEO forecast for 2024 is essentially unchanged at +0.01 mmb/d to 13.24 mmb/d from the November STEO of 13.23 mmb/d. There were some small revisions by quarter: Q1/24 flat at 12.94 mmb/d, Q2/24 flat at 13.23 mmb/d, Q3/24 down -0.02 mmb/d to 13.25 mmb/d, and Q4/24 up +0.06 mmb/d to 13.53 mmb/d. (iv) The EIA forecasts US oil production of 13.52 mmb/d for 2025, which is essentially unchanged at -0.01 mmb/d from the November STEO. The revisions by quarter were Q1/25 down -0.02 mmb/d to 13.44 mmb/d, Q2/25 down -0.01 mmb/d to 13.51 mmb/d, Q3/25 up +0.01 mmb/d to 13.55 mmb/d, and Q4/25 -0.02 mmb/d to 13.58 mmb/d. Below is our EIA STEO forecast comparison by month.

Figure 34: EIA STEO Oil Production Forecasts by Month

(million b/d)	Q1/23	Q2/23	Q3/23	Q4/23	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	Q1/25	Q2/25	Q3/25	Q4/25	2025
Dec-24	12.67	12.76	13.05	13.25	12.93	12.94	13.23	13.25	13.53	13.24	13.44	13.51	13.55	13.58	13.52
Nov-24	12.67	12.76	13.05	13.25	12.93	12.94	13.23	13.27	13.47	13.23	13.46	13.53	13.54	13.60	13.53
Oct-24	12.67	12.76	13.05	13.25	12.93	12.94	13.23	13.27	13.45	13.22	13.46	13.53	13.54	13.64	13.54
Sep-24	12.67	12.76	13.05	13.25	12.93	12.94	13.22	13.38	13.47	13.25	13.45	13.60	13.73	13.89	13.67
Aug-24	12.67	12.76	13.05	13.25	12.93	12.94	13.20	13.33	13.44	13.23	13.46	13.66	13.76	13.90	13.69
July-24	12.63	12.75	13.07	13.26	12.93	12.94	13.21	13.32	13.10	13.25	13.52	13.72	13.84	13.98	13.77
June-24	12.63	12.75	13.07	13.26	12.93	12.94	13.17	13.33	13.50	13.24	13.51	13.68	13.76	13.88	13.71
May-24	12.63	12.75	13.07	13.26	12.93	12.96	13.10	13.25	13.50	13.20	13.55	13.73	13.76	13.87	13.73
Apr-24	12.63	12.75	13.07	13.27	12.93	12.84	13.13	13.32	13.54	13.21	13.56	13.72	13.74	13.86	13.72
Mar-24	12.63	12.75	13.07	13.28	12.93	12.91	13.13	13.25	13.47	13.19	13.49	13.66	13.68	13.78	13.65
Feb-24	12.63	12.75	13.07	13.29	12.93	13.03	13.12	13.06	13.18	13.10	13.37	13.46	13.50	13.64	13.49
Jan-24	12.63	12.75	13.07	13.22	12.92	13.27	13.22	13.15	13.21	13.21	13.36	13.44	13.43	13.53	13.44
Dec-23	12.63	12.75	13.06	13.26	12.93	13.09	13.07	13.07	13.23	13.11					
Nov-23	12.63	12.75	13.07	13.17	12.90	13.06	13.08	13.11	13.35	13.15					
Oct-23	12.63	12.75	13.13	13.16	12.92	13.07	13.02	13.07	13.31	13.12					
Sep-23	12.63	12.71	12.86	12.94	12.78	13.03	13.09	13.15	13.36	13.16					
Aug-23	12.63	12.67	12.81	12.93	12.76	12.98	13.01	13.08	13.27	13.09					
Jul-23	12.61	12.55	12.48	12.63	12.56	12.67	12.71	12.98	13.13	12.85					
Jun-23	12.60	12.56	12.57	12.70	12.61	12.69	12.63	12.76	13.00	12.77					
May-23	12.54	12.51	12.46	12.61	12.53	12.63	12.58	12.68	12.85	12.69					
Apr-23	12.54	12.50	12.50	12.61	12.54	12.69	12.71	12.77	12.83	12.75					
Mar-23	12.31	12.43	12.48	12.54	12.44	12.58	12.58	12.64	12.71	12.63					
Feb-23	12.44	12.46	12.49	12.56	12.49	12.63	12.62	12.65	12.70	12.65					
Jan-23	12.37	12.34	12.40	12.51	12.41	12.63	12.72	12.86	13.03	12.81					

Source: EIA STEO

Figure 35: Estimated US Crude Oil Productions by Forecast Month



Source: EIA STEO

Oil: US SPR less commercial reserve deficit narrows, now -29.419 mmb

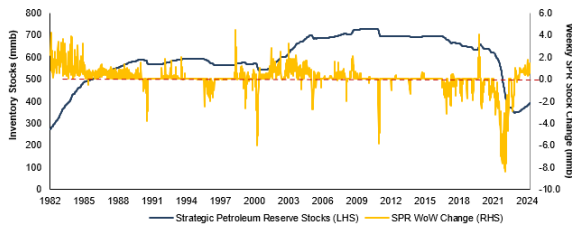
The US Strategic Petroleum Reserves (SPR) continues to be much lower than total US

US SPR reserves

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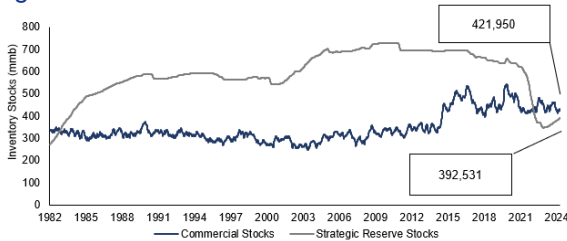
commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sep 16, 2022, week. This week, we saw a build on the SPR side and a draw on the commercial side. The EIA’s weekly oil data for Dec 6, [LINK](#) saw the SPR reserves increase +0.724 mmb WoW to 392.531 mmb, while commercial crude oil reserves decreased -1.425 mmb to 421.950 mmb. There is now a -29.419 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles, along with the weekly changes to SPR stockpiles.

Figure 36: Strategic Petroleum Reserve Stocks and SPR WoW Change



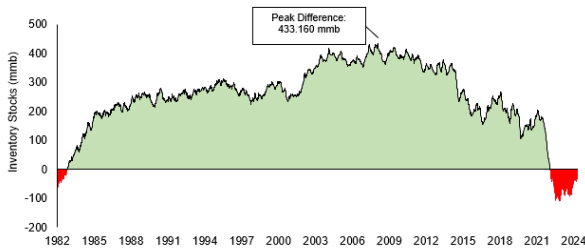
Source: EIA

Figure 37: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 38: US Oil Inventories: SPR Less Commercial



Source: EIA

Oil: AAA reports US national average gasoline price flat WoW to \$3.02 on Dec 14

Yesterday, we posted [LINK](#) “AAA National average gasoline prices flat WoW at \$3.02 on Dec 14, -\$0.06 MoM & -\$0.08 YoY. California average prices -\$0.04 WoW to \$4.33, -\$0.15 MoM & -\$0.27 YoY. National average gasoline price hasn’t been below \$3 since May 11, 2021. Thx @AAAnews #OOTT.” National average gasoline prices were \$3.02 so just above the \$3 level and the last time national average gasoline prices were below \$3 was May 11,

US gasoline prices

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2021. Yesterday, AAA reported that US national average prices were \$3.02 on Dec 14, which was flat WoW, -\$0.06 MoM, and -\$0.08 YoY. Yesterday, AAA also reported California average gasoline prices were \$4.33 on Dec 14, which was -\$0.04 WoW, -\$0.15 MoM and -\$0.32 YoY. Below is our graph of Bloomberg's National Average weekly gasoline prices.

Oil: Crack spreads +\$0.58 WoW to \$16.53 on Dec 13, WTI +\$4.09 WoW to \$71.29

On Friday, we tweeted [LINK](#) "321 crack spreads +\$0.58 WoW to \$16.53 on Dec 13. WTI +\$4.09 WoW to \$71.29. Reinforces WTI is impacted more by global markets than by cracks as WTI was up with NSA Waltz reinforcing US to crack down on Iran oil, potential Biden added RUS sanctions. Thx @business #OOTT." Crack spreads were +\$0.58 WoW to \$16.53 on Dec 13 and WTI was +\$4.09 WoW to \$71.29. WTI was up this week driven by Trump NSA pick Mike Waltz reminding Trump plans to clamp down on Iran's oil and cash flow, and reports of Biden looks to add more sanctions on Russia oil. As a general rule, over the past few months, WTI has been driven more by global factors and not crack spreads. Crack spreads at \$16.53 are near the bottom end of the typical pre-Covid \$15-\$20 range so aren't by themselves high enough to incentivize refineries to take any more crude than necessary. Crack spreads of \$16.53 on Dec 13 followed \$15.95 on Dec 6, \$15.72 on Nov 29, \$17.09 on Nov 22, \$17.99 on Nov 15, \$17.30 on Nov 8, \$16.82 on Nov 1, \$16.91 on Oct 25, \$16.92 on Oct 18, \$17.42 on Oct 11, \$16.65 on Oct 4, \$15.82 on Sept 27, \$15.57 on Sept 20, and \$14.30 on Sept 13.

**Crack spreads
closed at \$16.53**

Crack spreads normally point to near term oil moves, explaining 321 cracks

It hasn't been normal times for oil markets for the past few months with Iran/Israel, Chinese stimulus, Trump win, stronger US\$, Putin's new nuclear doctrine and its 1st hypersonic ballistic missile hit on Ukraine, OPEC and Trump NSA Waltz reminding Trump will clamp down on Iran oil. So for the most part, the last few months are good examples that global oil and market items impact WTI more than crack spreads. As noted above, that was the case last week when crack spreads were up modestly and WTI was up strong with the Waltz comments on Iran and reports Biden will add sanctions on Russia oil. But in normal times, broad market factors aside, we have focused on crack spreads for since the 90s as they are an unchanged fundamental of refineries – wide/high crack spreads provide incentives for refineries to buy more crude because there are big profit margins to be made. We track US crack spreads but there is also an influence on global refining capacity on US crack spreads as the increasing global refining capacity has also tended to have downward pressure on US crack spreads especially with demand being less than most expect. So if crack spreads are wide/high, it is normally a positive for the very near term look ahead to WTI. Conversely, if crack spreads are narrow/low, it doesn't give refineries any real incentive to take more crude, which is normally softness for the very near term look ahead to WTI. 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

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normally drags up oil prices. 321 Crack spread closed at \$16.53 on Friday Dec 13.

Figure 39: Cushing Oil 321 Crack Spread & WTI Dec 13, 2014 to Dec 13, 2024



Source: Bloomberg

Oil: Cdn heavy oil differentials narrow \$0.15 WoW to \$12.20 on Dec 13

WCS less WTI differentials continue to trade in a narrow range and narrowed small this week -\$0.15 WoW to close at \$12.20 on Dec 13. As noted in the following item, we have been saying that the real test for WCS less WTI differentials was in Sept/Oct/Nov as to how much the startup of the 590,000 b/d TMX expansion and ramp up of tanker exports will impact WCS less WTI differentials. And it looks like TMX worked as hoped, if not better, in keeping WCS less WTI differentials way lower than would be expected in Aug/Sept/Oct/Nov. Sept/Oct/Nov is when we normally see a significant seasonal widening of the WCS less WTI differentials. And WCS less WTI differentials have remained much lower and has not widened meaningfully this fall. But even with the TMX startup, there will always be the unexpected impact on WCS less WTI differentials from other items like refineries up and downs, wildfires, etc. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials that normally widens into or through October, which it did not. The WCS less WTI differential closed on Dec 13 at \$12.20 which was a narrowing of -\$0.15 WoW vs \$12.35 on Dec 6.

**WCS differential
widens**

TMX impact: WCS less WTI diffs did not seasonally widen as in 2022 & 2023

The start of TMX pipeline in Q2 was the big expected positive for Cdn oil by keeping WCS less WTI differentials a lot narrower than what is normally seen in the normal seasonal widening in Sept/Oct/Nov. WCS less WTI differentials are approx. \$8 narrower vs a year ago and approx. \$16 narrower than two years ago. That is a big win for cash flows for all Cdn oil producers. For the past several months, we have been saying that the big test for the impact of the start of the 590,000 b/d TMX expansion on WCS less WTI differentials wasn't what happened in the summer months but what would happen in late Aug, Sept, Oct and Nov when differentials normally start to seasonally widens. On Friday, we tweeted [\[LINK\]](#) "Big continuing win for Cdn #Oil Q4/24 cash flows. Increasing tanker exports from 590,000 b/d TMX June start kept WCS less WTI differentials from normal Sept/Oct/Nov widening. WCS less WTI diffs: 12/13/24: \$12.20. 12/13/23: \$19.99. 12/13/22: \$28.30. Thx garquake @ @business #OOTT." Our post included the below chart that shows how WCS less WTI differential were low in the summer and have stayed fairly flat in Aug/Sept/Oct/Nov/Dec and how differentials were widening in Sept/Oct/Nov in 2022

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and 2023.

Figure 40: WCS less WTI differentials to Dec 13, 2024 close



Source: Bloomberg

Oil: RBC, Trans Mountain export tanker loadings continue at strong levels

Trans Mountain's start of the 590,000 b/d TMX expansion has led to a big increase in Cdn oil exports via tanker and been the reason why WCS less WTI differentials ave been flat and not widening as normally happens every fall. It looks like Trans Mountain has moved into its close to a steady state at or near capacity. On Friday, we posted [LINK](#) "Big positive for Cdn #Oil. Trans Mountain tanker loadings continue strong in Oct & Nov. Thx Greg Pardy @RBC See 📌 Dec 6 post graph, Q4/24 WCS less WTI differentials have been stable and avoided the normal huge widening in Sep/Oct/Nov because of these tanker loadings. #OOTT." There will always be tanker timing and weather issues that will shift tanker loadings a big but it looks like Trans Mountain is settling into a groove for tanker loadings near 300,000 b/d. Below is the RBC chart we attached to our post.

Trans Mountain export tanker loadings

Figure 41: US Refinery Crude Oil Inputs

Exhibit 3 - YTD 2024 Trans Mountain Pipeline Tanker and Estimated Shipment Volumes



Source: RBC

Oil: Refinery Inputs up -0.251 mmb/d WoW to 16.659 mmb/d

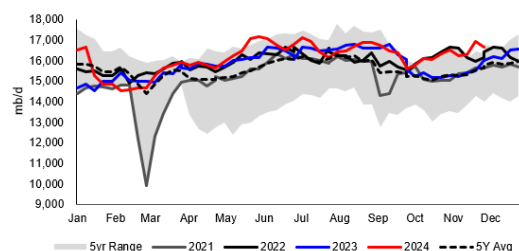
There are always unplanned refinery items that impact crude oil inputs into refineries. And there is always different timing for refinery turnarounds; generally late October marks the point when refineries have come out of fall turnarounds and are ramping up crude oil inputs

Refinery inputs -0.251 mmb/d WoW

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as they change from summer to winter fuel blends. And in Nov/Dec, it is normally ramps up before we start to see refineries move into turnarounds starting the end of Jan. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended December 6 [\[LINK\]](#). The EIA reported crude inputs to refineries were down -0.251 mmb/d this week to 16.659 mmb/d and are up +0.562 mmb/d YoY. Refinery utilization was up +0.9% WoW to 92.4% and was up +2.2% YoY.

Figure 42: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports down -0.170 mmb/d WoW as oil exports down -1.136 mmb/d

The EIA reported US “NET” imports were down -0.170 mmb/d to 2.885 mmb/d for the week of December 6. US imports were down -1.306 mmb/d to 5.984 mmb/d, while exports were down -1.136 mmb/d to 3.099 mmb/d. Top 10 was down -0.842 mmb/d. Give the EIA credit for putting out weekly oil import estimates, but it’s a reminder that we must be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. (i) Canada was down -0.215 mmb/d to 3.829 mmb/d. Weekly imports have been higher for the past five months with the increased Cdn crude coming off TMX and hitting west coast US refineries. (ii) Saudi Arabia was down -0.217 mmb/d to 0.175 mmb/d. (iii) Mexico was up +0.161 mmb/d to 0.440 mmb/d. This is because of the new Olmecca/Dos Bocas refinery coming back online, after being down earlier in the month. But, as a general rule, oil imports from Mexico in Q2 and Q3 have been significantly lower than prior year’s levels with the new Olmecca (Dos Bocas) refinery slowing ramping up in 2024 and Pemex’s other refineries increasing crude oil processing. (iv) Colombia was down -0.158 mmb/d to 0.125 mmb/d. (v) Iraq was down -0.184 mmb/d to 0.213 mmb/d. (vi) Ecuador was flat +0.000 mmb/d at 0.103 mmb/d. (vii) Nigeria was up +0.058 mmb/d to 0.168 mmb/d. (viii) Venezuela was up +0.014 mmb/d to 0.187 mmb/d.

