Energy Tidbits

January 12, 2025

Produced by: Dan Tsubouchi

BlackRock: Think Oil & Natural Gas, Solar Farms & Power Grids to Meet Growing Energy Demand Driven by AI Datacenters

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. BlackRock's 2025 global outlook *"Meeting growing energy demand (think solar farms, power grids, oil and gas) will generate investment of US$3.5 trillion per year this decade."* [click here]

2. Must be AI datacenters driving the plans for massive new natural gas power plants in the US after years of net retirement of natural gas power plants. [click here]

3. Markets starting to believe Trump when he says, "*we're going to try and have a policy where no windmills are being built."* [click here]

4. Biden new sanctions on Russia energy drove Brent +$2.84 on Fri to $79.76. [click here]

5. "Every single datacenter is limited by power" Nvidia CEO Jensen Huang. [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: Extremely low -40 bcf draw in US gas storage; now -3 bcf YoY

-40 bcf draw in US gas storage

HH prices rallied to end the week as the cold temps hit the US and this was despite an extremely low -40 bcf draw for the week ending Jan 3, 2025 [LINK]. Total storage is now 3.373 tcf, representing a deficit of only -3 bcf YoY compared to a deficit of -67 bcf last week. A draw of only -40 bcf is an extremely low draw from storage for a peak winter period. For much of 2024, storage figures exceeded the 5-year range but moved back into the 5-yr range as winter approached and continues to be within the 5-yr range. The week of Jan 3, 2025, saw storage is +207 bcf above the 5-yr average, above last week's +154 bcf surplus to the 5-yr average. 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.

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons: Year ago (01/03/24)		5-year average (2020-24)	
Region	01/03/25	12/27/24	net change	implied flow	Bcf	% change	Bcf	% change
East	737	745	-8	-8	769	-4.2	745	-1.1
Midwest	881	914	-33	-33	937	-6.0	886	-0.6
Mountain	255	262	-7	-7	222	14.9	181	40.9
Pacific	293	295	-2	-2	276	6.2	235	24.7
South Central	1,207	1,197	10	10	1,172	3.0	1,119	7.9
Salt	364	349	15	15	335	8.7	323	12.7
Nonsalt	844	848	-4	-4	836	1.0	797	5.9
Total	3,373	3,413	-40	-40	3,376	-0.1	3,166	6.5

Source: EIA

Figure 2: Previous US Natural Gas Storage

Previous 8 weeks (Bcf)				
Week Ended	Gas in Storage	Weekly Change	Y/Y Diff	Diff to 5 yr Avg
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
Dec/13	3,622	-125	20	132
Dec/20	3,529	-93	14	166
Dec/27	3,413	-116	-67	154
Jan/03	3,373	-40	-3	207

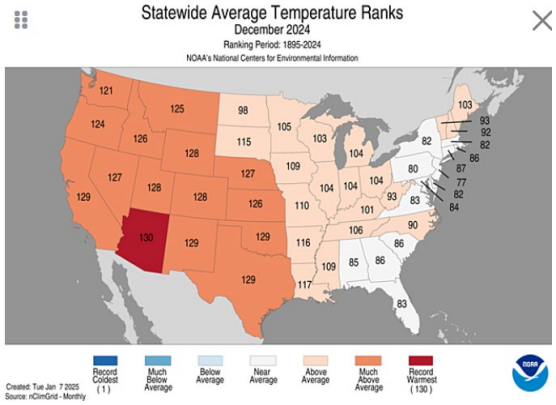
Source: EIA

Natural Gas: NOAA reported US Dec temperature was 4th hottest in last 130 years

Dec was 4th hottest US on record

HH closed in Dec at $3.63, which was surprisingly strong considering it was hot in the Lower 48 in Dec. On Friday, NOAA posted its recap of US temperatures for Dec 2024, and it was the 4th hottest Dec for the Lower 48 in total in the last 130 years. One of the key reasons HH was stronger than might be expected was that was warmer than normal but not near record warmth in the NE and around Lake Erie & Ontario. So the areas that have high penetration of natural gas in home heating weren't the near record warmth. Below is a map of statewide average temperature ranks.

Figure 3: Statewide average temperature ranks

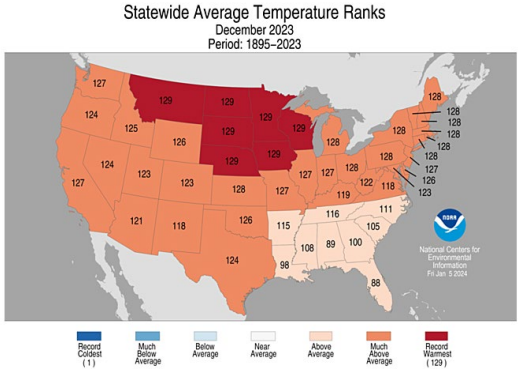


Source: NOAA

December 2023 was the warmest for US in 129 years

Here is what we wrote in our Jan 14, 2024, Energy Tidbits memo. "*December 2023 was the warmest for US in 129 years. We have been highlighting the warmer than normal US temperatures so far this winter that has led to lower natural gas demand. On Wednesday, the NOAA posted its national climate recap for Dec and Dec 2023 was the hottest on record in the past 129 years. Remember, we wrote in our Dec 17 Tidbits Memo that November was the 19th hottest in 129 years, which is definitely reflective of the unusually warm winter we've had so far. NOAA also sees El Nino conditions thru the rest of winter, with 100% probability for Dec/Jan/Feb and Jan/Feb/Mar. Again, we note it's not impossible for natural gas demand to catch up after a warm Nov/Dec, but it really needs to have sustained cold in January and February to make up for it. Below is the NOAA graphic showing indexed average statewide temperatures since 1895.*