**US net imports
-0.170 mmb/d
WoW**

Figure 43: US Weekly Preliminary Imports by Major Country

	Oct 11/24	Oct 18/24	Oct 25/24	Nov 1/24	Nov 8/24	Nov 15/24	Nov 22/24	Nov 29/24	Dec 6/24	WoW
Canada	3,537	3,719	3,660	3,879	3,953	3,862	4,081	4,044	3,829	-215
Saudi Arabia	314	150	13	443	140	220	248	392	175	-217
Venezuela	134	289	250	212	359	211	267	173	187	14
Mexico	406	258	621	247	384	768	151	279	440	161
Colombia	223	365	150	72	142	414	142	283	125	-158
Iraq	70	237	216	183	121	237	277	397	213	-184
Ecuador	35	138	67	37	247	355	118	103	103	0
Nigeria	134	125	145	86	77	86	146	110	168	58
Brazil	154	285	88	202	280	498	227	348	251	-97
Libya	0	81	89	238	0	86	0	204	0	-204
Top 10	5,007	5,647	5,299	5,599	5,703	6,737	5,657	6,333	5,491	-842
Others	522	784	676	641	806	947	426	957	493	-464
Total US	5,529	6,431	5,975	6,240	6,509	7,684	6,083	7,290	5,984	-1,306

Source: EIA, SAF

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Oil: Colombia oil production still well below pre-Covid, September was 0.751 mmb/d
 Ever since the President Petro took office in Aug 2022, we have believed it would be very hard to see how Colombia oil production ever sustainably rallies anywhere back to 1.000 mmb/d or even 900,000 b/d. Despite stronger oil prices post Covid, Colombia oil production has been stuck below 800,000 b/d. On Nov. 28, Bloomberg published Colombian production data for September. Production in September was down -3.3% MoM to 0.751 mmb/d from 0.777 mmb/d in August. This puts September's production down -2.6% YoY vs 0.771 mmb/d in September 2023. Production is now -15.2% below pre-Covid levels of 0.886 mmb/d in 2019.

Colombia oil production stuck below 800,000 b/d

Figure 44: Colombian Oil Production

mmb/d	2016	2017	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	0.986	0.860	0.860	0.899	0.884	0.745	0.740	0.774	0.777	0.4%
Feb	0.955	0.864	0.823	0.893	0.878	0.746	0.740	0.759	0.764	0.7%
Mar	0.917	0.804	0.856	0.885	0.857	0.745	0.751	0.771	0.780	1.2%
Apr	0.915	0.857	0.865	0.891	0.796	0.745	0.751	0.782	0.790	1.0%
May	0.904	0.851	0.866	0.895	0.732	0.703	0.746	0.774	0.788	1.7%
June	0.898	0.857	0.864	0.892	0.730	0.694	0.752	0.778	0.781	0.4%
July	0.843	0.856	0.860	0.869	0.735	0.731	0.748	0.782	0.784	0.3%
Aug	0.827	0.858	0.866	0.883	0.742	0.748	0.749	0.782	0.777	-0.6%
Sept	0.859	0.851	0.869	0.879	0.749	0.744	0.754	0.771	0.751	-2.6%
Oct	0.846	0.864	0.879	0.883	0.751	0.740	0.757	0.778		
Nov	0.855	0.851	0.883	0.880	0.761	0.747	0.771	0.783		
Dec	0.837	0.870	0.889	0.882	0.759	0.745	0.784	0.787		

Source: Hydrocarbons Colombia, Bloomberg

Figure 45: Colombia's Oil Production (mmb/d)



Source: Bloomberg

Oil: Is Russia backing down from launching hypersonic Oreshnik retaliation

As of our 7am MT news cut off, we have not seen any reports that Russia launched any hypersonic Oreshnik missiles in its Dec 12 stated vow for retaliation for Ukraine's use of US ATACMS missile attacks on the Taganrog airfield. And that vow was clearly pointing to use of the hypersonic Oreshnik missile again. However, on Friday, Russia seems to back down from using an Oreshnik. On Friday, TASS reported [LINK](#) "Kremlin confirms recent strikes on Ukraine's energy system part retaliation for Taganrog. Earlier on Friday, the Russian Defense Ministry reported that Russia's Armed Forces had launched high-precision strikes on Ukraine's fuel and energy infrastructure, which generates power for its defense sector, in response to the attack on the Taganrog airfield with ATACMS missiles earlier this week."

Will Russia use Oreshnik?

Oil: Did Putin remind Trump a cluster of Oreshnik's has the power of a nuclear bomb?

We were watching the coverage on Thursday morning of Trump's comments at the NYSE and we couldn't help think of Putin when we heard Trump say he sees the biggest threat the power of weaponry today. Trump has spoken with Putin and we have to believe one item that came up in discussing Ukraine was the hypersonic ballistic missile Oreshnik. On

Bunch strike of Oreshnik's is like a nuclear bomb power

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Thursday, we posted [LINK](#) *“the power of weaponry today is the biggest threat we have in my opinion. It’s not some of the other things you read about. It’s the power of weaponry. The weapons are so powerful, so devastating.” Trump. Assume Putin reminded him (👉 11/28 warning) a cluster of Oreshnik’s are strong as a nuke. #OOTT.”* We were a little surprised that Trump highlighted his weaponry fears at the NYSE press conference. Our post included the transcript we made of his belief that the power of weaponry is the biggest threat the US faces. The media reports linked this to nuclear and we were surprised that they didn’t link to the new hypersonic Oreshnik ballistic missile especially as Putin warned a cluster of Oreshnik’s in a single attack would have the same strength as a nuclear bomb. Here is the full transcript we made of Trump saying *“We do have to solve some problems. We have wars going on that we didn’t have. We have a lot of things happening that we didn’t have. That would have never happened. They never would have happened. But now they have happened. And I want to get them solved because ultimately the power of weaponry today is the biggest threat we have in my opinion. It’s not some of the other things you read about. It’s the power of weaponry. The weapons are so powerful, so devastating. I rebuilt our military. I got to know every one of them. Including nuclear weapons. I hated to do it. Actually, I hated to do it. But we did some nuclear weapons that are so devastating. It almost makes you very sad when you, as you get them and as they come on line, it makes you very sad. Because you know what the purpose of them is. And you just hope to God that you never have to use them. Because if you do, the world will never be the same. So we have to be very very smart. We have to be very sharp. We have to be very special to do a job.”*

11/28/24: Putin reminds a cluster of Oreshnik’s are a strong as a nuclear bomb

Our Trump post on weaponry included our Nov 28 post on Putin’s warning that several Oreshkin’s in a single strike have the power of a nuclear bomb. Here is what we wrote in our Nov 28, 2024 Energy Tidbits memo. *“Putin, several Oreshniks in a single strike have the power of a nuclear bomb. Early Thursday morning, all of the headlines were all about Putin warning that major control centers in Kiev could be targeted by the hypersonic Oreshnik (Hazel) intermediate range missile. We don’t disagree that that is significant but what didn’t get well reported was Putin saying sending multiple Oreshnik missiles at once at a target would have the same power as a nuclear bomb. Early Thursday morning, we tweeted [LINK](#) ‘Breaking. Headline is Putin warns potential Oreshkin/Hazel targets incl decision making centers in Kiev. Scary point, he reminds of the mass destruction potential if firing multiple Hazels in a bunch single strike ie. would have destructive power comparable to nukes. #OOTT.”* Our tweet included the short TASS report [LINK](#) *“Putin: the power of the “Hazel” in a massive strike is comparable to nuclear weapons. The President of the Russian Federation noted that the tests carried out on November 21 confirmed that the Oreshnik is a high-precision weapon. The massive use of the latest Russian hypersonic missile system “Oreshnik” will entail a strike power comparable to the use of nuclear weapons, Russian President Vladimir Putin said at a meeting of the Collective Security Treaty Organization (CSTO) in a narrow format. “According to military and technical experts, in the event of a massive, group use of these missiles, that is, several missiles at once, in a bunch in one strike, its power will be comparable to the use of nuclear weapons. Although the Hazel, of course, is not a weapon of mass destruction,” the head of the Russian state said. Putin emphasized*

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that the tests carried out on November 21 confirmed that the "Hazel" is a high-precision weapon. "Most importantly, there is no nuclear charge here, and therefore no nuclear contamination after its use," the Russian leader emphasized."

11/22/24: Russia reminds Oreshnik can hit targets across entire Europe

Here is what we wrote in our Nov 24, 2024 Energy Tidbits memo. "On Friday, TASS reported [\[LINK\]](#) "The Oreshnik missile system is capable of reaching targets across entire Europe, Sergey Karakayev, commander of Russia's strategic missile forces, told President Vladimir Putin. "This missile system with hypersonic blocks can hit any targets - from isolated to area-type, as well as highly-protected - with a high efficiency. Based on the tasks and the range of this weapon, it can hit targets across entire Europe, which sets it apart from other high-precision long-range weapons," he said at a meeting with top Russian defense officials, executives of defense sector companies and arms developers."

OPEC four-prong deal

Oil: OPEC MOMR again lowers oil demand growth forecasts for 2024 and 2025

On Wednesday, OPEC released its Dec Monthly Oil Market Report. (i) Upon release, we posted that we didn't think the market should have any different views from the OPEC Dec MOMR vs its Nov MOMR because everyone thought and continues to think their demand growth forecasts are too optimistic and OPEC is likely to once again lower their demand forecast in the Jan MOMR. This is unfortunate as there continues to be the difference between looking back at the physicals that look solid with continued deficits to the 2015-2019 average for oil stocks but then the financial markets keep seeing OPEC's oil demand forecast being optimistic and focus on continued risk for China and the potential supply glut in 2025. The Dec MOMR non-OPEC supply forecast increased +0.50 mmb/d. And with another reduction in oil demand forecasts, it means a lesser call on OPEC+ barrels. Q1/25 oil demand is seasonally down -1.37 mmb/d vs Q4/24. The physical positive in the look back that oil bulls hang their hats on is that oil + products stocks in the continued deficit to the 2015-2019 average. (ii) Demand. OPEC reduced their global oil demand forecast by -0.21 mmb/d for 2024 and -0.09 mmb/d in 2025. (iii) Non-DOC supply. OPEC increased their non-DOC supply growth to +1.28 mmb/d to 53.12 mmb/d (compared to +1.23 mmb/d to 53.07 in the Nov MOMR) in 2024, and 2025 saw a immaterial increase in growth rate due to a change in starting point, but no change to growth of +1.11 mmb/d to 54.23 mmb/d (compared to +1.11 mmb/d to 54.17 mmb/d in the Nov MOMR). Key non-DOC growth areas: 2024 are: US +0.67 mmb/d YoY, Canada +0.21 mmb/d YoY and Brazil which was not provided a number but was forecasted at +0.11 mmb/d YoY in the September MOMR. For 2025, US +0.50 mmb/d YoY, Brazil +0.18 mmb/d YoY, Canada +0.16 mmb/d YoY, and Norway +0.10 mmb/d YoY. (iv) Call on OPEC is now called Call on DoC Oil and is revised down by -0.30 mmb/d to 42.40 mmb/d for 2024 and by -0.4 to 42.7 mmb/d in 2025. (v) OPEC only production, based on secondary sources, Dec MOMR is +0.323 mmb/d MoM to 40.665 mmb/d in Nov. The largest MoM change was Libya +0.141 mmb/d MoM driven by the return of production following the recent strike. The other big change was Kazakhstan, which saw the end of maintenance in November, +0.202 mmb/d to 1.498 mmb/d. Non-OPEC DOC countries were up +0.219 mmb/d MoM to 14.008 mmb/d in Nov; the MoM to Kazakhstan production increasing +0.202 mmb/d MoM to 1.498 mmb/d. Russia saw production fall by -0.007 mmb/d to 8.994 mmb/d. (vi) The physical positive for oil is that oil stocks continue to be lower. Dec MOMR has total crude oil + products stocks down by -22.3 mmb MoM to 2,777 mmb, which

OPEC Monthly Oil Market Report

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is -169.0 mmb below the 2015-2019 average. Crude oil only stocks at Oct 31. Dec MOMR has crude oil only stocks at down +7.9 mmb MoM to 1,324 mmb, which is -130.0 mmb below the 2015-2019 average. Products only stocks at Oct 31. Dec MOMR has products only stocks -30.2 mmb MoM to 1,453 mmb, which is -39.0 mmb below the 2015-2019 average. (ix) One overlooked positive in looking at global oil stocks is the comparison for oil stocks to the 2015-2019 average, oil demand is higher than that period. OPEC’s forecast for 2024 oil demand is approximately 6 mmb/d higher than the 2015-2019 average oil demand. Our Supplemental Documents package includes excerpts from the OPEC November MOMR.

OPEC seen as an optimistic outlier for oil demand YoY growth in 2024 & 2025

One of the reasons why we didn’t see the market reacting to OPEC’s Dec MOMR on Tuesday was that the markets have considered OPEC an optimistic outlier in its oil demand growth forecasts and were expecting another month of OPEC tweaking down its YoY oil demand growth forecasts for both 2024 and 2025. Upon release of the OPEC Dec MOMR, we posted [LINK](#) “As expected, OPEC Dec MOMR cuts oil demand growth again but is still a big outlier. OPEC +1.61 mmbd YoY in 2024. +1.45 mmbd YoY in 2025. See 📌 demand growth comp Next closest: For 2024: Saudi Aramco Q3 +1.10 mmbd YoY. For 2025: EIA Dec STEO +1.29 mmbd YoY. IEA OMR out tomorrow. #OOTT”. Our tweet was before the IEA Dec OMR. Below is the table we attached to our post.

Figure 46: Comparison oil demand YoY growth forecasts

Comparison of YoY Oil Demand Growth Forecasts			
million b/d	YoY Oil Demand Growth Forecast		
	2024 YoY	2025 YoY	
OPEC Dec MOMR	1.61	1.45	
OPEC Nov MOMR	1.52	1.54	
OPEC Oct MOMR	1.93	1.64	
OPEC Sept MOMR	2.03	1.74	
OPEC Aug MOMR	2.11	1.78	
Saudi Aramco Q3	1.10	1.20	
Saudi Aramco Q2	1.60	1.40	IEA demand million b/d
			2024 2025
IEA Dec OMR	0.84	1.08	102.907 103.887
IEA Nov OMR	0.92	0.99	102.817 103.807
IEA Oct OMR	0.86	1.00	
IEA Sept OMR	0.90	0.95	
IEA Aug OMR	0.97	0.95	
EIA Dec STEO	0.89	1.29	
EIA Nov STEO	0.99	1.22	
EIA Oct STEO	0.92	1.29	
EIA Sept STEO	0.94	1.52	
EIA Aug STEO	1.14	1.61	
Note: IEA Dec OMR revised up 2023d demand to 101.964 mmb/d vs Nov OMR: 101.697 mmb/d			
Source: OPEC, Saudi Aramco, IEA, EIA, Bloomberg			
Prepared by SAF Group https://safgroup.ca/insights/energy-tidbits/			

Source: EIA, IEA, OPEC, Saudi Aramco

Oil: OPEC reminds Q1/25 oil demand is seasonally down -1.37 mmb/d QoQ vs Q4/24

One of the key reasons Saudi Energy Minister Abdulaziz gave for delaying the return of barrels from Jan 1 to Apr 1 was that oil demand is seasonally down in Q1 and Q1 is typically the quarter for oil stock builds. OPEC’s Dec MOMR’s quarterly oil demand forecast reminded of this seasonality. On Wednesday, we posted [LINK](#) “Oil demand 101. Oil demand always seasonally declines Q1 vs preceding Q4 with less driving/flying in winter. OPEC Dec MOMR forecasts Q1/25 demand at 104.16 mmb/d, down -1.37 mmb/d QoQ vs Q4/24 of 105.53 mmb/d. It’s also why OPEC wasn’t going to add back barrels in Q1/25. #OOTT.” OPEC Dec MOMR forecasts oil demand in Q1/25 of 104.16 mmb/d, which is -1.37 mmb/d QoQ vs Q4/24

IEA Oil Market
Report

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of 105.53 mmb/d. This is the normal seasonal QoQ decline. Below is the OEC Dec MOMR forecast table attached to our post.

Figure 47: OPEC's Dec MOMR oil demand forecast

World oil demand	2023	1Q24	2Q24	3Q24	4Q24	2024	Change 2024/23	%
Americas	24.91	24.42	24.86	25.33	25.80	25.80	0.89	3.57
of which US	20.38	19.82	20.47	20.66	20.83	20.49	0.12	0.57
Europe	13.40	12.85	13.82	14.15	13.41	13.51	0.06	0.46
Asia Pacific	7.24	7.51	6.96	6.92	7.43	7.22	-0.03	-0.39
Total OECD	45.61	44.80	45.56	46.41	46.26	46.26	0.11	0.25
China	12.35	12.61	12.60	12.70	12.70	12.70	0.43	3.47
India	5.34	5.86	5.61	5.30	5.65	5.50	0.21	3.93
Other Asia	9.26	9.70	9.77	9.40	9.51	9.56	0.32	3.42
Latin America	6.09	6.05	6.80	6.85	6.88	6.80	0.11	1.81
Middle East	6.65	6.65	6.46	6.50	6.52	6.76	0.15	2.24
Africa	4.40	4.55	4.29	4.41	4.67	4.53	0.07	1.57
Russia	3.64	3.65	3.63	3.66	4.11	3.66	0.12	3.25
Other Eurasia	1.17	1.34	1.28	1.10	1.20	1.25	0.07	6.08
Other Europe	0.76	0.76	0.82	0.76	0.79	0.80	0.02	2.55
Total Non-OECD	56.56	57.98	57.44	57.56	59.27	58.60	1.50	2.65
Total World	102.17	102.78	103.00	103.97	105.53	104.86	1.51	1.46
Previous Estimate	102.21	102.86	103.19	104.54	104.21	104.21	1.52	1.75
Revisions	0.00	-0.08	-0.19	-0.57	-0.03	-0.21	-0.21	-0.21

Q4/24 105.53
Q1/25 104.16
QoQ -1.37 mmb/d

OPEC Monthly Oil Market Report - December 2024

World oil demand	2024	1Q25	2Q25	3Q25	4Q25	2025	Change 2025/24	%
Americas	25.03	24.54	25.01	25.47	25.50	25.11	0.08	0.31
of which US	20.49	19.93	20.59	20.72	20.89	20.52	0.04	0.21
Europe	13.51	12.87	13.83	14.15	13.43	13.53	0.02	0.12
Asia Pacific	7.25	7.54	6.98	6.94	7.44	7.23	0.01	0.13
Total OECD	45.76	44.88	45.63	46.50	46.37	46.87	0.11	0.23
China	12.79	12.99	12.83	12.72	12.79	12.71	0.33	2.55
India	5.51	5.86	5.86	5.55	5.98	5.79	0.24	4.31
Other Asia	8.99	9.47	9.50	9.14	9.41	9.46	0.26	2.87
Latin America	6.05	6.00	6.94	7.02	7.02	6.94	0.14	2.39
Middle East	6.70	6.61	6.62	6.57	6.16	6.44	0.16	2.39
Africa	4.53	4.63	4.28	4.51	4.66	4.62	0.09	2.00
Russia	3.96	4.01	3.89	4.02	4.15	4.02	0.05	1.26
Other Eurasia	1.20	1.37	1.29	1.16	1.31	1.28	0.03	2.50
Other Europe	0.80	0.80	0.83	0.75	0.85	0.81	0.01	1.42
Total Non-OECD	60.60	61.27	61.14	60.89	60.85	61.46	1.24	2.03
Total World	106.37	106.15	106.77	107.39	107.22	108.33	1.41	1.32
Previous Estimate	106.29	106.29	106.41	106.41	106.41	106.41	1.44	1.41
Revisions	-0.21	-0.14	-0.26	-0.22	-0.08	-0.30	-0.09	-0.08

Source: OPEC

Oil: IEA OMR, 2024 oil demand growth unchanged, 2025 oil demand increased

On Thursday, the IEA released its monthly Dec Oil Market Report. On Thursday we posted [\[LINK\]](#) "IEA Dec OMR oil demand. 2024 demand unchanged but YoY growth lowered as 2023 demand was revised up. 2025 demand increased to 103.887 mmb/d (was 103.807) with revised up 2025 YoY growth to +1.08 mmb/d (was +0.99 mmb/d). Goldilocks? OPEC Dec MOMR still high, IEA Dec OMR still low, is EIA Dec STEO just right? Thx @business Kristian Siedenburg #OOTT" (i) The IEA messaging for December pivoted to be less extreme, and we think the numbers are fairly neutral when compared to the Nov OMR; we think this may be due to the upcoming Trump presidency. We note that their conclusions are not changed, rather they have toned down the messaging. Their forecasts for YoY oil demand, non-OPEC oil supply and call on OPEC are basically unchanged so the numbers are relatively neutral when compared to Nov. But the big picture IEA Dec OMR takeaway remains negative as non-OPEC supply growth continues to be more than oil demand growth so there will be stock builds in 2025. One of the offsetting positives continues to be global oil stocks keep declining i.e. what physical players keep highlighting. (ii) Demand. There was a small decrease of -80,000 b/d to its oil demand growth for 2024, but that was due to an increase in the 2023 baseline. The 2024 YoY growth is now +840,000 b/d YoY to 102.807 mmb/d. The 2025 demand growth was revised up +90,000 b/d to +1,080,000 b/d to 103.887 mmb/d. (iii) The IEA forecast is that OECD countries reached peak oil demand in Q4/24 at 46.2 mmb/d. This was revised from the Nov OMR which believed Q3/24 reached peak at 46.2 mmb/d. (iv) China remains the holdback to demand. When detailing the postponement of the return of OPEC production, the IEA noted a driver being the "slowing global oil demand

IEA Oil Market Report

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growth led by China.” (v) Non-OPEC supply for 2024 is unchanged at 70.2 mmb/d from last month’s forecast, and 2025 was lowered by -0.1 mmb/d to 71.9 mmb/d. (vi) The IEA’s call on OPEC for 2024 was unchanged at 27.0 mmb/d, and 2025 was revised +0.2 mmb/d to 26.3 mmb/d. (vii) It doesn’t get much coverage but the IEA notes global oil stocks keep going lower, but noted preliminary data for November has shown a potential increase in stocks. The IEA wrote “Global observed oil inventories drew by 39.3 mb in October, led by an exceptionally sharp decline in oil products (-82.3 mb) as low refinery activity coincided with a rise in global oil demand. OECD industry stocks declined by 30.9 mb to 2 778 mb, 91.6 mb below the five-year average Preliminary data for November show global inventories rebounded, led by oil on water and non-OECD crude oil”. (viii) Our Supplemental Documents package includes the IEA release and the Bloomberg tables and reports.

Figure 48: IEA Global Demand Forecast by OMR Report

SAF Group - Comparison of IEA Oil Market Report Forecasts By Month
IEA Estimated Global Oil Demand Forecasts based on Bloomberg monthly reporting
IEA OMR Forecast Month

mmb/d	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	24:23	Q1/25	Q2/25	Q3/25	Q4/25	2025	25:24
Dec 24	102.0	101.4	102.5	103.5	103.7	102.8	0.8	102.8	103.8	104.8	104.6	103.9	1.1
Nov24	101.9	101.5	102.6	103.7	103.5	102.8	0.9	102.8	103.9	104.8	104.4	103.8	1.0
Oct 24	102.0	101.5	102.6	103.6	103.6	102.8	0.8	102.8	103.5	104.6	104.6	103.8	1.0
Sep 24	102.1	101.4	102.9	103.9	103.7	103.0	0.9	102.4	103.7	104.8	104.7	103.9	0.9
Aug 24	102.1	101.3	103.1	104.1	103.7	103.1	1.0	102.3	103.8	105.0	104.8	104.0	1.0
July 24	102.1	101.3	102.9	104.1	103.9	103.1	1.0	102.3	103.7	105.1	104.9	104.0	1.0
June 24	102.2	101.5	103.0	104.2	104.1	103.2	1.0	102.6	103.9	105.3	105.1	104.2	1.0
May 24	102.1	101.7	102.9	104.1	103.9	103.2	1.1	102.8	104.1	105.3	105.1	104.3	1.1
Apr 24	102.0	102.0	103.0	103.9	103.8	103.2	1.2	103.1	104.0	105.1	105.0	104.3	1.1
Mar 24	101.9	102.0	103.0	104.0	103.7	103.2	1.3						
Feb 24	101.8	101.7	102.8	103.8	103.7	103.0	1.2						
Jan 24	101.7	101.7	102.7	103.7	103.8	103.0	1.3						
Dec 23	101.7	101.4	102.4	103.4	103.9	102.8	1.1						
Nov23	102.0	101.5	102.4	103.5	104.1	102.9	0.9						
Oct 23	101.9	101.3	102.2	103.5	103.9	102.7	0.8						
Sep 23	101.8	101.1	102.6	104.0	103.5	102.8	1.0						
Aug 23	102.2	101.5	102.6	104.2	104.3	103.2	1.0						

Note: Bloomberg reported data is provided on a one decimal rounded basis. Detailed #s where available from Bloomberg
Source: Bloomberg, IEA

Source: IEA, Bloomberg

Oil: Trump’s views on Ukraine, Palestine and Iran in his Time Interview

Trump was named Time’s man of the year and Time posted its interview with him. He was asked about Ukraine, Palestine and Iran. (i) No surprise, he doesn’t get into specifics. (ii) Ukraine. He wouldn’t be pinned down too much and stuck to his line that all he wants is an agreement. Time wrote “The question that many Americans and many people around the world have is, Will you abandon Ukraine? I want to reach an agreement, and the only way you’re going to reach an agreement is not to abandon. You understand what that means, right?” (iii) Back off a two-state solution is the needed resolve. Time wrote “Do you still support a two-state solution? I support whatever solution we can do to get peace. There are other ideas other than two state, but I support whatever, whatever is necessary to get not just peace, a lasting peace. It can’t go on where every five years you end up in tragedy. There are other alternatives. Your incoming ambassador to Israel, Mike Huckabee, supports the settlement movement and Israel annexing the West Bank. The real question at the heart of this, sir, is, do you want to get a two-state deal done, outlined in your Peace to Prosperity deal that you put forward, or are you willing to let Israel annex the West Bank? So what I want is a deal where there’s going to be peace and where the killing stops.” (iv) Says nothing specific about Iran. Time wrote “Iran recently plotted to have you assassinated. What are the chances of going to war with Iran during your next term? Anything can happen. Anything can happen. It’s a very volatile situation. I think the most dangerous thing right now is what’s happening, where Zelensky has decided, with the approval of, I assume, the President, to start shooting missiles into Russia. I think that’s a major escalation. I think it’s a foolish decision. But I would imagine people are waiting until I get in before anything happens. I

**Trump is upside
wildcard to oil**

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would imagine. I think that would be very smart to do that.” Our Supplemental Documents package includes excerpts from the Time interview.

Oil: What Trump does on Iran is the upside wildcard to oil in Q1/25

Trump’s NSA pick Mike Waltz continues to be clear that Trump will be going after Iran’s oil and cash flow. On Friday, we posted [\[LINK\]](#) “Upside wildcard to #Oil in Q1/25. Trump NSA Waltz continues to clearly state Trump to hit Iran’s oil and cash flow. “you’re going to see a huge shift on Iran. You already have. We have to constrain their cash. We have to constrain their oil. We have to go back to maximum pressure, number one, which was working under the first Trump administration.” #OOTT [\[LINK\]](#). Our post included the link to Waltz Fox News interview on Thursday. Waltz repeated his prior comments that Trump will be going after Iran’s oil and therefore its cash flow. There has been no backing away from this clear messaging, which have been identifying as the key wildcard upside to oil prices in Q1/25. And we have also highlighted how some of the first Trump calls post his win were to Saudi Arabia and UAE and we have to believe Trump and MBS would have had Iran on their discussion. So the question is what did Trump tell MBS? These are why we weren’t surprised Saudi et al only postponed their return of barrels until Apr 1/25. Because if Trump does as clearly stated by his NSA Waltz, we would expect that Trump’s actions to hit Iran’s oil exports could be happening the day he takes office on Jan 20.

**Trump is upside
wildcard to oil**

11/26/24: Trump NSA Waltz clearly points to Trump hitting Iran’s oil exports

Waltz’s comments on Iran this week are right in line with his early comments post being named as Trump’s NSA pick. Here is what we wrote in last week’s (Dec 1, 2024) Energy Tidbits memo. “Trump NSA Waltz clearly points to Trump hitting Iran’s oil exports. We would have to think Trump’s pick for National Security Advisor, Mike Waltz, is going to be one of the top voices on Iran. And, if so, Waltz put forward some clear comments that Trump is going back to what he did in his first term on Iran – cut off their cash flow and that means cutting of oil exports. And that dealing with Iran was a priority for Trump. Waltz doesn’t leave much doubt Trump is going to make sure Iran doesn’t have cash to fund its backing of terrorism because as long as Iran is flush with cash, there is no chance for Middle East peace. (i) We had just hear Waltz on Squawk Box and we tweeted [\[LINK\]](#) “Bullish for 2025 #Oil. Just now, Trump National Security Advisor Mike Waltz clearly pointing to Trump return to cutting Iran’s oil exports so it doesn’t have cash flow to be a bad actor. Is well aware that US will have to make sure China doesn’t buy Iran oil. Will help Saudi, UAE, RUS by providing room for them to bring back voluntary cuts. Hope @SquawkCNBC posts the interview. #OOTT.” (ii) A couple hours later, CNBC posted the Waltz interview. And we tweeted [\[LINK\]](#) “Bullish for 2025 #Oil. See 🗨️ transcript. Trump NSA pick Mike Waltz. “.. world’s largest backer of terrorism... as long as they are flush with cash, the Middle East is never going to have peace....” Clearly points to cutting Iran’s oil exports back to almost nothing. #OOTT.” (iii) Our tweet included the transcript we made of comments by Trump pick for National Security Advisor, Mike Waltz, on with Becky Quick, Joe Kernan and Andrew Ross Sorkin on CNBC Squawk Box on Nov 26, 2024. [\[LINK\]](#). Items in “italics” are SAF Group created transcript. At 4:55 min mark, Waltz “The change you are going to see is more focused on Iran. I don’t believe that you restore stability. I don’t believe you solve Gaza. And I think this is

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shared across many in the administration with the President. Necessarily there you saw that dealing with Tehran. Tehran is the world's largest backer of terrorism. They are going to help Hezbollah, Hamas, the Houthis rebuild if they can. And as long as they are flush with cash, the Middle East is never going to have peace. ... There will be a shift. The president has been very clear about that. He was very clear in his 1st term in exerting maximum pressure on Iran until they are ready to come to the table from a very different perspective than they did with the Iran deal": At 6:20 min mark "I just want to make one more point on Iran. China buys 90% [he may have said 98% but hard to hear] of Iran's illicit oil. Roughly 2017/2018, they were exporting 4 mmb/d. By the end of Trump's first administration, it was down to around 3, 4 hundred thousand so I think we will be having some conversations with China about those purchases. But again, going back to that full maximum pressure. Not only will it help stability in the Middle East, it will help stability in the Russia/Ukraine theatre as well as Iran provides ballistic missiles and literally thousands and thousands of drones that are going into that theatre. So the Middle East is also a key component to resolving the Russia/Ukraine conflict."

11/07/24: Trump's Brian Hook points to Trump cutting off Iran oil exports

Trump's pick for National Security Advisor Mike Waltz's comments on Iran were right in line with what Trump's envoy on Iran in his first term said post the election. Here is what we wrote in our Nov 10, 2024 Energy Tidbits memo. *"Trump's Brian Hook points to Trump cutting off Iran oil exports. We were surprised that, prior to the election, analysts and agencies were focused on the downside risk to oil prices under Trump's drill baby drill will get US oil companies to crank up drilling and lower oil prices. For months, we have been highlighting Trump's big impact on oil prices will be what he does on Iran and Venezuela. (i) On Friday, we tweeted [\[LINK\]](#) "Positive for #Oil. Seems Brian Hook (rumored to lead transition team at State Dept) is clearly pointing to Trump is going to clamp down on Iran oil exports like he did in 1st term. Allow room for Saudi, Russia et al to bring back voluntary cut barrels without crashing oil price. Slash Iran oil revenues for funding proxies. Fits SAF Group 📌 Nov 3, 2024 Energy Tidbits highlight. Thx @BeckyCNN. #OOTT." (ii) Brian Hook was Trump's envoy on Iran in his first term and is the rumored person to lead Trump's transition team on the State Dept. And he was interviewed on Thursday on CNN. (iii) Hook highlighted Trump's Middle East accomplishments and "President Trump has no interest in regime change. The future of Iran will be decided by the Iranian people. We've said that repeatedly over four years. But what President Trump did say in Riyadh was that he would isolate Iran diplomatically and weaken them economically so they can't fund all of the violence that is going with the Houthis in Yemen, Hamas, Hezbollah, PIJ and these proxies that around Iraq and Syria today. All of whom destabilize Israel and our Gulf Partners." It's worth reading what Hook said and he highlighted a couple of times on Trump's strategy to weaken Iran financially. The #1 way to hit Iran financially is to enforce sanctions and cut back Iran oil exports to almost nothing like he did in his first term. (iv) Hook also highlighted Trump's foreign policy is clear. CNN said he was swerving his answers away from the questions and Hook replied "well look Becky, President Trump's foreign policy is hiding in plain sight. I'm not swerving any of your answers. I just think it's fairly obvious what he did*

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in the first term. It's obvious that he isolated Iran and he weakened Iran economically." (iv) Our tweet reminded that a cutting off of Iran's oil exports would be a plus to Saudi Arabia and Russia as it would allow them to add back their voluntary cut barrels. And to Israel as it would cut off Iran's cash flow that is used to fund the proxies."