Figure 4: US Statewide Average Temperature Ranks December 2023



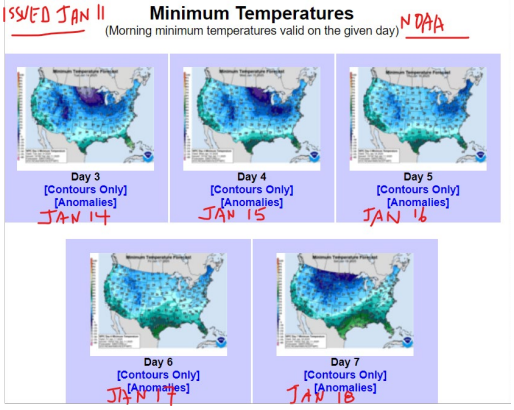
Source: NOAA

Natural Gas: NOAA's 3-7, 6-10 & 8-14 day temp outlook calls for cold to continue

Cold temperatures to continue

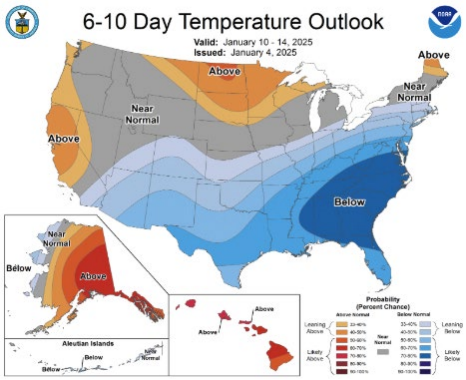
It was a great week for HH prices up $0.64 to $3.99 with the cold weather hit the Lower 48. And the good news for HH is that the cold weather is forecast to continue for the next couple weeks. Yesterday, we posted [LINK] *"Positive for HH #NatGas. Cold temps expected to continue across most of Lower 48 for the next two weeks. Today's updated @NOAA 3-7, 6-10 & 8-14 day temperature outlooks. #OOTT."* Our post included the below NOAA yesterday updated temperature maps for 3-7 days, 6-10 days and 8-14 days

Figure 5: NOAA 3-7 day minimum temperature outlook covering Jan 14-18



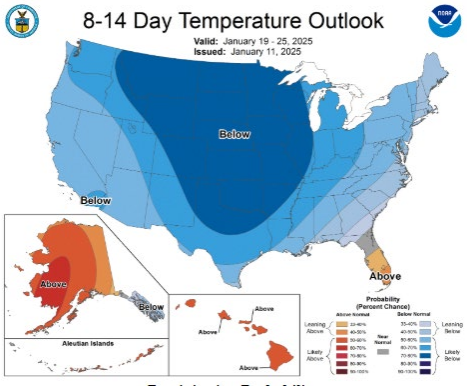
Source: NOAA

Figure 6: NOAA 6-10 day temperature outlook covering Jan 17-21



Source: NOAA

Figure 7: NOAA 8-14 day temperature outlook for Jan 19-25



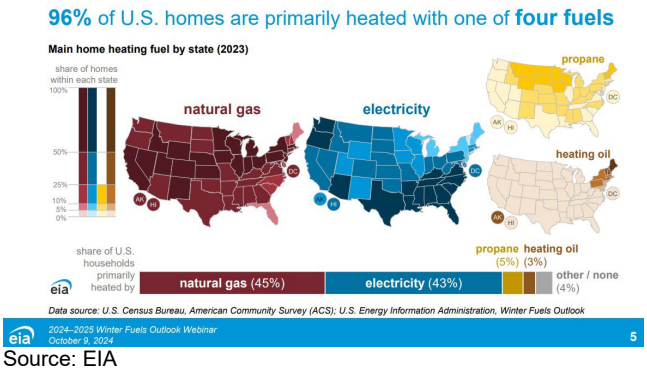
Source: NOAA

Natural Gas: Most Great Lakes & NE US homes use natural gas for home heating

Natural gas home heating

The cold wave came in and hit the US this week. Yesterday, we posted [LINK] "*Great week for HH #NatGas prices +$0.64 WoW to $3.99. Reminds cold Jan temperatures around the more populous Great Lakes & NE US are great for HH #NatGas prices. It's where natural gas has the highest penetration rate for home heating. #OOTT."* HH prices were +$0.64 this week to close at $3.99 on Friday. It was cold but our tweet highlighted that it's always the best when it is cold around the populous Great Lakes and NE US because that is where natural gas has the highest penetration rate for home heating. Natural gas, on average, heats 45% of US homes but a way higher percentage around the Great Lakes and parts of the NE US. Below is the EIA home heating by fuel by state map attached to our post.

Figure 8: Fuels for winter home heating of US homes



Source: EIA

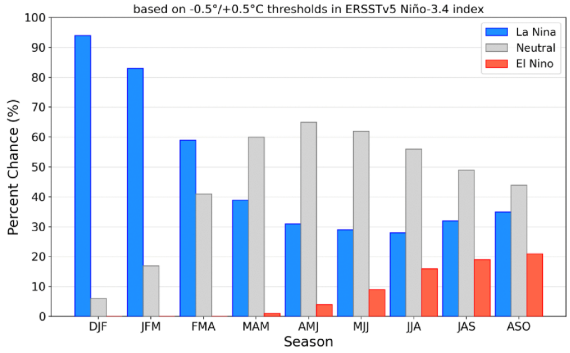
Natural Gas: NOAA sees La Niña conditions to persist Feb-Apr, milder spring

La Niña forecast for winter 2024/25

On Thursday, the NOAA posted the updated monthly El Nino/La Niña outlook, which is issued on the 2nd Thursday of every month [LINK]. NOAA continues to see a La Nina/Normal end to winter but turning to a weak La Niña Spring. The takeaway from the December update is that La Niña conditions are present and expected to continue through February – April at a 59% probability. The probability forecast for a transition to ENSO-neutral is now likely during

March-May at a 60% chance. NOAA wrote: *"The dynamical models in the IRI plume continue to predict a weak La Niña during the winter seasons, as indicated by the Niño-3.4 index values less than -0.5C (Fig. 6). The North American Multi-Model Ensemble (NMME) predicts slightly cooler SST anomalies with La Niña persisting through February-April 2025. The forecast team favors the NMME guidance, predicting weak La Niña conditions through the early spring before transitioning to ENSO neutral. Weak La Niña conditions are less likely to result in conventional winter/spring impacts, though predictable signals can still influence the forecast guidance (e.g., CPC's seasonal outlooks). In summary, La Niña conditions are present and are expected to persist through February-April 2025 (59% chance), with a transition to ENSO-neutral likely during March-May 2025 (60% chance; Fig. 7)."* Below is a chart of El Nino probability forecasts for 2025.