Trump's Day 1 calls were with Saudi Arabia, UAE, Egypt and Israel

We have been wondering if Trump has given and will giving a hint on what he plans to do on Iran to Saudi Arabia, Russia and UAE, who will be the big winners if Trump cuts Iran and Venezuela oil exports. Our Nov 10, 2024 Energy Tidbits memo wrote *"It will be interesting to watch OPEC announces in a month on what Saudi, Russia et al decide about bringing back the voluntary cut barrels on Jan 1, 2025. Will they start the add back of voluntary oil barrels in Q1/25 which is forecast to have lower QoQ oil demand vs Q4/24. Will they add back the barrels in Q1/25? If so, we have to believe Saud Arabia and UAE and Russia have some indication from Trump that he is going to move immediately to cut Iran oil exports. In his CNN Interview on Thursday, Brian Hook (former envoy on Iran in Trump's 1st administration and rumored lead on the transition team on US State Dept) made a point of highlighting that Trump's Day 1 calls were with Saudi Arabia, UAE, Egypt and Israel."*

Trump's big impact on oil will be from what he does on Iran and Venezuela

Please note that both Iran and Venezuela have increased oil production since we wrote the following comments. Here was the last time, prior to the election on Trump on Iran and Venezuela in our July 21, 2024 Energy Tidbits memo. *"We recognize that the market is focused on Trump's big impact on oil being his "drill, baby, drill" for the US oil industry that he said twice in his acceptance speech on Thursday. Trump was clear that he says unleashing oil drilling in the US will lead to lower oil prices. We continue to believe that Trump's big impact on oil will be from what he does on Iran and Venezuela, and if he will go back to what he did in enforcing sanctions and bringing their oil exports down to almost nothing. Trump did not address Venezuela oil in his acceptance speech but did highlight how he was forcing Iran to run out of money by enforcing the sanctions. Here is what Trump said on Thursday night "Iran was broke. Iran had no money. Now Iran has \$250 billion. They made it over the last two-and-a-half years. They were broke. I watched the other day on a show called De-Face the Nation. Has anyone seen it? And they had a congressman who is a Democrat say, well, whether you like them or not, Iran was broke dealing with Trump. I told China and other countries, if you buy from Iran, we will not let you do any business in this country and we will put tariffs on every product you do send in or 100 percent or more. And they said to me, well, I think that's about it, they weren't going to buy any oil. And they were ready to make a deal, Iran was going to make a deal with us. And then we had that horrible, horrible result that we'll never let happen again, the election result. We're never going to let that happen again. They used COVID to cheat. We're never going to let it happen again. And they took off all the sanctions and they did everything possible for Iran. And now Iran is very close to having a nuclear weapon, which would have never happened. This is a shame what - - what this administration -- the damage that this administration has done." Whether you like Trump or not, he was responsible for cutting Iran's oil exports down to*

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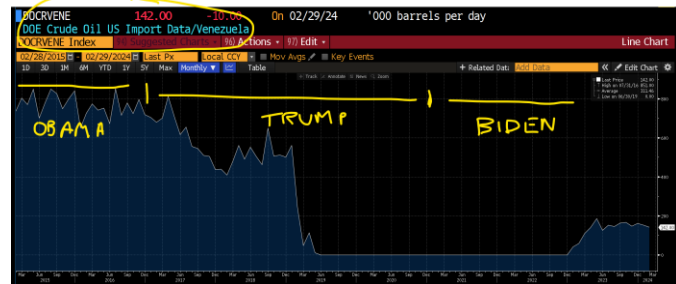
effectively zero and squeezing Iran’s cash. Here is what we wrote in our May 19, 2024 Energy Tidbits memo. “There were a number of comments on Trump reportedly promising to work with the oil industry, but we believe the bigger impact that Trump will have on oil prices is he moves back to enforcing sanctions on Iran and Venezuela sanctions. If he goes back to what he did, he will be knocking a million b/d or Iran oil exports off global oil markets and likely at least 150,000 b/d of Venezuela oil out of US oil imports.”

Figure 49: Iran oil exports (as of July 2024)



Source: Bloomberg

Figure 50: US oil imports from Venezuela (as of July 2024)



Source: Bloomberg

Oil: Would Israel go after Iran’s publicly known & secret nuclear facilities

After seeing the reports that Israel had taken out all the major Syrian military facilities on Thursday, we posted [LINK](#) “Would Israel go after Iran’s publicly known & secret nuclear facilities? See 📌 07/24/24 post: Netanyahu tells congress it’s not IF but WHEN Israel takes action vs Iran nuclear program. Israel has taken out all Syria major military assets incl south Syria radar ie. sets up flight path to attack Iran. #OOTT.” The key is something we have noted in Israel’s prior attacks taking out some of the southern Syria radar. By doing so, it gives Israel the potential to fly over southern Syria in a more direct route to northern Iran. And our post included our July 24, 2024 post when Netanyahu told Congress it was a matter of when not if Israel goes after Iran’s nuclear facilities. The other part of our post was attacking Iran’s publicly known and secret nuclear facilities. We don’t have any inside knowledge but can’t believe Iran doesn’t have some secret nuclear facilities. Although we would be shocked if Israel didn’t know about all Iran nuclear facilities, public and secret.

Would Israel attack Iran’s nuclear now?

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Netanyahu tells Congress it's not if but when Israel attacks Iran nuclear

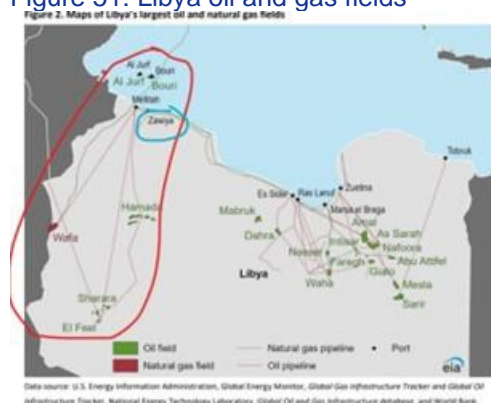
Here is what we wrote in our July 28, 2024 Energy Tidbits memo. *"Netanyahu tells Congress it's not if but when Israel attacks Iran nuclear program. We understand the focus was on Israel vs Hamas, but we are still surprised that Netanyahu's clear warning to Congress on Iran's nuclear program didn't get much attention. On Wednesday, we tweeted [\[LINK\]](#) "Netanyahu tells congress. it's not if but when Israel takes action vs Iran nuclear program! Overlooked geopolitical & #Oil wildcard/risk! 'And one more thing. When Israel acts to prevent Iran from developing nuclear weapons, nuclear weapons that could destroy Israel and threaten every American city, every city that you come from, we're not only protecting ourselves. We're protecting you." Netanyahu to congress. See 📌 07/21 tweet. Blinken: Iran now 1 or 2 weeks from breakout capacity to produce nuclear material for a weapon. Thx @TimesofIsrael #OOTT." Netanyahu seemed clear it was a question of when they take action against Iran's nuclear program, not if. We don't think anyone knows how this would play out but it doesn't seem to be an issue on geopolitical risk or oil risk screens. As a reminder, the Biden Admin has been consistent that they won't let Iran develop a nuclear weapon. Israel's bar is lower as they won't let Iran have the potential to develop a nuclear weapon and reaching break out capability would appear to do so. Our tweet posted an excerpt from the Times of Israel posted transcript of Netanyahu's speech."*

Oil: Will fighting at Zawiya refinery impact the 160,000 b/d oil exports at Zawiya port?

We have a 7am MT news cut off so it's far from certain what will happen from the overnight news that Libya NOC declared force majeure at the 120,000 b/d Zawiya oil refinery in NW Libya as fighting near the refinery led to a number of storage tanks being hit and causing fires. Earlier this morning, we posted [\[LINK\]](#) *"Oil story for Monday - Potential cut to Libya oil exports? Libya NOC declares force majeure at Zawiya refinery with fighting damages. Even if Libya fighting is restricted to NW Libya, Zawiya is also major Libya export port with ~160,000 b/d loadings fed by its biggest oilfield - Sharara. thx @aydincalik90 #OOTT [\[LINK\]](#)."* Our post linked to the Argus reporting [\[LINK\]](#) Zawiya is in NW Libya, just west of Tripoli. But it is strategic as Zawiya's oil tanker loadings were reportedly 160,000 b/d. This is overnight breaking news but we have not seen any reports of any impact on the nearby Zawiya oil export terminal. Zawiya refinery and exports are fed by Libya's largest oil field, Sharara and the nearby El Feel oil field. There should be a lot of added insight today but, at least in the early hours, it would seem to add risk when armed groups fighting led to this force majeure given Libya's recent history of fighting causing oil supply and export interruptions. Below is the EIA's map of Libya oil and gas business.

**Force majeure
at Zawiya
refinery**

Figure 51: Libya oil and gas fields



Source: EIA

Oil: China signals bigger & better stimulus & policy increases in 2025, but no specifics

The CSI 300 was down 1.1% on the week despite two big signals from China that there was bigger and better stimulus and policy increases in 2025. There is no question that China is messaging that they are prepared to go back to post global financial crisis level of support and that they realize they have to have more effective policy and stimulus. However, the market wants more than general statements, the markets want specifics. So no specifics meant China stocks were down on the week. (i) On Monday afternoon (local time) the Politburo went back to post global financial crisis actions with their language about having a “moderately loose monetary policy” hasn’t been used since the global financial crisis. And it also seemed timely that it was to try to reassure markets in the face of the unknown Trump factor. On Monday, we posted [LINK](#) “China trying to convince markets they are prepared for Trump. Politburo messages big stimulus & policy increase in 2025. “urged implementing a more proactive fiscal policy and a moderately loose monetary policy next year” “strengthen unconventional counter-cyclical adjustments” “make the macro regulation forward-looking, targeted and effective” #OOTT.” The three major state media all had the same short report. Global Times reported [LINK](#) “CPC leadership holds meeting on 2025 economic work, Party conduct, anti-corruption work. The Political Bureau of the Communist Party of China (CPC) Central Committee on Monday held a meeting to analyze and study the economic work of 2025 and arrange Party conduct and anti-corruption work. The meeting was chaired by Xi Jinping, general secretary of the CPC Central Committee. The main goals and tasks for economic and social development in 2024 will be successfully accomplished, according to the meeting. It urged implementing a more proactive fiscal policy and a moderately loose monetary policy next year. It is necessary to enrich and improve the policy toolkit, strengthen unconventional counter-cyclical adjustments, intensify the coordination of various policies, and make the macro regulation more forward-looking, targeted and effective, the meeting noted. The country should vigorously boost consumption, improve the investment efficiency, and expand domestic demand on all fronts, it said.” (ii) Early Thursday morning, Xinhua reported on results of China’s Central Economic Work Conference. It also was short of any specifics. Xinhua reported “the country should adopt a more proactive fiscal policy and set a higher deficit-to-GDP ratio, and it should ensure that its fiscal policy is continuously forceful and more impactful, according to the meeting.” “A moderately loose monetary policy should

**China
 messaging big
 stimulus**

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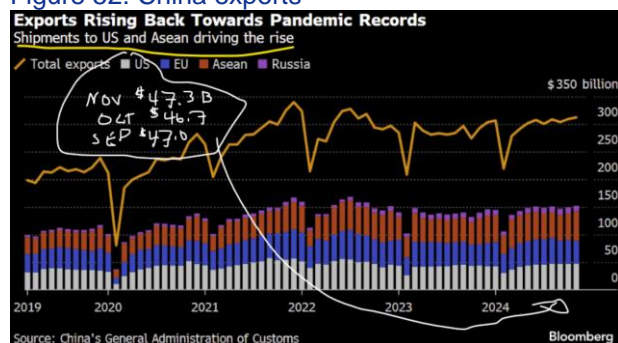
be implemented, with reductions in the reserve requirement ratio and interest rates at an appropriate timing to ensure ample liquidity, according to the meeting.” “the meeting urged efforts to vigorously boost consumption, improve investment efficiency, and expand domestic demand on all fronts. A special campaign dedicated to stimulating consumption should be implemented, and efforts should be made to increase the incomes and alleviate the burdens of low- and middle-income groups, the meeting noted.” Our Supplemental Documents package includes the Xinhua report.

Oil: China exports increasing post Trump

One of the surprises post the trump election was how it led to a rush of foreign orders for Chinese goods for rush delivery before Trump takes over on Jan 20. On Tuesday, we posted [\[LINK\]](#) “Trump election increased China exports to US +\$0.6b to \$47.3b in Nov. Positive but not huge. To avoid tariff risk, foreign customers want goods landed in US before Jan 20. See 📌 12/03 post, foreign customers paying up for air freight to beat Jan 20. Thx @JDMayger #OOTT.” Our post included the below Bloomberg graph that showed China exports were +\$0.6b MoM to \$47.3b in Nov. That wasn’t a huge MoM increase but we suspect the Trump election only had a partial impact on Nov exports and the real test will come to see Dec exports. But the increasing exports fits the other indicators we have seen with increasing foreign orders and a big jump in China international freight.

China exports up in Nov

Figure 52: China exports



Big jump in China international air freight to get goods before Trump

Here is what we wrote in last week’s (Dec 8, 2024) Energy Tidbits on the big jump in Chinese international air freight post the Trump win. “There seems to be no question that international customers want to get Chinese goods and products before Trump. The next item in the memo on Caixin China Manufacturing PMI notes how external orders ramped up post Trump winning the election. To support that statement on increasing external orders, on Tuesday Xinhua (state media) reported [\[LINK\]](#) that “the volume of China’s air cargo has reached a historic peak, fueled by robust growth in international air freight, an official with the Civil Aviation Administration of China (CAAC) said on Tuesday.” Then Xinhua reported that international air cargo for YTD Oct 31 was +48.5% YoY, but that international air cargo for the past week was +100.4% YoY. On Tuesday, we posted [\[LINK\]](#) “Trump boost to China economy. Big jump to record international air cargo as customers pay up for air cargo to get their

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China goods pre Trump. International air cargo. YTD Oct 31: +48.5% YoY. Last week: +100.4% YoY. Fits 📌 12/01/24 post. Caixin PMI external orders for China good up post Trump. #OOTT.” Our Supplemental Documents package includes the Xinhua report.”

Oil: Some China economic indicator data tonight

Every month, we report on a number of China economic indicators for color on how the Chinese economy and, in particular, consumers are responding. Tonight, China is scheduled to release monthly data for retail sales, household savings, new and used home prices and net foreign direct investment. To date, we have still been seeing hesitancy from Chinese consumers and also from foreign capital into China.

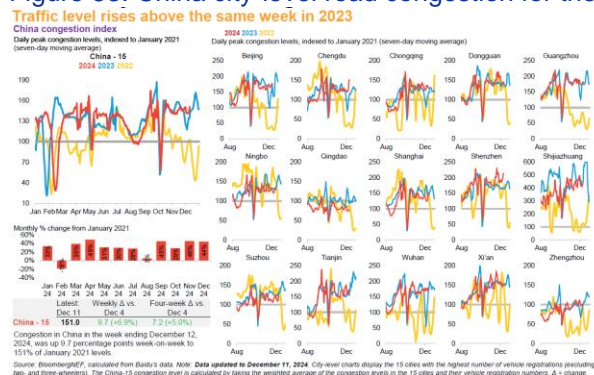
China economic data tonight

Oil: Baidu China city-level road congestion in Dec MTD is down -2% YoY

On Thursday, BloombergNEF posted its China Road Traffic Indicators Weekly Dec 12 report, which includes the Baidu city-level road congestion for the week ended Dec 11. BloombergNEF reported Baidu city-level road congestion saw an increase of +6.9% WoW to 151.0% of Jan 2021 levels. December MTD data has seen average daily peak congestion down -2% YoY when compared to December 2023. Note that this report was formerly titled Road Traffic indicators, and is now China Road Traffic Indicators, but the content of the report is unchanged. BloombergNEF’s report was titled “Congestion rises above year-ago level”. Below are the BloombergNEF key figures.

China city-level road congestion down YoY

Figure 53: China city-level road congestion for the week ended Dec 11, 2024:



Source: Bloomberg

Figure 54: China city-level road congestion for the week ended Dec 11, 2024

City	Indexed to January 2021 = 100												Indexed to the same month in previous year = 100													
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
China-15	146	133	81	138	148	130	129	127	104	144	120	145	143	187	151	85	100	114	110	86	104	87	94	99	99	98
Beijing	161	145	73	151	169	143	141	146	123	171	147	163	169	275	135	42	92	113	103	93	106	90	95	92	97	105
Chengdu	116	120	68	134	140	125	119	126	98	135	113	126	136	124	144	51	106	107	115	91	116	85	104	93	102	117
Chongqing	116	111	80	112	138	122	129	119	78	119	119	133	127	228	136	64	101	125	126	112	113	85	94	107	110	110
Dongguan	144	121	62	129	138	138	138	125	103	141	123	151	141	155	258	41	99	127	120	108	108	101	96	94	107	98
Guangzhou	181	161	76	171	195	174	170	162	158	179	159	183	171	307	199	45	99	127	127	107	107	106	98	99	102	95
Ningbo	142	127	79	144	146	120	128	121	94	140	119	131	127	127	203	59	115	140	121	112	106	81	110	101	90	90
Qingdao	103	78	51	71	78	72	75	91	80	87	79	81	74	195	175	62	94	97	98	87	95	76	82	85	81	72
Shanghai	158	115	79	146	152	130	132	119	93	151	121	135	137	172	156	54	98	117	105	101	98	78	93	95	98	91
Shenzhen	170	149	68	160	164	172	163	162	155	184	159	193	197	156	189	41	96	120	132	99	113	106	102	105	114	116
Shijiazhuang	461	494	350	400	390	311	329	334	308	354	356	422	411	258	156	69	93	85	81	77	89	70	75	104	86	89
Suzhou	136	118	79	134	137	113	112	105	96	115	106	114	116	157	171	60	111	130	117	97	99	88	86	98	90	85
Tianjin	198	133	85	160	165	145	132	105	98	168	150	163	166	244	136	60	114	121	119	100	96	88	107	100	97	87
Wuhan	159	167	105	174	171	146	144	141	117	168	154	167	168	187	151	55	94	100	97	85	95	86	88	107	105	106
Xian	155	152	98	141	147	129	123	135	107	145	136	158	145	152	132	66	110	112	105	91	110	97	96	101	101	94
Zhengzhou	108	110	85	95	96	80	78	86	86	91	83	103	97	164	119	76	98	102	90	82	96	72	86	103	106	91

Source: BloombergNEF calculations based on Baidu data. Note: Data updated to December 11, 2024. Values for the latest month are month-to-date. The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers.

Source: Bloomberg

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Oil: China oil imports 11.8 mmb/d in November, up +12.0% MoM and up +14.2% YoY

On Wednesday, Bloomberg released a report with data from China’s General Administration for Customs (GACC) on the summary data of China’s oil and natural gas imports for November. China’s imports of crude oil in November were backed out of the YTD figure, and are 48.5 million tons, or 11.8 mmb/d, a +12.0% increase from 10.6 mmb/d in October, and up +14.2% YoY from 10.4 mmb/d in November 2023.

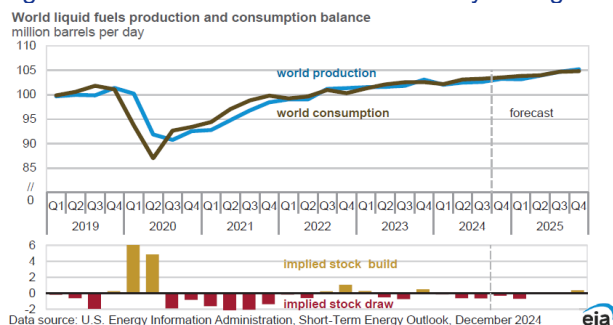
**China oil imports
November**

Oil: EIA forecasts global oil stocks will continue to decline thru Q1/25

On Tuesday, the EIA STEO also included their forecast for changes in global oil stocks [\[LINK\]](#). (i) The EIA forecasts OPEC production in November 2024 at 31.98 mmb/d and for Dec 2025 at 32.07 mmb/d. The EIA has accounted for the extension of voluntary OPEC+ cuts. The EIA forecasts OPEC production is 32.01 mmb/d in Q4/24, this is expected to rise in 2025 by +0.49 mmb/d YoY to 32.50 mmb/d in Q4/25. The EIA forecasts OPEC+ total petroleum and other liquid fuels production is 42.16 mmb/d in Q4/24, in Q4/25 the EIA forecasts an increase of +1.03 mmb/d to 43.19 mmb/d. The EIA said: “We expect global oil inventories will end 2025 near their current volume. We estimate that ongoing OPEC+ production cuts have contributed to global oil inventory withdrawals of about 0.4 million barrels per day (b/d) on average in 2024, and we expect that the extension of OPEC+ production cuts will cause inventories to fall by 0.7 million b/d the first quarter of 2025 (1Q25). However, we expect the subsequent ramp up in OPEC+ production and continued supply growth outside of OPEC+ will lead to an average inventory build of 0.1 million b/d over the remainder of 2025”. (ii) The EIA forecasts continued global stock declines thru Q1/25. The EIA forecasts global oil stocks declined by -0.66 mmb/d in Q3/24 with continued declines in Q1/25 before returning to oil stocks build in H2/25. The EIA wrote “We forecast that inventory builds will put some downward pressure on crude oil prices later in 2025, with Brent falling from an average of \$74/b in 1Q25 to an average of \$72/b in 4Q25. In our forecast, the 2025 annual average Brent price is \$74/b, down from an average of \$80/b this year”. Below is the EIA STEO global oil inventory chart.

**EIA global oil
stock draws
thru Q1/25**

Figure 55: EIA STEO Global oil inventory change



Source: EIA

Oil: Former IEA oil head Atkinson is a peak oil demand skeptic incl for China

The IEA posted its Dec OMR on Thursday. But , on Wednesday, we posted [\[LINK\]](#) “Wishing for the pre 🇫🇷 02/19/24 Macron version of the IEA. Former IEA Oil division head

**Former IEA Oil
head is a peak
oil skeptic**

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@NeilAtkinson58, a peak oil skeptic as he sees growth in demand from India, China, other developing countries in Asia, Africa & other parts of world will exceed any demand decline in rich countries. #OOTT @DyalaSabbagh_GI @gulf_intel.” We have referenced Neil Atkinson’s views over the years in our Energy Tidbits. He was head of the IEA’s Oil division for years back in the days when the IEA wasn’t viewed as a political arm for the green transition. Rather, the IEA was the go-to agency for oil views. We were listening to the Gulf Intelligence daily podcast when Atkinson was asked his views on oil demand from India and China. Atkinson said he was a peak oil skeptic, also a China peak oil skeptic and that demand from developing countries would more than offset any decline from developed countries. Atkinson replied “India is the poster child of demand growth over the next decade or foreseeable future. It’s using, I think less than one and a half barrels per capita per year currently and China after 30-years of growth, strong growth, is using about four I think it is, something like that. And the OECD average is 12, so you know, India has a lot of growth ahead of it as it’s population gets richer and they become more mobile, so more passenger cars, more trucking, more shipping, more aviation, more petrochemicals for plastics. So, India is going to be, a big, big pull for the OPEC producers in the next decade, as far as the eye can see. Elsewhere in Asia of course, the other developing countries are still developing, and they are going to see their demand grow strongly. My personal belief as a peak oil demand skeptic, is that the growth in demand from countries like India, and I still believe there is still growth in China by the way, I am not a peak oil demand enthusiast for China either. The growth in demand from developing countries in Asia, and also in Africa, which is less talked about, and other parts of the world; their growth will exceed any likely fall in the rich countries. So, you know India is going to be very, very important, and all the, all the estimates from the analysts out there show strong growth again in 2025 and into the foreseeable future.”

02/19/24: Macron, IEA is “our armed wing of implementing” Paris agreement

Our post this week on former IEA Oil division head Atkinson’s peak oil comments also linked to our Feb 19, 2024 post on Macron calling the IEA “our armed wing of implementing” the Paris agreement. Here is what we wrote in our Feb 25, 2024 Energy Tidbits memo. “Macron, IEA is “our armed wing of implementing” Paris agreement. We were shocked by France President Macron’s comment on the IEA. On Monday, we tweeted [\[LINK\]](#) “The IEA has become, so to speak, our armed wing of implementing the Paris agreement” Macron. The IEA has no guns, is Macron saying analysis/fcasts are their weapons to implement Paris as opposed to analyzing energy! Saudi Energy Minister Abdulaziz will say I told you so! #OOTT.” Macron made the keynote speech at the IEA Ministerial Meeting in Paris that also celebrated the IEA’s 50th anniversary. We were surprised that Macron made such a direct comment that made it clear the IEA’s focus is on implementing the Paris Agreement on behalf of the western governments that fund the IEA. This was not an accident, rather it looked like a prepared speech Macron read from a teleprompter. So, for some reason, Macron wanted the world to know the IEA is there to the “armed wing” for their western country funders to implement the Paris agreement. And not an agency that provides analysis for their western governments to make the right policy decisions. But, if we take Macron at his words, the IEA’s analysis is there to support policy or provide the impetus for their western government funders to make policy to support the conclusions of the analysis. And to provide the western governments with the rationale for why they make policies for Paris Agreement. It was a major ht to

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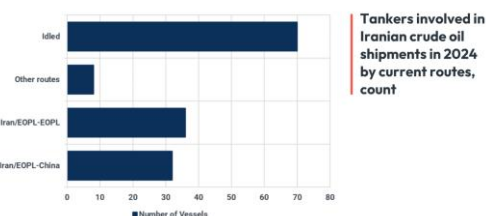
the IEA credibility and we just don't understand why Macron did it unless he wanted to hurt the IEA's credibility. Here is the transcript we made of Macron's comments that was attached to our tweet. Note that we made the transcript from the IEA's posting of Macron's speech. The IEA just didn't include the full Macron quote. At 0:52 min mark, Macron "We are also very proud that since its creation, the Agency has been able to profoundly shift its mandate. From an agency dedicated to managing strategic oil reserves, it has now become a global hub for debate, collective action to meet the challenge of the energy transition. The IEA has become, so to speak, our armed wing of implementing the Paris agreement, given that energy accounts for more than 75% of global greenhouse gas emissions."

Oil: Kpler China Nov oil + condensate imports from Iran -0.524 MoM to 1.31 mmb/d

Yesterday we posted [LINK](#) "Here's more support for why floating oil storage off Asia was jumped up in Oct/Nov. China imports of Iran crude oil + condensate hit 4-month low of 1.31 mmb/d, -0.524 mmb/d MoM. Thx @Kpler #OOTT." Note Kpler is referring to crude oil plus condensate barrels. It followed the same theme as Vortexa on reduced China oil imports from Iran due to wanting un-sanctioned tankers. Yesterday, Kpler posted [LINK](#) "US efforts to restrict Iranian oil flows are beginning to yield notable impacts. China's imports of Iranian crude #oil and condensate dropped sharply in November, hitting a four-month low of 1.31 million barrels per day. The significant 524 kbd month-on-month decline reflects the impact of geopolitical tensions, domestic energy shortages, and increased shipping challenges arising from stricter U.S. sanctions. Our analysis of the 147 tankers involved in Iranian crude shipments this year shows the disruption caused by the latest rounds of U.S. sanctions. This has resulted in a buildup of floating storage, primarily near Malaysia and Singapore." Below is the Kpler chart from this post. Our Supplemental Documents package includes the Kpler post.

China oil + condensate imports from Iran

Figure 56: Implied Iranian oil on water



kpler

Source: Kpler

Oil: Vortexa crude oil floating storage est 65.53 mmb at Dec 13, -6.55 mmb WoW

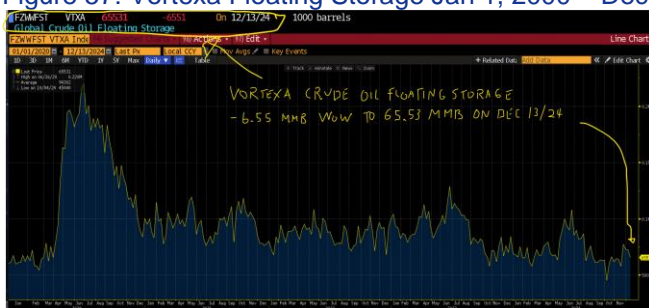
We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Dec 7 at 9am MT. (i) Yesterday, we posted [LINK](#) "Vortexa crude #Oil floating storage. 65.53 mmb on Dec 13, -6.55 mmb WoW vs revised up Dec 6 of 72.08

Vortexa floating storage

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mmb. 7-wk moving average is 67.65 mmb vs 56.88 on Nov 15. Driven by Asia, but Asia Dec 13 was 28.32, 1st wk below 30 mmb after 5 wks >30 incl 39.53 on Nov 29. Thx @vortexa @business #OOTT.” (ii) As of 9am MT Dec 14, Bloomberg posted Vortexa crude oil floating storage estimate for Dec 13 was 65.53 mmb, which was -6.55 mmb WoW vs revised up Dec 6 of 72.08 mmb. Note Dec 6 of 72.08 mmb was revised up +5.72 mmb vs 66.36 mmb originally posted at 9am on Dec 7. (iii) The 7-wk moving average is now 67.65 mmb is now +10.77 mmb over the past month vs the then 7-week moving average of 56.88 mmb as of Nov 15. This has been driven by the increase in Asia floating storage, where the 7-week moving average was up +6 mmb. It’s only one-week but Asia was -7.12 mmb WoW to 28.32 mmb on Dec 13, which was the first week below 30 mmb after five weeks above 30 mmb including 39.53 mmb on Nov 29. (iv) Revisions. Dec 6 was the largest upward revision of +5.72 mmb, rest of revisions were smaller so there was an average +1.89 mmb per week revision. Here are the revisions for the past seven weeks compared to the estimates originally posted on Bloomberg at 9am MT on Dec 7. Dec 6 revised +5.72 mmb. Nov 29 revised -0.45 mmb. Nov 22 revised +0.33 mmb. Nov 15 revised +1.75 mmb. Nov 8 revised +1.77 mmb. Nov 1 revised +2.40 mmb. Oct 25 revised +1.72 mmb. (v) There is a wide range of floating storage estimates for the moving 7-week average, but a simple moving 7-week average to Dec 13 is 67.65 mmb vs last week’s then 7-week moving average of 65.22 mmb. The 7-week moving average of 67.65 mmb is now +10.77 mmb over the past month vs the then 7-week moving average of 56.88 mmb as of Nov 15. (vi) Also remember Vortexa revises these weekly storage estimates on a regular basis. We do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. Normally we download the Vortexa data as of Saturday mornings around 9am MT. (vii) Note the below graph goes back to Jan 1, 2020 to show the run up to Covid and then how Covid started to impact Covid in March/April 2020. (viii) Dec 13 estimate of 65.53 mmb is -63.13 mmb vs the 2023 peak on June 25, 2023 of 128.66 mmb. Recall Saudi Arabia stepped in on July 1, 2023 with its voluntary cuts. (ix) Dec 13 estimate of 65.53 mmb is -4.42 mmb YoY vs Dec 15, 2023 at 69.95 mmb. Below are the last several weeks of estimates posted on Bloomberg as of 9am on Dec 14, Dec 7, and Nov 30.

Figure 57: Vortexa Floating Storage Jan 1, 2000 – Dec 13, 2024, posted Dec 14 at 9am MT



Source: Bloomberg, Vortexa

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Figure 58: Vortexa Estimates Posted 9am MT on Dec 14, Dec 7, and Nov 30

Posted Dec 14, 9am MT					Dec 7, 9am MT					Nov 30, 9am MT				
F2WVFST VIXA Indc					F2WVFST VIXA Indc					F2WVFST VIXA Indc				
ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD	ID	3D	1M	6M	YTD
F2WVFST VI...					F2WVFST VI...					F2WVFST VI...				
Date	Last Px				Date	Last Px				Date	Last Px			
Fr 12/13/2024	65531				Fr 12/06/2024	66360				Fr 11/29/2024	68898			
Fr 12/06/2024	72082				Fr 11/29/2024	73260				Fr 11/22/2024	70153			
Fr 11/29/2024	72812				Fr 11/22/2024	76959				Fr 11/15/2024	53796			
Fr 11/22/2024	77285				Fr 11/15/2024	55875				Fr 11/08/2024	60067			
Fr 11/15/2024	57634				Fr 11/08/2024	62090				Fr 11/01/2024	60411			
Fr 11/08/2024	63859				Fr 11/01/2024	61980				Fr 10/25/2024	55962			
Fr 11/01/2024	64378				Fr 10/25/2024	60020				Fr 10/18/2024	63009			
Fr 10/25/2024	61743				Fr 10/18/2024	63865				Fr 10/11/2024	56173			
Fr 10/18/2024	66133				Fr 10/11/2024	58003				Fr 10/04/2024	41971			
Fr 10/11/2024	59738				Fr 10/04/2024	43333				Fr 09/27/2024	59461			
Fr 10/04/2024	45040				Fr 09/27/2024	61223				Fr 09/20/2024	59363			
Fr 09/27/2024	63132				Fr 09/20/2024	61158				Fr 09/13/2024	59403			

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Bloomberg posts Vortexa crude oil floating storage in key regions, but not all regions of the world. The regions covered are Asia, North Sea, Europe, Middle East, West Africa and US Gulf Coast. We then back into the “Other” for rest of world. (i) As noted above, last week’s Dec 6 was revised +5.72 mmb. The major revisions were West Africa revised +2.88 mmb and Middle East revised +1.66 mmb. (ii) Total floating storage at Dec 13 of 65.53 mmb was -6.55 mmb WoW vs the revised up Dec 6 of 72.08 mmb. The major WoW changes were Asia -7.12 mmb WoW, Europe +3.00 mmb WoW and Middle East -2.14 mmb WoW. (iii) See below chart. We have been highlighting Asia floating storage up in Nov and the new Vortexa floating storage for Asia at 28.32 mmb at Dec 13, which was the first week below 30 mmb after five weeks above 30 mmb including 39.53 mmb on Nov 29. (iv) Dec 13 estimate of 65.53 mmb is -63.13 mmb vs the 2023 high on June 23, 2023 of 128.66 mmb. Recall Saudi Arabia started its voluntary 1 mmb/d production cuts on July 1, 2023. The major changes by region vs the last year June 23, 2023 peak are Asia -44.93 mmb and Other -16.09 mmb. (v) 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 Dec 6 that was posted on Bloomberg at 9am MT on Dec 7.