Figure 9: NOAA El Nino Probability Jan 2025



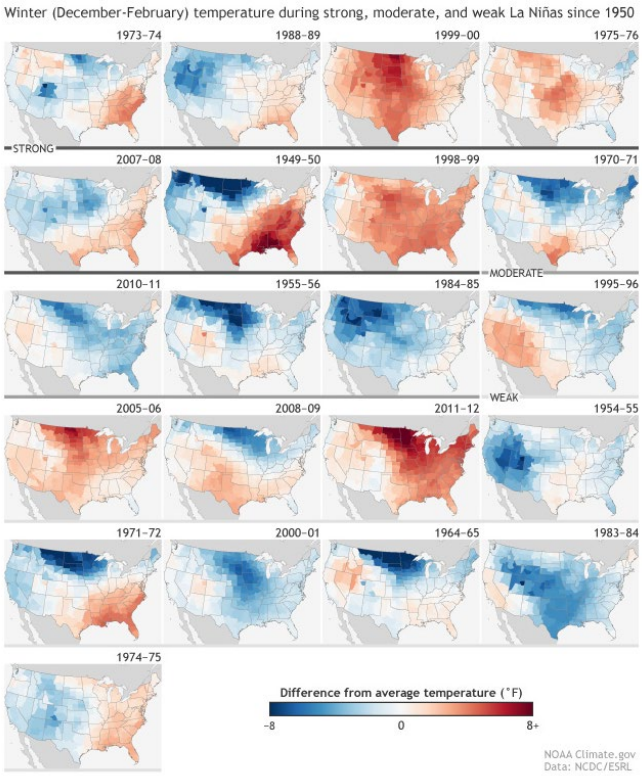
Source: NOAA

La Niña correlations to colder winters aren't perfect

La Niña 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 Nina 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.

Figure 10: Winter (Dec-Feb) temp in strong, moderate and weak La Niñas since 1950



Source: NOAA

Natural Gas: Natural gas deliveries to US LNG plants hit record 15.12 bcf/d on Jan10

15.12 bcf/d feed gas to US LNG plants

Last week's (Jan 5, 2025) Energy Tidbits memo highlighted the recent start up of Cheniere's Corpus Christi 3 and Venture Global's Plaquemines LNG projects. So, no one should be surprised to see natural gas to US LNG export plants hit a new record of 15.12 bcf/d on Friday. The significance of increasing US LNG exports and increasing AI datacentre consumption of natural gas is that they reduce the potential swings on natural gas prices from the most important wildcard – how cold it is or isn't in winter. How cold it is or isn't in winter will continue to be the most significant wildcard for causing swings in HH prices. But we see that key factor being minimized to some modest degree. Yesterday, we posted

[LINK] "*Biggest wildcard causing the biggest swings in HH prices will always be how cold or not it is in winter. BUT a key factor minimizing the potential swing is increasing #NatGas deliveries to LNG plants, which just hit 15.12 bcf/d on Jan 10. Increasing #Datacenter need for 24/7 #NatGas power will also help minimize winter price swings. #OOTT.*" Our post included the below graph of Bloomberg's natural gas deliveries to US LNG plants.

Figure 11: Natural gas deliveries to US LNG plants

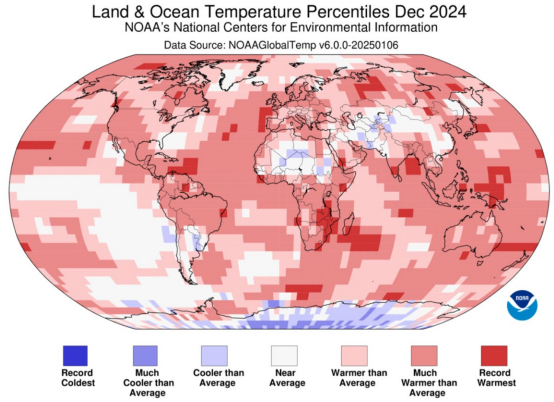
Source: EIA

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

Second warmest December on record globally

On Friday, the NOAA posted its December recap for the global climate, which came in as the second warmest December in the last 175 years [LINK]. The NOAA wrote "*Global surface temperature in December 2024 was 2.27°F (1.26°C) above the 20th-century average—the second warmest December on record. Generally speaking, the Arctic, North America and northern Asia were much warmer than normal; parts of southern South America, northern Africa and southern Asia were slightly below average.*" Below is a map of the land & ocean temperature percentiles for December 2024.

Figure 12: Land & Ocean Temperature Percentiles for Dec 2024



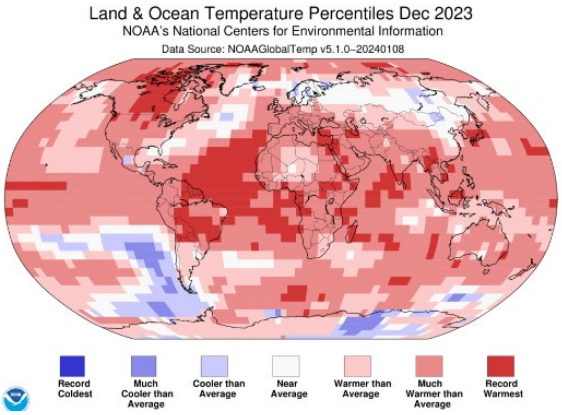
Source: NOAA

Dec 2023 had the hottest average global temperature on record

Here is what we wrote in our Jan 14, 2024 Energy Tidbits memo. "*Dec 2023 had the hottest average global temperature on record. On Friday, we tweeted [LINK] "Here's why JKM #LNG and Europe TTF #NatGas prices are basically half of a year ago.*

And why the risk for repeat of 2023 with soft LNG and #NatGas prices carrying thru shoulder season. Hottest average global temperature on record for BOTH Nov 2023 and Dec 2023. #OOTT." NOAA's December 2023 Global Climate Report [LINK] had a simple message – it was hot everywhere in December. NOAA noted "Dec 2023 average global surface temperature ranked highest for Dec since global records began in 1850." "Europe had its seventh warmest Dec on record". "Asia had its 18th warmest Dec". "North America had its warmest Dec on record". And for the numbers, NOAA wrote "The December global surface temperature was 1.43°C (2.57°F) above the 20th-century average of 12.2°C (54.0°F), making it the warmest December on record. This was 0.30°C (0.54°F) above the previous record from December 2015. December 2023 marked the 48th-consecutive December and the 538th-consecutive month with temperatures at least nominally above the 20th-century average."

Figure 13: Land & Ocean Temperature Percentiles for Dec 2023



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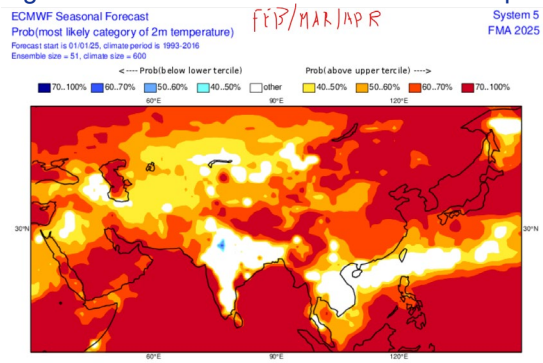
Source: NOAA

Natural Gas: ECMWF forecasts warmer end of winter in most of China, Japan, and KR

On Wednesday we posted [LINK] "*Holdback to #LNG and global #NatGas prices. ECMWF's Jan updated seasonal temperature outlook calls for warmer than normal temperatures in Europe and Asia to end winter. #OOTT."* Winter and end of winter temperatures are key to natural gas and LNG prices. Last month, we highlighted the ECMWF forecasts for a warm winter in Asia. Our post referenced the January ECMWF Feb/Mar/Apr forecast. The forecast predicts that Asia is to see warmer than normal temperatures to end winter in most of China, Japan, and South Korea. We recognize weather forecasts are far from 100% accurate, and we also remind that the period is not forecasted to be as warm as the very warm 2023-24 winter. The European Centre for Medium Range Weather Forecasts (ECMWF) updated its seasonal forecast with a January base time for Asia for the end of Winter depicted in the figure below. The ECMWF didn't provide any commentary.

Figure 14: ECMWF Jan seasonal JFM temperature forecast for Asia



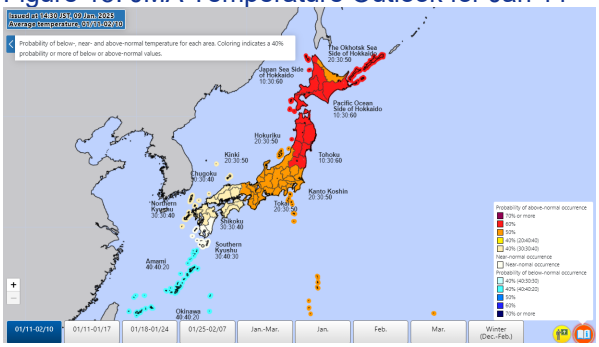
Source: ECMWF

Natural Gas: JMA forecasts is for warmer than normal for next 30 days

JMA temperature forecast for next 30 days

The JMA next 30-day temperature forecast continues what was seen the prior week – the cold across most of Japan is turning to warmer than normal temperatures. On Wednesday we posted [LINK], "*Holdback to #LNG and global #NatGas prices. ECMWF's Jan updated seasonal temperature outlook calls for warmer than normal temperatures in Europe and Asia to end winter. #OOTT*". Then on Thursday we posted [LINK], "*Holdback to JKM #LNG prices. Updated Japan Meteorological Agency temperature outlook is for warmer than normal temperatures to end winter. Only covers Jan 11-Feb 10 but winter for most of Japan ends in Feb. Fits 01/08/24 ECMWF forecast. #OOTT*". On Thursday, the Japan Meteorological Agency updated its temperature forecast for the next 30 days, Jan 11 – Feb 10, in Japan [LINK]. There is no JMA commentary on the forecast. JMA is calling for a 60% chance of warmer than normal temperatures in the mid-to-northern prefectures. The southern prefectures now are calling for closer to normal temperatures, while the southern islands have a 40% chance of being colder than normal. We checked AccuWeather for Tokyo and for the period there are forecasted daily highs in the ~11C range and overnight lows around ~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 Jan 11 – Feb 10.

Figure 15: JMA Temperature Outlook for Jan 11 – Feb 10



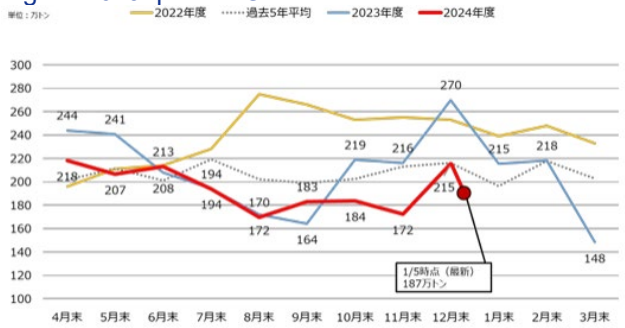
Source: Japan Meteorological Agency

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

Japan LNG stocks down WoW

Japan's LNG stocks are down WoW, down YoY, and are down when compared to the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK]. LNG stocks on January 5 were 89.8 bcf, down -16.5% WoW from 107.6 bcf on December 29, and down -13.0% from 103.3 bcf from a year ago. Stocks are down compared to the 5-year average of 94.1 bcf. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 16: Japan LNG Stocks



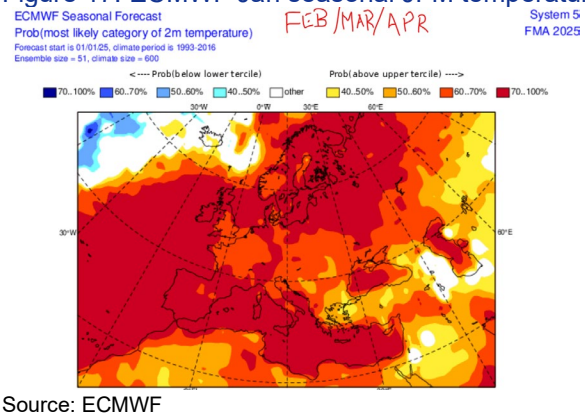
Source: METI

Natural Gas: ECMWF forecasts warmer than normal end to winter across Europe

Forecast warmer than normal temps across Europe

Winter and end of winter temperatures are key to natural gas and LNG prices; the forecast for a warmer than normal end of winter in Europe is a reminder to be cautious until we begin to see temperatures that promote natural gas demand. We recognize weather forecasts are far from 100%. Although the forecast is for warmer than normal Feb/Mar/Apr, the YoY comp is against a very hot 2023-24 winter. Last winter, was significantly warmer than normal in all the major natural gas consuming regions in the world; and the warm winter caused LNG, TTF and HH prices to remain relatively weak all year. The European Centre for Medium Range Weather Forecasts (ECMWF) posted its January Feb/Mar/Apr seasonal temperature forecast for Europe displayed in the figure below.