Vortexa floating storage by region

Figure 59: Vortexa crude oil floating by region

Region	Vortexa crude oil floating storage by region			Original Posted	Recent Peak	
	Dec 13/24	Dec 6/24	WoW	Dec 6/24	Jun 23/23	Dec 13 vs Jun 23/23
Asia	28.32	35.44	-7.12	35.18	73.25	-44.93
North Sea	0.68	0.72	-0.04	0.75	4.71	-4.03
Europe	4.54	1.54	3.00	1.31	6.05	-1.51
Middle East	9.06	11.20	-2.14	9.54	6.59	2.47
West Africa	8.77	9.83	-1.06	6.95	7.62	1.15
US Gulf Coast	0.83	0.96	-0.13	1.02	1.02	-0.19
Other	13.33	12.39	0.94	11.61	29.42	-16.09
Global Total	65.53	72.08	-6.55	66.36	128.66	-63.13

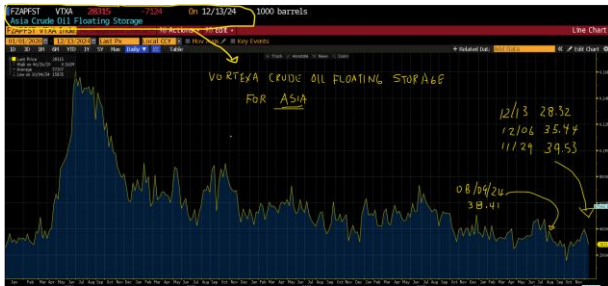
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Dec 14

Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

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Figure 60: Vortexa crude oil floating for Asia Jan 1, 2020 to Dec 13, 2024



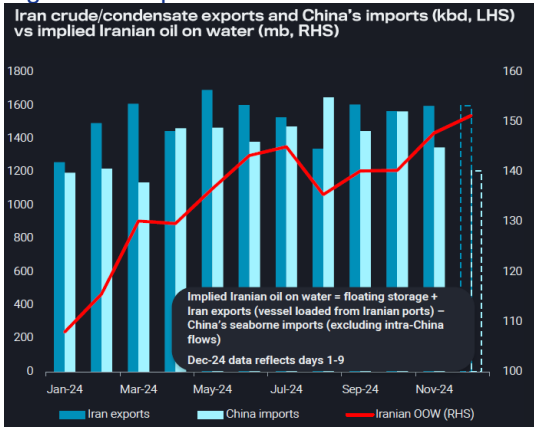
Source: Bloomberg, Vortexa

Oil: Asia floating storage is up as China wants non-sanctioned tankers for Iran oil

For the past few weeks, we have highlighted how Asia crude oil floating storage had jumped up. It looks like we found out why – it’s China. On Monday, we posted [LINK](#) “Here’s why crude oil floating storage off Asia is up. “In recent weeks, Iranian crude & condensate have been rapidly building up on tankers, as Chinese buyers increasingly require cargos to be delivered on non-sanctioned vessels due to heightened US sanctions” @vortexa Emma Li #OOTT.” Vortexa posted “Asia Market Spotlight: Iranian oil on water builds up amid heightened sanctions on tankers”. Vortexa wrote “In recent weeks, Iranian crude and condensate have been rapidly building up on tankers, as Chinese buyers increasingly require cargos to be delivered on non-sanctioned vessels due to heightened US sanctions.” Our post included the below Vortexa graph.

Asia floating storage up from China

Figure 61: Implied Iranian oil on water



Source: Vortexa

Oil: Bloomberg Oil Demand Monitor, How China Punched a Big Hole in 2024 Outlook

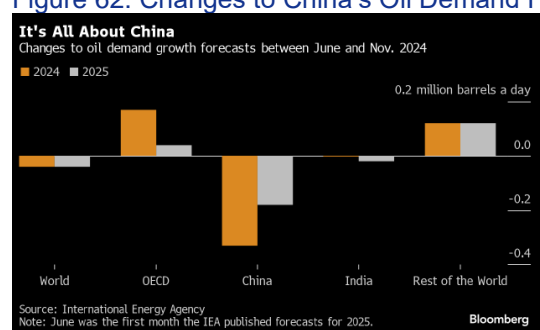
The Bloomberg Oil Demand Monitor is a good recap of key oil demand indicators around the world. This week’s report discusses the current concerns of China’s economy, and the resulting potential impact on their fuel consumption, as well as analyst concerns of a global surplus in 2025. Bloomberg noted that the continued cuts to 2024, and 2025 oil demand growth forecasts by the major energy authorities, such as the IEA, and OPEC, has been

Bloomberg oil demand monitor

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primarily driven by pessimism regarding China's economy. OPEC has trimmed their 2025 demand growth forecast by -0.310 mmb/d over the past 4 months. The trend of slowed China demand growth and increased supply from non-OPEC+ countries has driven analysts to forecast an oil glut in 2025. Bloomberg reported "*China's economic woes and their impact on the nation's fuels consumption lie at the heart of deteriorating expectations for global oil-demand growth. Forecasts for both 2024 and 2025 have been cut repeatedly by the International Energy Agency and analysts at OPEC. Since the start of the year, the IEA has reduced its 2024 demand growth forecast by 320,000 barrels a day, to just 920,000. OPEC, which didn't start trimming its outlook until August, has lowered it by 430,000 barrels a day, though still sees the world adding twice as much to consumption this year as the IEA does*". Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Figure 62: Changes to China's Oil Demand Forecast



Source: Bloomberg

Oil: IATA forecast jet fuel consumption to be +0.40 mmb/d YoY to 6.99 mmb/d in 2025

We don't have a jet fuel forecast model, but we couldn't help think that the IATA's forecast for global jet fuel consumption to be +0.40 mmb/d YoY in 2025 seems conservative given the IATA's highlighting of an aging global air fleet and increasing demand for used planes. (i) On Tuesday, the IATA (International Air Transport Association) posted its global outlook. The headline is record air passenger and air cargo in 2024 and going higher in 2025. For 2025 vs 2024, the IATA forecasts passengers +6.7% YoY to 5.221 million, flights +4.7% YoY to 40.0 million, passenger RPK +8.0% YoY, and cargo growth CTK +6.0% YoY. (ii) On Tuesday, we posted [LINK](#) "*Anyone else surprised IATA only fcast jet fuel consumption +0.40 mmbd YoY in 2025 to 6.99 mmbd. Follows 2024 was +0.59 mmbd YoY to 6.59 mmbd. Air travel up again YoY to new record flying in 2025 AND IATA highlights global fleet average age now record high 14.8 yrs and increased demand for used planes. Old planes tend to be relative jet fuel guzzlers. #OOTT.*" (iii) We don't know their model, but we would have expected fuel efficiency would have been worse ie. more liters per passenger. Before we saw the fuel efficiency table below, the IATA highlighted the backlog of new plane deliveries, "*high traffic demand, coupled with capacity constraints, has led to an increase demand for used aircraft, and in turn, to a significant decline in the share of parked fleet, which dropped to 14%, the lowest since 2019.*" And they highlighted "*The ongoing delays in deliveries have increased the average age of the global fleet to a record high of 14.8 years, compared to an average age of 13.6 years during 1990-2024*". Having read these first, we would have expected fuel efficiency to be worse in 2025 and not better in 2025. An older fleet and more used planes

IATA's jet fuel consumption forecast

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would have normally pointed to less fuel efficiency and therefore more jet fuel consumption given increasing flights. And that is why we have to wonder if the IATA forecast for jet fuel consumption being +0.40 mmb/d YoY in 2025 is conservative. Our Supplemental Documents package includes excerpts from the IATA global outlook.

Figure 63: Global air industry statistics

Table 10: Industry statistics

Global airline industry	2019	2020	2021	2022	2023	2024E	2026F
Segment passengers, million	4,560	1,779	2,304	3,472	4,439	4,893	5,221
O-D passengers, million	3,974	1,570	2,017	2,962	3,808	4,216	4,477
Flights, million	37.5	19.7	24.2	29.0	35.7	38.2	40.0
Passenger growth, RPK, % YoY	4.1%	-65.8%	21.8%	64.9%	36.8%	11.2%	8.0%
Cargo growth, CTK, % YoY	-3.2%	-9.9%	18.8%	-8.1%	-1.7%	11.8%	6.0%
Capacity growth, ATK, % YoY	3.3%	-44.3%	16.6%	19.7%	21.7%	9.9%	7.1%
Total load factor, % ATK	70.1%	59.9%	61.9%	67.2%	68.7%	69.6%	69.9%
Passenger load factor, % ASK	82.6%	65.2%	66.9%	78.7%	82.2%	83.0%	83.4%

Source: IATA

Figure 64: Key industry fuel metrics

Table 7: Key industry fuel metrics

Global airline industry	2019	2020	2021	2022	2023	2024E	2026F
Fuel spend, USD billion	190	80	106	215	269	261	248
% change YoY	1.5%	-58.0%	32.3%	103.0%	25.2%	-3.2%	-4.8%
% of operating costs	23.9%	16.1%	19.0%	29.6%	31.8%	28.9%	26.4%
Fuel use, billion gallon	96	52	62	76	92	101	107
% change YoY	2.2%	-45.9%	19.9%	22.9%	20.3%	9.8%	6.0%
Fuel efficiency, liter/100 ATK	0.24	0.23	0.24	0.24	0.23	0.23	0.23
% change YoY	-0.6%	-2.7%	3.0%	0.7%	-1.8%	-0.1%	-1.0%
Fuel consumption, liter per 100 km/passenger	4.2	6.6	6.5	4.8	4.3	4.2	4.1

Source: IATA

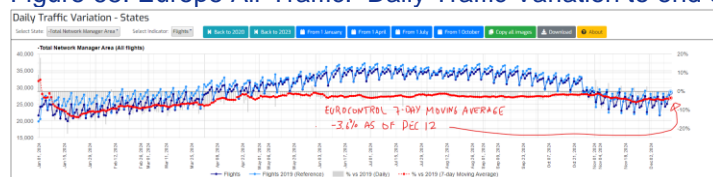
Oil: Europe airports daily traffic 7-day moving average is -3.6% below pre-Covid

Yesterday, we posted [LINK](#) "Pinched EU consumer. Daily Europe air traffic still at Apr levels. 7-day moving average as of: Dec 12: -3.6% below pre-Covid. Dec 5: -4.0%. Nov 28: -4.3%. Nov 21: -5.5%. Nov 14: -3.8%. Nov 7: -2.9%. Oct 31: -2.0%. Oct 24: -1.6%. Oct 17: -1.9%. Oct 10: -1.7%. Thx @eurocontrol #OOTT." Daily Europe air traffic relative to pre-Covid continues to be back down at April levels. Other than over Christmas, European daily traffic at airports has been stuck a little bit below pre-Covid. The 7-day moving average has got close to pre-Covid including -0.8% below pre-Covid as of May 30, but the 7-day moving average is now -3.6% below pre-Covid as of Dec 12, which followed -4.0% as of Dec 5, -4.3% as of Nov 28, -5.5% below as of Nov 21, -3.8% as of Nov 15, -2.9% as of Nov 7, -2.0% as of Oct 31, -1.6% as of Oct 24, -1.9% as of Oct 17, and -1.7% as of Oct 10. Please note the Eurocontrol website was under maintenance on Saturday until 5pm MT. Normally we try to pull the data early Saturday mornings for a consistent weekly comparison. Eurocontrol updates this data daily and it is found at [LINK](#).

Europe airports daily traffic

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Figure 65: Europe Air Traffic: Daily Traffic Variation to end of Dec 12



Source: Eurocontrol

Oil: Spain’s fuel consumption up YoY in October

Spain continues to show strong YoY growth in its fuel consumption. On Dec 2, Cores reported Spain’s monthly oil and petroleum consumption for the month of October [\[LINK\]](#). The takeaway from the Oct data was strong YoY increase in consumption of all the major petroleum products. And certainly not pointing to Spain having reached peak petroleum products consumption. Cores port noted that overall automotive fuel consumption rose +2.9% YoY, showing continued YoY gains in line with the upward trend in fuel consumption this year. Cores wrote “This month, consumption of all product groups increased year-on-year, with the exception of LPG (-1.8%): gasoline (+7.3%), kerosenes (+8.7%), diesel (+4.7%) and fuel oils (+18.7%). In the year-to-date, all product groups increased: LPG (+0.6% vs. 2023), gasoline (+7.7%), kerosenes (+11.9%), diesel (+1.6%) and fuel oils (+7.8%)”. Below is a table showing the breakdown of demand by fuel type in October. Our Supplemental Documents package includes the Cores report.

Spain’s fuel consumption

Figure 66: Spain’s October Oil Demand Product Breakdown (thousand mt)

Productos Petrolíferos	Consumos			Tasas Variación (%) Interanuales		
	Octubre 2024	Acumulado Anual	Año Móvil	Octubre 2024	Acumulado Anual	Año Móvil
Gasolinas Automoción	560	5.463	6.452	7,3%	7,7%	6,6%
Gasóleos Automoción	1.850	18.253	21.867	1,6%	1,1%	0,2%
Combustibles de Automoción	2.410	23.716	28.319	2,9%	2,5%	1,6%
GLP	139	1.767	2.107	-1,8%	0,6%	-2,2%
Gasolinas*	560	5.467	6.457	7,3%	7,7%	6,6%
Querosenos	670	6.244	7.307	8,7%	11,9%	12,6%
Gasóleos*	2.592	24.782	29.941	4,7%	1,6%	0,0%
Fuelóleos	751	7.180	8.546	18,7%	7,8%	8,4%

* Productos de automoción incluidos en el grupo de productos correspondiente

Source: Cores

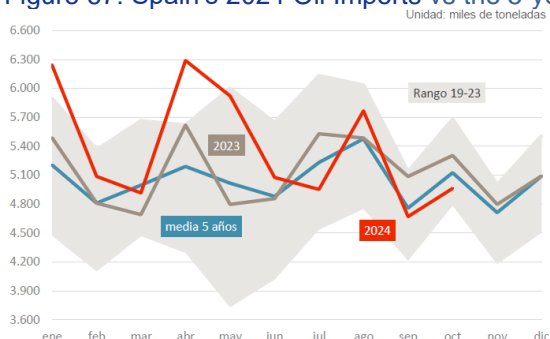
Oil: Spain’s Oil imports were down YoY and up MoM in October

On last Wednesday, Cores reported Spain’s oil imports for the month of October [\[LINK\]](#). The report showed that oil imports decreased by -6.4% YoY, and increased +6.3% MoM, however, YTD imports are up +4.3%. Cores reported that 31.3% of imports YTD have been from OPEC (“OPEP” here) suppliers. The reports said: “Crude oil imported into Spain in October stood at 4,962 kt. Crude oil imports decreased year-on-year in the month (-6.4%), while they increased in the accumulated annual (+4.3%) and in the moving year (+3.2%)”. Below is a graph showing Spain’s oil imports, and a table showing the breakdown of imports by OPEC or Non-OPEC countries. Our Supplemental Documents package contains the official report by Cores.

Spain’s Oil imports

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Figure 67: Spain's 2024 Oil Imports vs the 5-year Range and 5-year Average (thousand mt)



Source: Core

Figure 68: Spain's 2024 oil imports OPEC breakdown (thousand mt)

	4,982	-6.4	100.0	53,886	4.3	63,776	3.2	100.0
Total								
OPEP	1,553	-33.2	31.3	19,909	-10.1	24,623	-6.7	38.6
No-OPEP	3,410	14.4	68.7	33,977	15.1	39,153	10.6	61.4
OCDE	1,852	15.9	37.3	18,297	-1.1	21,551	-1.6	33.8
No-OCDE	3,110	-16.1	62.7	35,589	7.3	42,225	5.9	66.2
UE	87	36.0	1.7	442	44.6	500	27.9	0.8

Source: Cores

Energy Transition: Blackrock, \$3.5T/yr in capex to meet growing energy demand

We have been big believers that the value of natural gas will be going much higher as the energy transition unfolds and that is even moreso with the emergence of AI data centers that need 24/7 reliable power. So as we see this golden age or super cycle for AI data centers, we see that bringing a similar bullish view for natural gas. It may have taken most of 2024 but we are finally seeing more people realize that AI data centers need 24/7 power as their priority and that means natural gas and keeping coal and nuclear plants from being retired as the only ways to have new 24/7 power in scale for the next decade. So whenever we see bullish AI data center forecasts and the associated increase in electricity demand, it is a reminder of the bullish mid- and long-term demand for natural gas. On Wednesday, we posted [LINK](#) "AI Data Center 24/7 power need is bullish for #NatGas. Low-carbon = #NatGas. BlackRock "I and the low-carbon transition require investment potentially on par with the Industrial Revolution.... Plus, meeting growing energy demand will generate US\$3.5 trillion of investment per year this decade,,,," #OOTT." BlackRock's weekly commentary on Dec 9 highlighted the AI data center growth and need for massive growth in energy demand and hopefully low carbon as a priority. But like we have said before, it's like a dirty little secret that companies wit BlackRock don't want to use the words fossil fuels including natural gas when talking about the big energy demand to fuel the massive growth in energy demand for AI data centers. So the reminder we always make is low-carbon means natural gas. BlackRock wrote "More broadly, we think investors can find opportunities by tapping into the transformation we expect in the real economy. AI and the low-carbon transition require investment potentially on par with the Industrial Revolution. Major tech companies are starting to rival the U.S. government on research and development spending. Plus, meeting growing energy demand will generate US\$3.5 trillion of investment per year this decade, according to the BlackRock Investment Institute Transition Scenario. We see private markets playing a vital role in financing the future. Big spending on AI and the low-carbon transition plus rising geopolitical fragmentation is likely to cause persistent U.S. inflation pressures. And

BlackRock on massive energy demand

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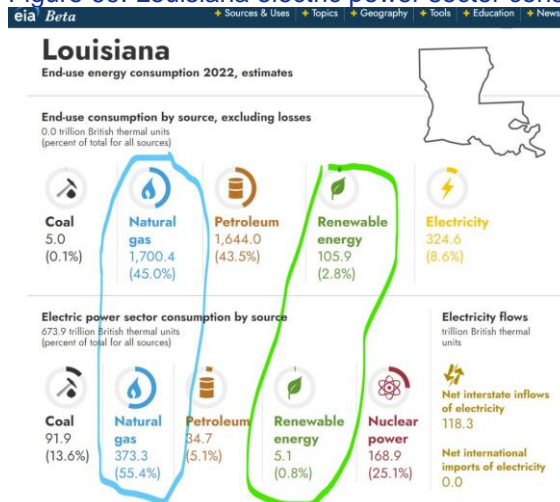
an aging workforce could start to bite as immigration slows, likely keeping wage growth too high for inflation to return to the Fed's 2% target.” Our Supplemental Documents package includes the BlackRock weekly commentary.

12/04/24: Meta's \$10b AI data center powered by natural gas?

A good example of going out of their way to say natural gas was the big announcement last week on Meta's \$10b AI data center. Here is what we wrote in last week's (Dec 8, 2024) Energy Tidbits memo. *“It's another of the dirty little secrets in the energy transition that companies and agencies should do what they can to avoid specifically saying fossil fuels are the primary fuel source for their AI data centers and that they wouldn't be able to have a 24/7 AI data center if they didn't have fossil fuels. That was the case this week with the crafty drafting and avoiding the dirty little secret Meta's new \$10b AI data center will be powered by natural gas, that is unless Meta is able to displace existing nuclear power from going into the grid. This will be Meta's largest AI data center. On Wed, we posted [\[LINK\]](#) “Bullish #NatGas for coming decade. Meta's \$10b AI data center to be in Louisiana. Read release closely, doesn't say the data center will be powered by renewables. And carefully doesn't mention #NatGas power. AI data centers need reliable, available 24/7 power. Louisiana is a big #NatGas producer incl the Haynesville shale. EIA's electricity profile shows LA's electricity generation is driven by #NatGas and renewable energy is immaterial. Unless Meta can divert existing nuclear from going into the grid, no one may want to say it BUT it will be #NatGas providing the 24/7 power. #OOTT.” There was no mention that natural gas would power the \$10b AI data center. Rather the crafty drafting. Entergy seems to infer that they will add clean efficient power plants (whatever they are) to power Meta \$10b AI data center, but that is the inference. Rather they are adding these clean efficient power plants to the overall Entergy system to meet demand including from the data center. This is NOT saying the new clean efficient power plants are what will power the \$10b data center. And then Meta says they have pledged to match its electricity use with 10% clean and renewable power. They aren't saying they will run the \$10b AI data center on clean and renewable power.. Here is the other reality check on why Meta isn't going to run this on renewable power - Louisiana has essentially no renewable energy. Our post included the below EIA Louisiana electric power sector consumption by source. Sure they will add some renewable power in Louisiana, but the reality is if Meta wants affordable, reliable, available 24/7 power, it will be relying on natural gas unless Meta can take the nuclear power instead of the nuclear power going into the grid. Lastly, we reminded that Louisiana's Hayneville 2024 production is forecast by the EIA to be 15.0 bcf/d vs total US production of 113.1 bcf/d. Our Supplemental Documents package includes the press release.”*

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Figure 69: Louisiana electric power sector consumption by sources



Source: EIA

Energy Transition: IATF forecasts Sustainable Aviation Fuel growth to be immaterial

We have been highlighting for years that Sustainable Aviation Fuel (SAF) will have an immaterial impact on jet fuel consumption and that thesis continues to play out. Putting aside the issue of availability, SAF is just too expensive relative to jet fuel and jet fuel is already the largest cost component. The IATA forecast SAF “could” rise to 0.6% of total jet fuel consumption in 2025. On Tuesday, the IATA (International Air Transport Association) posted its Global Outlook for Air Transport, which included its recap and forecast for SAF. On Tuesday, we posted [LINK](#) “Here’s why Sustainable Aviation Fuel will be immaterial to jet fuel consumption for several yrs. IATA: jet fuel is largest cost component at 30% of total cost. And SAF costs 2 to 5 times cost of jet fuel. IATA: SAF “could rise” to 2 MT in 2025 or 0.6% of total jet fuel. 2 MT = ~43,000 b/d vs total 2025 jet fuel consumption of 6.99 million b/d. #OOTT.” The IATA makes a big deal upfront on reducing emissions and fossil fuel use and moving to SAF. But then later talk about the reality of SAF – It’s expensive, it costs 2 to 5 times more. On pg 1, the IATA notes “fuel is airlines’ largest cost component, representing 30% of total cost”. On pg 4, IATA writes “Airlines still need liquid fuel to combust for propulsion, and the switch from fossil fuel to SAF involves a staggering price increase, as SAF is between 2-5 times more expensive than fossil-based jet fuel. In our Financial Roadmap,3 we estimate that the fuel share of airlines’ costs could reach 45% in 2050. Clearly, this SAF jet fuel price differential must shrink for air transportation’s wholesale energy-source shift to occur.” Then on pg 28, IATA writes “According to our estimates, SAF production has been around 1 Mt in 2024. The airline industry has consumed all of the SAF produced at a hefty price tag of USD 2,350 per tonne (or 3.1x jet fuel) in 2024, adding an incremental USD 1.7 billion to the industry fuel bill. In 2025, we estimate that SAF production could rise to 2 Mt and or 0.6% of airlines’ total fuel consumption, adding USD 3.8 billion to the fuel bill at USD 2,500 per tonne (or 3.8x conventional jet fuel).” Annoying that they deliberately use different measures instead of making apples to apples. But we did the math. They say around 1 MT in 2024 and “could rise” to 2 MT and 0.6% airlines total fuel

SAF is immaterial to jet fuel consumption

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consumption in 2025. We converted this to barrels and the above fuel use gallons to barrels. Using a conversion of 7.880 for jet fuel/kerosene per barrel. The 1 MT is equal to 21,600 b/d, and 2 MT is 43,200 b/d. Using the standard 1 barrel = 42 US gallons. The 101 billion gallons in 2024 is 6.59 mmb/d and the 107 billion gallons is 6.99 mmb/d ie. +0.40 mmb/d YoY vs 2024. So 43,200 b/d is 6.2% of 6.99 mmb/d in 2025. The math goes around. Note the IATA table uses 92 billion gallons in 2023 of fuel consumption, which is 6.00 mmb/d for 2023 ie. 2024 of 6.59 mmb/d is +0.59 mmb/d YoY. But given the point on older planes, we would have expected higher YoY growth in jet fuel consumption in 2025, at least as much YoY growth as in 2024 vs 2023. Our Supplemental Documents package includes excerpts from the IATA Global Outlook.

Energy Transition: Kevin O’Leary NatGas power world largest AI data center in Alberta

There is another reminder for increasing Alberta natural gas and that is AI data centres. And one thing that is clear from the Kevin O’Leary world’s largest AI data center to be built in Alberta is that it is powered by natural gas, albeit with the potential to add some future geothermal. On Monday, we posted [\[LINK\]](#) “*Alberta #NatGas makes it possible for Mr. Wonderful to make the world’s largest AI data center happen near Grande Prairie. The most compelling site in NA for AI data centre as can “offer 7.5 GW of low-cost power to hyperscalers over the next 5-10 yrs. Given existing permits, proximity to stranded sources of natural gas, pipeline infrastructure, water and a fiber optic network within just a few kms of the Greenview Industrial Gateway, we will be in the ground and up and running sooner than any scale project of its kind,” said Kevin O’Leary, Chairman of O’Leary Ventures.*” #OOTT.” Our post included the Mr. Wonderful video introduction of the “world’s largest AI data centre industrial park “Wonder Valley” near Grande Prairie. It will not be a surprise to see a large AI data centre in Alberta given the charter for a year on how natural gas producers were being approached about natural gas supply. But we hadn’t heard O’Leary’s name mentioned. O’Leary’s release noted some of the key benefits that Alberta has been promoting: natural gas supply to provide 24/7 power, geothermal potential to add a clean energy components, pipeline infrastructure, water, cold weather and skilled labour force. O’Leary says the final investment of the project over time will be over \$70 billion. Our Supplemental Documents package includes the O’Leary release.

World’s largest AI data centre proposed in Alberta

12/04/24: Alberta promotes its AI data centre attraction

Looking back, there should be no surprise in the timing that, on Dec 4, Alberta posted “*Fueling innovation through AI data centre attraction. Alberta’s government is aiming for Alberta to become North America’s destination of choice for Artificial Intelligence (AI) data centre investment.*” [\[LINK\]](#). The Alberta release was on why Alberta is the ideal place for AI data centre investment. It couldn’t have been a coincidence that this release came out five days before the Kevin O’Leary announcement. Our Supplemental Documents package includes the Alberta release.

Energy Transition: Better month for US BEV sales, but still at low % of penetration

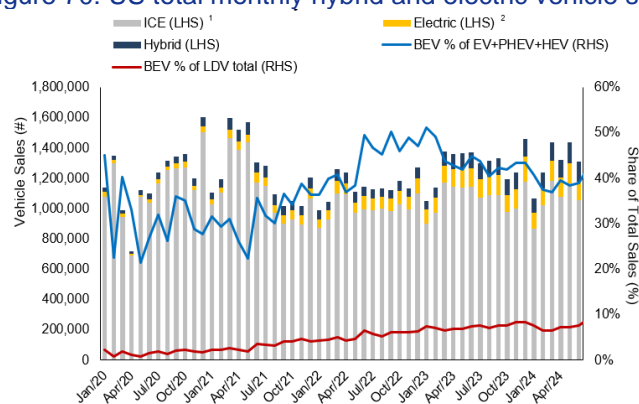
Argonne National Laboratory posted its monthly US sales data for Light Duty Vehicles (LDVs) broken out into Battery Electric Vehicles (BEVs), Plug-in Electric Hybrids (PHEVs) and Hybrid Electric Vehicles (HEVs) for November, which then allows us to back into ICE sales [\[LINK\]](#). (i) For EVs and hybrids, two recent trends have been the slowing growth rate in EV sales, and Hybrids taking more share from EVs. (ii). Hybrids are still showing the strongest YoY growth

US car sales up MoM in November

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and taking share from EVs. Hybrids are now 52.0% of total EV + PHEV + Hybrid, whereas it was 39.2% in Jan 2023. November was a better month for BEVs, as they are up +1.2% MoM in terms of % of EV + PHEV + Hybrid. In terms of % of total US LDV sales, BEV is up +0.5% to 8.7% of LDV's. (iii) Total US LDV car sales in November were up +17,182 cars or +1.3% MoM to 1,360,060 total car sales in November vs 1,342,878 in October. BEV: +7,580 or +6.9% MoM to 117,929 and 8.7% of total US. PHEV: +309 or +1.3% MoM to 23,513 and 1.7% of total US. HEV: +2,480 or +1.6% MoM to 153,163 and total 11.3% of total US. ICE: +6,813 or +0.6% MoM to 1,065,455 and 78.3% of total US. (iv) It was a slightly better month for BEVs, which have been underperforming HEVs. PHEVs look to be losing appeal. BEVs were up to 8.7% of total US LDV sales from 8.2% in October. The previous high for BEVs was in August 2024, when BEVs were 8.9% of total US LDV sales. This month also represented a MoM decrease in ICE, nonetheless, ICE sales still represent 78.3% of total US car sales. Our Supplemental Documents package includes the data from Argonne.

Figure 70: US total monthly hybrid and electric vehicle sales vs LDV total



¹ICE is total LDV - (BEV+PHEV+HEV) ²Electric includes BEV+PHEV
Source: Argonne National Laboratory

Source: Argonne National Laboratory

Energy Transition: Challenge for EU car co's to compete against China BEV + PHEV

It may not surprise anyone to heard Sky News 5:44 min clip on why China's BEV and PHEV manufacturers are dominating EU car manufacturers. But it was a good report on the challenge or impossibility for EU car manufacturers to compete against Chinese BEV/PHEV car manufacturers. On Monday, we posted [\[LINK\]](#) "Great @EdConwaySky recap of the challenge for western car manufacturers to compete against China for #BEVs and #PHEVs. Selling cheaper BEVs and PHEVs is needed to penetrate lower/middle income buyers who say cost is #1 holdback. Thx @vertumotorsCEO for flagging. #OOTT." Conway's primer was a series of graphs that show how EVs have led China to be the #1 exporter of cars. And he has a couple of good reminder charts on how China's costs are far below the E and how China dominates the supply chain for EVs. It's worth a quick listen.

China's EV dominance

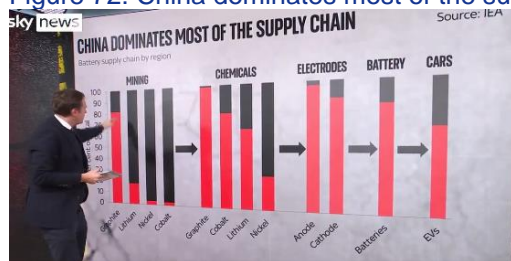
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Figure 71: Cheaper to make cars in China



Source: Bloomberg

Figure 72: China dominates most of the supply chain



Source: SkyNews

Energy Transition: BP and JERA reduce offshore wind spending

Whenever we see items like BP and JERA reducing offshore wind spending, we remind of the reality for adding 24/7 electricity for the last half of the decade – there are only limited options to provide electricity at scale over the next five years. To add electricity at scale in the next five years can only mean retaining coal and nuclear or adding natural gas. Last week's (Dec 8, 2024) Energy Tidbits memo noted Shell's slowing offshore wind spending. This week, it's BP and JERA. On Monday, we tweeted [LINK](#) "Can offshore wind attract Other People's Money when returns have been less than aspired for the offshore wind owner? bp/JERA roll offshore wind to a 50/50 JV. "The equity investment contributed by the partners may be lower than the total agreed gross funding depending on project and venture financing and proceeds from asset farm-downs and sales." Less capital investment in offshore wind = less wind generation than planned. What else besides new #NatGas generation, not retiring #Coal #Nuclear generation can scale up to provide 24/7 electricity to meet growing electricity demand. #OOTT." Bp and JERA are combining their offshore wind businesses into one 50/50 owned entity. Their joint press release on the surface sounded impressive on combining this big offshore wind global entity. But all it really is a way for bp to not have to talk as much about what was a bad strategic decision and, most importantly, significantly reduce its capital spending to offshore wind and do things like offshore wind sales. They may not directly say it but they are saying it. For whatever the capital spending plans of BP and JERA were before this announcement, this new entity will be less. Ie. prior capex plans of BP + JERA will be some much larger capex than what BP + JERA will spend in the new combined entity. In addition to this, the partners are saying that their actual equity contribution may be lower than the total agreed gross funding as they look for Other People's Money, which is why we ask if they will be able to attract Other People's Money to be

**More offshore
wind spending
cuts**

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promoted into offshore wind projects that are not generating the returns that were aspired. The bottom line to announcements like this is that there will be less offshore wind spending and there will be delays to offshore wind spending. And back to our electricity reminder, what else is there in the next several years to provide 24/7 power besides natural gas and keeping existing coal and nuclear going for longer. Our Supplemental Documents package includes the BP/JERA release.