Figure 17: ECMWF Jan seasonal JFM temperature forecast for Europe



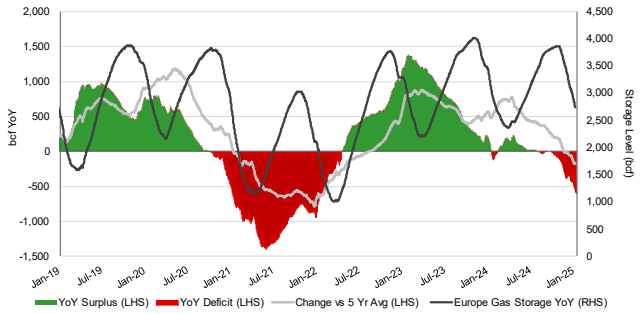
Source: ECMWF

Natural Gas: Europe storage down -3.7% WoW to 67.6% full, down -15.0% YoY

Europe gas storage

There have been gas storage draws in Europe with the recent colder temperatures. And as a reminder, the YoY comparison is to a hot Jan 2024 in Europe. The good news for Europe was that storage was fairly full to start the winter. It would have been full if Europe hadn't cut back on LNG imports in Q2 and Q3 for fear of being full early. But with some colder temperatures and low wind in Dec, storage draws picked up. This week, on Jan 9, Europe storage was down -3.7% WoW to 67.6% vs 71.3% on Jan 2. Recall that winter 2023/24 was one of the hottest winters in Europe. Storage is now down -15.0% from last year's levels of 82.6% on Jan 2, 2025, and down against the 5-year average of 73.7%. Below is our graph of European Gas Storage Level.

Figure 18: European Gas Storage Level

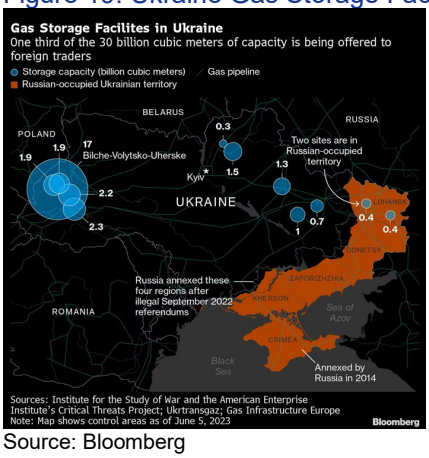


Source: Bloomberg, SAF

Ukraine storage is currently ~6% 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 January 9, 2025, natural gas in Ukraine storage was at 15.0% of its total capacity, down compared to 16.2% of its total capacity on January 2, 2025. Last winter, Ukraine storage as of Nov 1, 2023, was at 39.4%. Right now, Ukraine makes up ~6% 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 19: Ukraine Gas Storage Facilities as of June 2023



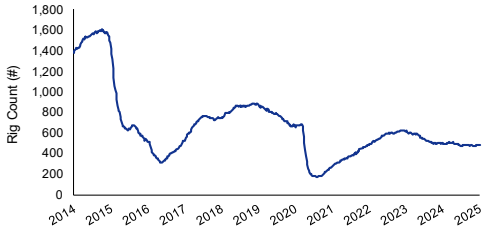
Source: Bloomberg

Oil: U.S. oil rigs down -2 rigs, still cold with snow in south pointing to more reductions

US oil rigs down WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note Baker Hughes no longer breaks out the basin changes by oil vs gas rig type. (ii) Total U.S. oil rigs were down -2 rigs WoW as of Jan 10, 2025. We expected to see a WoW decline with the cold and snow moving into the southern U.S. Total U.S. oil rigs are now down -19 oil rigs YoY to 480 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 WoW, DJ-Niobrara -1 rig WoW, Marcellus -1 rig WoW, and Utica +1 rig WoW. There must have been a rig added elsewhere because we did not have a proportionate number of gains within the major basins. (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 -36 rigs YoY to 580 rigs including US oil rigs -19 oil rigs YoY to 480 oil rigs. And for the key basins, the Permian is -5 rigs YoY, Haynesville is -12 rigs YoY, DJ-Niobrara is -6 rigs YoY, Marcellus -4 rigs YoY, Williston up +3 rigs YoY, Granite Wash is up +6 rigs YoY, Eagle Ford is down -12 rigs YoY, Barnett up +1 rig YoY, Ardmore Woodford is -2 rigs YoY, and Utica is -2 rigs YoY. (v) U.S. gas rigs were down this week at 100 gas rigs. We believe 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 flat at 4 rigs, and up +1 rigs YoY. (vi) There could be some more temporary reductions in the next week or two with the very cold weather coming further down in the U.S. earlier this month.

Figure 20: Baker Hughes Total US Oil Rigs



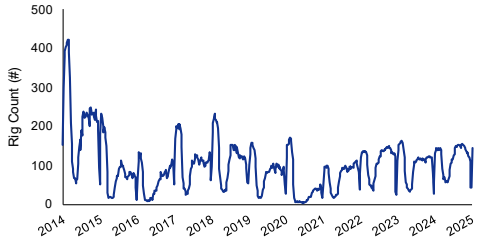
Source: Baker Hughes

Oil: Total Cdn oil rigs up +100 WoW on Friday, with gas rigs up +22 rigs WoW

Cdn oil rigs +100 WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. This week's total oil and gas rig count was up +122 rigs WoW to 216 rigs on Jan 10, and are up +3 rigs YoY. We expect to see Cdn rigs keep increasing in Jan as it is now peak winter drilling conditions. Oil rigs are up +100 rigs WoW at 144, and up +11 rigs YoY. Gas rigs are up +22 rigs WoW to 72 rigs and are down -8 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.

Figure 21: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes

Oil: Precision's updated Q1 Cdn drilling outlook might be up a bit from Q3 call outlook

Cdn oil rigs +100 WoW

On Tuesday, Precision Drilling provided an update to its Cdn winter drilling activity, it sounds like they may be down slightly in Q4 but its Q1 winter drilling activity outlook might be a little bit higher than vs its Q3 call outlook. On Tuesday, Precision said "*While some customers deferred fourth quarter drilling plans to January, our average active rig count remained robust at 65. We currently have 78 rigs active and expect our rig count to peak between the low to mid-80s during this winter drilling season, with our Super Triple and Super Single fleets nearly fully utilized.*" The Tuesday outlook for a peak in the low to mid-80s looks to be up a bit from its Q3 call outlook for a winter drilling season peak in the low 80's. In the Q3 call on Oct 30, Precision mgmt said "*We expect winter activity to ramp up fast in early this year, beginning as soon as December 27. With our activity hitting high '70s or low '80s by the end of the first week of January. Peak activity this winter should exceed last year for Precision*."

Oil: US weekly oil production down -0.010 mmb/d WoW to 13.563 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

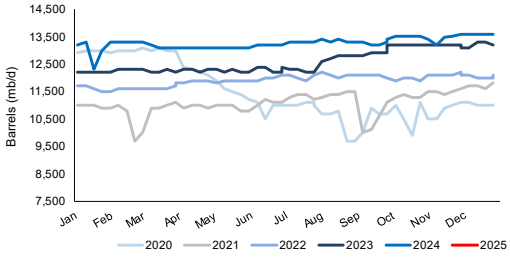
Wednesday for the totality of US oil production for the week ended the prior Friday [LINK]. We have to give the EIA credit for putting out weekly oil supply estimates for the prior week- that can't be easy so no one should be surprised that the EIA weekly oil supply estimates, based on the Form 914 actuals, will regularly require re-benchmarking; sometimes the re-benchmarking can be significant and other times, it is relatively small. This week's estimate came in down -0.010 mmb/d WoW to 13.563 mmb/d for the week ending Jan 3. This is up +0.363 mmb/d YoY from 13.200 mmb/d for the week ended January 5, 2024. 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 down -0.010 mmb/d WoW to 13.563 mmb/d for the week ended Jan 3. Alaska production figures were up +0.009 mmb/d WoW to 0.447 mmb/d, compared to 0.438 mmb/d last week. Below is a table of the EIA's weekly oil production estimates.

Figure 22: EIA's Estimated Weekly US Field Oil Production (mb/d)

	Week 1		Week 2		Week 3		Week 4		Week 5	
Year-Month	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
2023-Jan	01/06	12,200	01/13	12,200	01/20	12,200	01/27	12,200		
2023-Feb	02/03	12,300	02/10	12,300	02/17	12,300	02/24	12,300		
2023-Mar	03/03	12,200	03/10	12,200	03/17	12,300	03/24	12,200	03/31	12,200
2023-Apr	04/07	12,300	04/14	12,300	04/21	12,200	04/28	12,300		
2023-May	05/05	12,300	05/12	12,200	05/19	12,300	05/26	12,200		
2023-Jun	06/02	12,400	06/09	12,400	06/16	12,200	06/23	12,200	06/30	12,400
2023-Jul	07/07	12,300	07/14	12,300	07/21	12,200	07/28	12,200		
2023-Aug	08/04	12,600	08/11	12,700	08/18	12,800	08/25	12,800		
2023-Sep	09/01	12,800	09/08	12,900	09/15	12,900	09/22	12,900	09/29	12,900
2023-Oct	10/06	13,200	10/13	13,200	10/20	13,200	10/27	13,200		
2023-Nov	11/03	13,200	11/10	13,200	11/17	13,200	11/24	13,200		
2023-Dec	12/01	13,100	12/08	13,100	12/15	13,300	12/22	13,300	12/29	13,200
2024-Jan	01/05	13,200	01/12	13,300	01/19	12,300	01/26	13,000		
2024-Feb	02/02	13,300	02/09	13,300	02/16	13,300	02/23	13,300		
2024-Mar	03/01	13,200	03/08	13,100	03/15	13,100	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	13,200	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	13,513
2024-Dec	12/06	13,631	12/13	13,604	12/20	13,585	12/27	13,573		
2025-Jan	01/03	13,563								

Source: EIA

Figure 23: EIA's Estimated Weekly US Oil Production



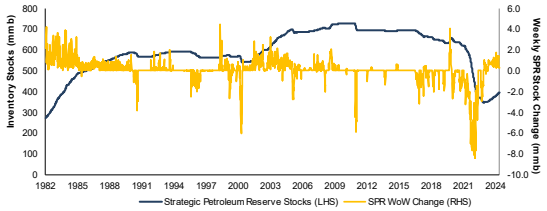
Source: EIA

Oil: US SPR less commercial reserve deficit narrows, now -20.825 mmb

US SPR reserves

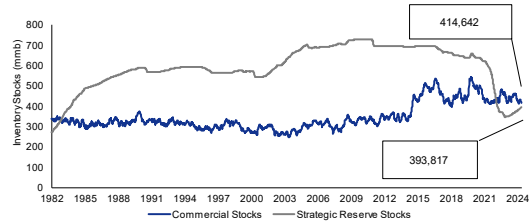
The US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sep 16, 2022, week. This week, we saw a build on the SPR side and a draw on the commercial side. The EIA's weekly oil data for Jan 3, [LINK] saw the SPR reserves increase +0.247 mmb WoW to 393.817 mmb, while commercial crude oil reserves decreased -0.959 mmb to 414.642 mmb. There is now a -20.825 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 24: Strategic Petroleum Reserve Stocks and SPR WoW Change



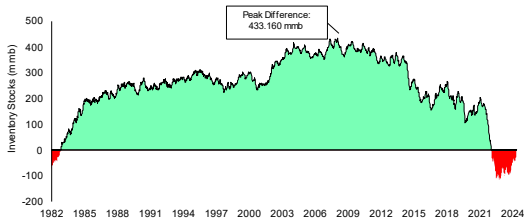
Source: EIA

Figure 25: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 26: US Oil Inventories: SPR Less Commercial