12/04/24: Shell slows offshore wind spending

BP is the latest in a number of major offshore wind players to either cut back or push back offshore wind spending. Last week's (Dec 8, 2024) Energy highlighted Shell's slowing down of offshore wind sending. We wrote *"Shell slows offshore wind spending. We think it is simple for electricity for the last half of the decade – there are only limited options to provide electricity at scale over the next five years. To add electricity at scale in the next five years can only mean retaining coal and nuclear or adding natural gas. On Wed, Reuters reported "Shell is stepping back from new offshore wind investments and is splitting its power division following an extensive review of the business that was once seen as a key driver of the company's energy transition strategy ... "While we will not lead new offshore wind developments, we remain interested in offtakes where commercial terms are acceptable and are cautiously open to equity positions, if there is a compelling investment case," a company spokesperson said in a statement." It's why when we saw the Reuters report that Shell was slowing its offshore wind spending, on Wed we posted [\[LINK\]](#) "What else besides new #NatGas generation, not retiring #Coal #Nuclear generation can scale up to provide 24/7 electricity to meet growing electricity demand given disappointing ramp up in renewables by big players such as Shell? Exclusive: Shell slows offshore wind spending reports @ronbousso1. #OOTT [\[LINK\]](#)." Slower offshore wind spending means less offshore wind generation being added. And we think it is simple that for the world's next decade want for reliable, affordable, available 24/7 power, what else is there in scale besides not retiring nuclear and coal plants, maybe some new coal plants and of course adding natural gas. Our Supplemental Documents package includes the Reuters report."*

Energy Transition: Record natural gas generation saves UK amidst low wind

On Thursday, Bloomberg reported *"Power From Gas-Fired Plants in UK Jumps to Record High. Gas-fired generation rises to 27.34 gigawatts on Thursday, meeting 70% of UK power demand, according to NESO data. * Wind is providing just 5% of power, boosting the need for more fossil fuel generation * UK shut its last coal station at the end of September."* When possible, we always like to go check out source data. The Bloomberg report was at 8:27am GMT and we didn't get to the data until 12:35pm GMT. But the conclusions were the same. On Thursday, we posted [\[LINK\]](#) *"#NatGas saving the day for UK power right now. Politicians need to stop just talking about how wind generation CAPACITY is up big. Also need to assure how people get 24/7 reliable, affordable, available power when wind doesn't blow. Right now: UK generation is 3.7% wind, 66.6% #NatGas. Over past yr: wind is 31.8%, #NatGas 27;0% #OOTT."* The reminder is that wind provided 31.8% of National Grid's generation over the past year but was down to 3.7% at 12:35pm GMT. This is the a good reminder of the intermittency challenge – grids need to have something to step in when the

**Record UK
 natural gas
 power generation**

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wind doesn't blow. It's why we get annoyed when all we hear from politicians is how much wind capacity is being added and nothing on the plan to fill in for wind when the wind isn't blowing or the sun isn't shining. Below is the live power by sources UK National Grid picture that was attached to our post.

Figure 73: UK National Grid live power sources as of 12:35pm GMT Dec 12, 2024



Source: UK National Grid

Energy Transition: Ford's winter driving tips for EV owners

Ford posted its “Ice & Easy: Winter Driving Tips for Electric Vehicle Owners” [\[LINK\]](#). These are their tips to give EV owners peace of mind for the winter driving. It's a way of reminding cold temperatures reduce battery range with tips like don't your heater, just put your seat warmer on. The five tips are. “1. Park your electric vehicle in a garage, if possible: Garage storage helps to ensure that harsh weather conditions outside do not affect your vehicle and maintaining a warmer storage temperature than outdoors will aid in vehicle and battery performance.” “2. Remove all snow from the vehicle before driving: This is important to reduce weight and reduce air resistance when driving.” “3. Plug in your electric vehicle when parked for extended periods of time: Keeping the vehicle plugged while parked for extended periods of time, such as while you're away on a trip or even while parked at home overnight works to maintain battery health and helps to prevent range loss.” “4. Set daily Departure Times to precondition both the vehicle's battery and cabin while plugged-in: If you have a regular reoccurring driving schedule, such as a daily commute, preconditioning the battery using Ford's Departure Times feature allows it to warm to optimum temperature before use, positively affecting range and power.” “5. Reduce energy consumption used by the vehicle HVAC: If equipped, use the heated seats and heated steering wheel as primary heat and lower the cabin temperature setting to reduce energy consumed by using HVAC. For shorter DC fast charging sessions (also known as Level 3) minimize cabin heating while charging plugged in.”

Ford winter driving tips for EV owners

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India retail vehicle sales in Nov

Capital Markets: Are weak India commercial vehicle sales in Nov a one-off?

One of the Q4 global economy stories was how India economy growth of 5.4% in Jul-Sept quarter was the lowest growth rate in seven quarters. It's why we wonder if the weak commercial vehicle retail sales in Nov are a one-off or a continuation of slower India growth in Jul-Sept quarter. On Mon, we posted [LINK](#) "Were Nov India commercial vehicles sales a one-off or an indicator of lower growth India economy. India economy grew 5.4% in Jul-Sep qt, slowest pace in 7 qts. Nov CV sales: 15.85% MoM, -6.08% YoY. "a slowdown in coal & cement industries & weak market sentiment" Nov drop took YTD Apr-Nov CV sales to -0.29% YoY. Thx @FADA_India #OOTT." On Mon, FADA (Federation of Automobile Dealers Association) released its India retail vehicle sales for Nov. We were looking at it to see what it said about BEV vs PHEV vs HEV vs ICE but FADA doesn't provide by fuel splits for passenger vehicles (PV). However, what jumped out at us was the commentary on weak Nov PV and CV (commercial vehicle) sales and the commentary would point to what was seen in the July-Sept GDP data that there is lower economic growth. India vehicles are dominated by 2W with over 80% of the sales, followed by PVs at 10%. Nov 2W was +26.67% MoM and +15.80% YoY. Nov PVs were -33.37% MoM and -13.72% YoY. Nov CVs were -15.85% MoM and -6.08% YoY. YTD Apr-Nov 30 sales: 2W +14.04% YoY. PVs +4.19% YoY. CVs -0.29% YoY. FADA wrote "The CV segment also struggled, with sales down 15.85% MoM and 6.08% YoY. Contributing factors included restricted product choices, older model issues, limited financier support, and the absence of major festivals in November following a strong October. External elements such as elections, a slowdown in coal and cement industries, and weak market sentiment also weighed heavily on this category." "The CV category faces a more challenging environment. Factors such as subdued infrastructure activity and customers holding back for newer model-year vehicles continue to dampen demand." FADA also wrote "The PV segment faced notable headwinds, with sales declining 33.37% MoM and 13.72% YoY. Dealers cited weak market sentiment, limited product variety and insufficient new launches, compounded by the shift of festive demand into October." Our Supplemental Documents package includes the FADA release.

Figure 74: India retail car sales Nov 2024

All India Vehicle Retail Data for November'24

CATEGORY	Nov'24	Oct'24	Nov'23	MoM%	YoY%
2W	26,15,953	20,65,095	22,58,970	26.67%	15.80%
3W	1,08,337	1,22,846	1,03,939	-11.81%	4.23%
E-RICKSHAW(P)	40,391	43,982	41,718	-8.18%	-3.18%
E-RICKSHAW WITH CART (G)	5,423	5,892	3,188	-7.96%	70.11%
THREE-WHEELER (GOODS)	10,940	12,709	10,524	-13.92%	-3.95%
THREE-WHEELER (PASSENGER)	51,466	60,169	48,418	-14.46%	6.30%
THREE-WHEELER (PERSONAL)	117	94	91	24.47%	28.57%
PV	3,21,943	4,83,159	3,73,140	-33.37%	-13.72%
TRAC	80,519	64,433	61,996	24.97%	29.88%
CV	81,967	97,411	87,272	-15.85%	-6.08%
LCV	47,530	56,015	49,751	-15.13%	-4.46%
MCV	5,473	6,557	5,476	-16.53%	-0.05%
HCV	24,441	29,525	27,635	-17.22%	-11.56%
Others	4,523	5,314	4,410	-14.89%	2.56%
Total	32,08,719	28,32,944	28,85,317	13.26%	11.21%

Source: FADA Research

Source: FADA

Capital Markets: RUS gas/Green Transition = DEU "considerable structural problems"

There was another good example of how leaders, in this case Germany's Bundesbank,

Germany has "considerable structural problems"

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doesn't want to highlight upfront how significant cutting off cheap Russian pipeline natural gas and the cost of the Green Transition are the two key reasons for its "*considerable structural problems*". (i) On Friday, the Bundesbank posted its semi-annual outlook. There was a press release and then a lengthy report. And, no surprise, the headlines were all on the press release and not the full report. The headlines were on the big cut to the German outlook and the tough near term outlook. We went to the full report. (ii) On Friday, we posted [\[LINK\]](#) "*Top 2 causes of DEU "considerable structural problems" are cutting off RUS cheap pipeline #NatGas AND Green Transition. Bundesbank release: DEU economy is not only struggling with persistent headwinds "but also with structural problems". Report "considerable structural problems" with top 2 structural problems "This is mainly a problem for the export-oriented industrial sector. Domestically producing industrial firms must adjust, in particular, to the longer-term effects of the energy price shock triggered by Russia's war of aggression against Ukraine, 2 the requirements of the green transition to a carbon-neutral economy" #OOTT.*" (iii) The press release led off "*An economic recovery is yet to materialise. The German economy is not only struggling with persistent economic headwinds, but also with structural problems*". There was nothing in the release on what are the structural problems, which surprised us structural problems don't normally away until they are fixed. (iv) We find it annoying that the Bundesbank press release didn't explain the "*structural problems*". But then in the full report, the Bundesbank calls them "*considerable structural problems*". So these are considerable but no color in the press release. But, in the report, the Bundesbank starts off the discussion of the "*considerable structural problems*" with the first two they highlight are energy costs and then the green transition. This gets back to what we have been highlighting for the past years - it's all about energy costs for an industrial country like Germany and cutting off cheap Russian pipeline natural gas with the costs of green transition on top of that are a massive blow to Germany. The report said "*It is becoming increasingly apparent that the German economy is struggling not only with persistent economic headwinds, but also with considerable structural problems. It is under great pressure to adapt due to changing structural conditions both at home and abroad. This is mainly a problem for the export-oriented industrial sector. Domestically producing industrial firms must adjust, in particular, to the longer-term effects of the energy price shock triggered by Russia's war of aggression against Ukraine, 2 the requirements of the green transition to a carbon-neutral economy.*" Our Supplemental Documents package includes the Bundesbank press release and excerpts from the full report.

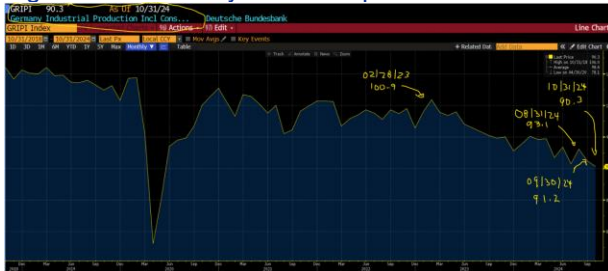
Capital Markets: Germany industrial production down MoM, lowest in years

No surprise, Germany industry production was down MoM and is now at the lowest level in years. On Monday, we posted [\[LINK\]](#) "*Germany industrial production in Oct down MoM vs est +1.0% MoM. Oct: 90.3, lowest in years. Sept: 91.2. Aug: 93.1. July: 90.7. June: 93.4. May: 91.7. Apr: 94.7. Banning cheap RUS pipeline #NatGas has hit DEU industrial base so give them credit for supporting UKR so far. Thx @business Kristian Siedenburg #OOTT.*" Last Friday, Bloomberg posted the Germany industrial production data for Oct and it was down 0.9% MoM vs estimates of +1.0% MoM. And it was the lowest level in the post Covid recovery. We have been highlighting how Germany manufacturing and industrial sector has been hard hit by Germany supporting Ukraine and stopping the use of cheap Russian pipeline natural gas. It has been a key factor to the decline in German manufacturing and industrial sectors. Our post included the below Bloomberg graph.

**Germany
industrial
production
lowest in years**

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Figure 75: Germany industrial production incl Oct 2024



Source: Bloomberg

Capital Markets: Canada’s Food Price Report forecasts food prices +3-5% in 2025

Last Thursday, Dalhousie University released their 15th annual Canadian Food Price Index [\[LINK\]](#). The report forecasts food prices to increase by +3-5% over 2025, which marks an increase from 2024’s forecast of +2.5-4% (according to the latest CPI data, the actual increase was +2.8%). Some of the items with the highest forecasted increases include, a forecasted +4-6% increase in meat prices, a +3-5% increase in restaurant food prices, and a +3-5% increase in vegetable prices. The report said: “The 2025 report forecasts that overall food prices will increase by 3% to 5%. This report has largely maintained the same approach as last year and shows estimated annual food expenditures by individual consumers based on their age and gender. Looking ahead to 2025, we are expecting a family of four with the same demographic makeup to spend \$16,833.67, an increase of up to \$801.56 from last year. This year’s report considers the following factors potential contributors to price increases: climate events, labor disputes, new policies, the U.S. election, and exchange and interest rates”. Note they show the below breakdown by food category i.e. bakery, fruit, meat, etc. to get to the +3-5% average. In addition to this, we have included the observed vs. forecasted increases for 2024. Our Supplemental Documents package includes excerpts from the food price report.

**Canada’s Food
Price Report
2025**

Figure 76: 2025 Food Price Forecasts

Food Categories	Anticipated Changes %
Bakery	2% to 4%
Dairy	2% to 4%
Fruit	1% to 3%
Meat	4% to 6%
Other	2% to 4%
Restaurants	3% to 5%
Seafood	1% to 3%
Vegetables	3% to 5%
Total Increase in Food Prices	3% to 5%

Source: Dalhousie et al.

Capital Markets: BofA cardholders Toronto spending up by 50% during Taylor Swift

Everyone has heard stories about the Taylor Swift impact on the local economies for her concert stops. On Thursday, we saw an impact comment by one of the people we regularly report on for her data on US consumer spending and savings – Liz Everett Krisberg, the head of the Bank of America Institute. She said their cardholders bumped their spending up

**Americans
seeing Taylor
Swift in Toronto**

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in Toronto by 50% during the Taylor Swift Toronto dates. She was on Squawk Box and we posted [LINK](#) “Taylor Swift impact! Bank of America client spending was up 50% in Toronto during Taylor Swift Toronto stop says Liz Everett Krisberg =, head of Bank of America Institute on @SquawkCNBC. Agree with @BeckyQuick's response "WOW". Doesn't hurt one USD gets 1.42 Cdn dollar.”

Demographics: Japan's growing worker shortage is only going to get worse

There was a good reminder of Japan's growing worker shortage in the Brookings Institute Dec 11, 2024 blog “Growing to extinction? Balancing economic and demographic sustainability”. It's a great food for thought blog on a big picture on what we called before the upcoming generational battle for the spending on the aging population. But included in that blog was a great Japan tidbit for this rapidly aging population amidst very low birth rates. Keep in mind Japan has a population of approx. 124 million people. Brookings wrote “The demographic crisis of depopulation and aging is rapidly emerging as one of the major determinants of economic and social environments in many countries. And despite the plethora of potential remedies—pro-natal policies, inward migration, longer working lives, technology—no solution is in sight. For example, to maintain the current worker-to-retiree ratio, Japan needs to attract more than 44 million foreign-born migrants, or a third of its population.”

Japan's growing
worker shortage

Twitter: Thank you for getting me to 11,000 followers

Last month, I went over 11,000 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, I am 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. My Twitter/X handle is @Energy_Tidbits and can be followed at [LINK](#). I wanted to use Energy Tidbits since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru my tweets and you can see I don't just retweet other tweets. Rather I try to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

@Energy_Tidbits
on Twitter

Misc Facts and Figures.

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

Wine of the week: Staglin Family Vineyard 1997 Cabernet Sauvignon

In August, I started the wine of the week when I realized I had to get to opening up some wines bought 20 to 30 years ago that included some that, unfortunately, were getting past their prime. One of the negatives of the change in life from Covid was a huge absence of entertaining at home, which means there has been a big shortfall in wine drinking at our home. So am now making sure what, when I bought them 15-25 years ago, were some good wines and make sure bottles get opened especially as many are 20 to 40 years old. On Friday, I tweeted out the wine of the week, which was Staglin Family Vineyard 1997 Cabernet Sauvignon. The recommended drinking

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period was 10 to 15 years ag. But I was surprised by how well it drank. Kudos to Staglin Family Vineyard.

Figure 77: Staglin Family Vineyard 1997 Cabernet Sauvignon



Source: SAF Group

Don't need an occasion to drink a great wine, a great wine is the occasion

No compelling sports to have on in the background yesterday so had flipped on the Norwegian show on Netflix, La Palma, about a disaster incl tsunami following a volcano in the Canary Islands. Watched Borgen earlier in the year so Norwegian shows pop up. But in the scene where the volcano is imminent and the key weather people can't get out, one opens a 2015 Pingus. His co-worker looks at him like what, and he says people always feel they need an occasion to drink a fine bottle of wine. They got it wrong, the bottle is the occasion. I agree and have put a purposeful effort to drink some great older red wines every week. And he opens the 2015 Pingus that his daughter gave him for his 60th. Pingus is one of the great Spanish red wines. Was disappointed when I went downstairs to see if I still had a Pingus. But none left, no Pingus or even their 2nd wine Flor de Pingus still in the cellar.

Figure 78: Pingus 2015



Source: Best of Wines

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