Source: EIA

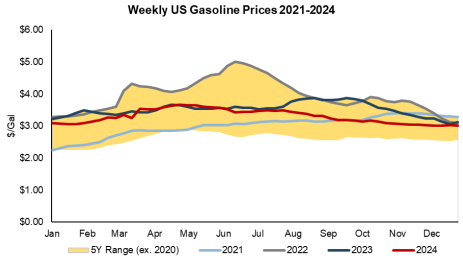
Oil: AAA reports US national average gasoline price flat WoW at $3.06 on Jan 11

US gasoline prices

Yesterday, we posted [LINK] "*AAA National average gasoline prices flat WoW at $3.06 on Jan 11, +$0.04 MoM & -$0.02 YoY. California average prices +$0.01 WoW to $4.38, -$0.03 MoM & -$0.24 YoY. On new RUS energy sanctions, Biden sees gas prices "could increase*

as much as 3, 4 cents a gallon". Thx @AAAnews #OOTT." Yesterday, AAA reported that US national average prices were $3.06 on Jan 11, which was flat WoW, +$0.04 MoM and -$0.02 YoY. Yesterday, AAA also reported California average gasoline prices were $4.38 on Jan 11, which was +$0.01 WoW, -$0.03 MoM and -$0.24 YoY. Below is our graph of Bloomberg's National Average weekly gasoline prices.

Figure 27: AAA National Average Gasoline Prices



Source: AAA

Oil: Crack spreads -$0.01 WoW to $16.47 on Jan 10, WTI +$2.61 to $76.57

Crack spreads closed at $16.47

On Friday, we posted [LINK] "*321 crack spreads -$0.01 WoW to $16.47 on Jan 10. WTI +$2.61 WoW to $76.57. Reminds WTI is impacted more by global #Oil moves (ie. potential that Russia/Iran barrels are being impacted by sanctions) than by crack spreads. Thx @business #OOTT."* Crack spreads were -$0.01 WoW to $16.47 on Jan 10 and WTI was +$2.61 to $76.57 on Friday. There was strength on oil to close the week despite continued China economy concerns given the reports that Russia and Iran oil is being more impacted by sanctions. It also fits what we have seen over the past six months that WTI has been driven more by global factors and not crack spreads. Crack spreads at $16.47 are near the lower 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 $16.47 on Jan 10 followed $16.48 on Jan 3, $16.05 on Dec 27, $16.44 on Dec 20, $16.53 on Dec 13, $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, and $17.42 on Oct 11.

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

It hasn't been normal times for oil markets in the last six months with a wide range of global factors. So for the most part, H2/24 was a good example that global oil and market items impact WTI more than crack spreads. As noted above, that was the case this week when crack spreads were -$0.01 WoW whereas WTI was +$2.61 WoW. 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 normally drags up oil prices. 321 Crack spread closed at $16.57 on Friday Jan 10.

Figure 28: Cushing Oil 321 Crack Spread & WTI Jan 10, 2015 to Jan 10, 2025

Source: Bloomberg

Oil: Alberta hits record oil + condensate production of 4.197 mmb/d in Nov

Alberta record oil + condensate production

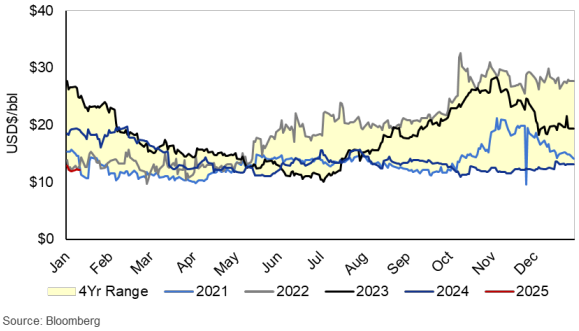
On Wednesday, AER (Alberta Energy Regulator) posted its ST3, which is its monthly oil and gas data including monthly oil production data for Nov. AER reported Alberta oil + condensate production was ~+0.046 mmb/d MoM to 4.197 mmb/d in Nov. This is split conventional oil 0.556 mmb/d, condensate 0.101 mmb/d and oil sands 3.539 mmb/d. The ST3 for oil production is found at [LINK]

Oil: Cdn heavy oil differentials widens +$0.10/bbl WoW to $12.15/bbl on Jan 10

WCS differential slightly widens

WCS less WTI differentials widened slightly +$0.10/bbl WoW to close the week at $12.15/bbl on Jan 10. The spread continues to trade in a narrow range relative to prior years. 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 and now thru Dec and into Jan. Sept/Oct/Nov is when we normally see a significant seasonal widening of the WCS less WTI differentials. That didn’t happen post TMX. WCS less WTI differentials have remained much lower and has not widened meaningfully in H2/24. 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 a 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, and continue to be much narrower than in prior years. The WCS less WTI differential closed on Jan 10 at $12.15/bbl which was a widening of +$0.10/bbl WoW vs $12.05/bbl on Jan 3.

Figure 29: WCS less WTI differentials



Source: Bloomberg

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. $7 narrower vs a year ago and approx. $13 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 widen. It is clear increasing tanker exports has worked and differentials did not widen as normally happens. On Friday, we posted [LINK] "B*ig continuing win for Cdn #Oil cash flows. Increasing tanker exports post June 2024 start 590,000 b/d TMX kept WCS less WTI diffs from normal S/O/N widening, and continue to stay narrow. WCS less WTI diffs: 01/10/25: $12.15. 01/10/24: $19.06.25. 01/10/23: $25.00. 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 and 2023.

Figure 30: WCS less WTI differentials to Jan 10, 2025 close

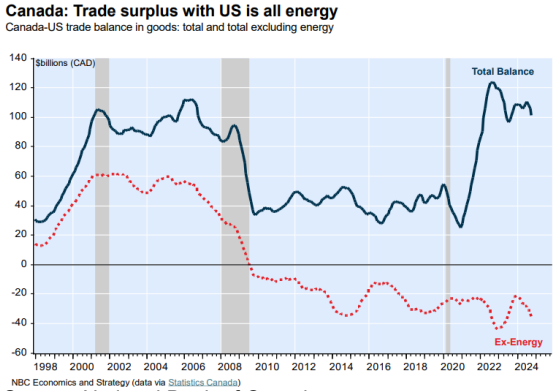
Source: Bloomberg

Oil: NBF reminds Canada would have $40b US trade deficit excl oil & other energy

Canada $40b trade deficit with US excl energy

The latest EIA oil import data was for the week of Jan 3, when the US imported 6.4 mmb/d of oil with almost 70% or 4.4 mmb/d from Canada. US refineries, in particular in the Midwest, need Cdn medium/heavy crude oil for their refineries whereas the US shale/tight oil plays produce light oil. Yesterday, we posted [LINK] "*Surely Trump knows his US subsidizes Canada to >$100 mm is only because of US needing Canada #Oil #Electricity #Uranium etc. "Strikingly, outside the energy sector, Canada's trade balance with the U.S. reveals an annual deficit of $40 b" NBF's Stéfane Marion & Ethan Currie. #OOTT."* Our post included the below National Bank of Canada graph that shows the Canada/US trade deficit/surplus with and without energy. They wrote "*The narrative is no different with Canada's largest trading partner. Over the past 12 months, Canada's $100 billion trade surplus with the U.S. (equivalent to 3.4% of GDP) has been entirely driven by energy exports. Strikingly, outside the energy sector, Canada's trade balance with the U.S. reveals an annual deficit of $40 billion (approximately 1% of GDP), highlighting the country's growing dependence on oil exports to sustain its trade position (chart).*" Surely everyone in the Trump Administration knows these simple numbers, which reminds that it's all part of the Trump messaging to set Canada on its back foot for negotiating something better from Canada. The reality is that his style has worked with other political leaders.

Figure 31: Canada Trade surplus with US is all energy



Source: National Bank of Canada

Captive buyers/captive sellers for Cdn medium/heavy oil to Midwest refineries

Here is what we wrote in our Dec 22, 2024 Energy Tidbits memo. "*Captive buyers/captive sellers for Cdn medium/heavy oil to Midwest refineries. We have heard how the shippers for the ~3 mmb/d of Cdn medium/heavy oil via pipeline to the Midwest PADD 2 will have to eat any Trump tariff costs as they have no other market for their oil. We agree that they are captive sellers. However, we have reminded that Midwest PADD 2 refineries are captive buyers of Cdn medium/heavy oil as they have no other way to replace ~3 mmb/d of Cdn medium/heavy oil. Sure the refineries could tweak it a little bit to run more US light oil. But that will have limitations. And then there is no logistics that could accommodate an additional 3 mmb/d of imports via tanker and then they have to find a way to get that oil from the Gulf Coast or East Coast or West Coast, without pipelines, to the Midwest refineries.*

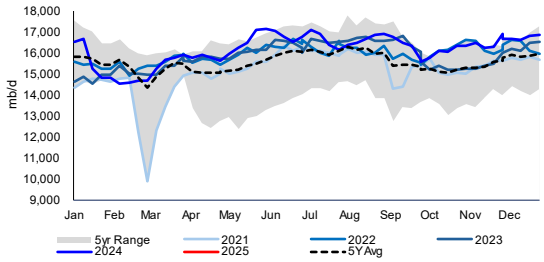
It's why we posted, on Nov 27, [LINK] "Captive buyer and captive seller. Yes, Cdn oil producers have no other replacement market for its ~2.9 mmbd of heavy/medium oil to US Midwest refineries. BUT US Midwest refineries have no other replacement supply for its ~2.9 mmbd of Cdn heavy/medium oil. So Trump 25% tariff should flow thru to regional Midwest prices of gasoline, jet fuel, diesel, etc. #OOTT."

Oil: Refinery Inputs up +0.044 mmb/d WoW to 16.902 mmb/d but turnarounds to start

Refinery inputs +0.044 mmb/d WoW

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 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. We expect to see oil inputs into refineries decline over the coming weeks with normal seasonal timing for refineries to move into turnarounds in Jan. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended January 3 [LINK]. The EIA reported crude inputs to refineries were up +0.044 mmb/d this week to 16.902 mmb/d and are up +0.384 mmb/d YoY. Refinery utilization was up +0.6% WoW to 93.3% and was up +0.4% YoY.

Figure 32: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports up +0.279 mmb/d WoW as oil exports were down -0.776 mmb/d

US net imports +0.279 mmb/d WoW

The EIA reported US "NET" imports were up +0.279 mmb/d to 3.350 mmb/d for the week of January 3. US imports were down -0.497 mmb/d to 6.428 mmb/d, while exports also decreased -0.776 mmb/d to 3.078 mmb/d. Top 10 was up +0.251 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 up +0.689 mmb/d to 4.422 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 -0.018 mmb/d to 0.069 mmb/d. (iii) Mexico was down -0.159 mmb/d to 0.392 mmb/d. But, as a general rule, oil imports from Mexico in Q2 and Q3 were significantly lower than prior year's levels with the new Olmeca (Dos Bocas) refinery slowing ramping up in 2024 and Pemex's other refineries increasing crude oil processing. But the latest Mexico oil exports to the US and other places are due to poor refinery operations. (iv) Colombia was down -0.217 mmb/d to 0.072 mmb/d. (v) Iraq was down -0.032 mmb/d to 0.180 mmb/d. (vi) Ecuador was up +0.147 mmb/d to 0.147 mmb/d. (vii) Nigeria was up +0.121 mmb/d to 0.192 mmb/d. (iix) Venezuela was down -0.100 mmb/d to 0.253 mmb/d.

Figure 33: US Weekly Preliminary Imports by Major Country

	Nov 8/24	Nov 15/24	Nov 22/24	Nov 29/24	Dec 6/24	Dec 13/24	Dec 20/24	Dec 27/24	Jan 3/25	WoW
Canada	3,953	3,862	4,081	4,044	3,829	4,339	3,919	3,733	4,422	689
Saudi Arabia	140	220	248	392	175	81	368	87	69	-18
Venezuela	359	211	267	173	187	521	120	353	253	-100
Mexico	384	768	151	279	440	526	397	551	392	-159
Colombia	142	414	142	283	125	136	276	289	72	-217
Iraq	121	237	277	397	213	209	229	212	180	-32
Ecuador	247	355	118	103	103	69	0	0	147	147
Nigeria	77	86	146	110	168	56	237	71	192	121
Brazil	280	498	227	348	251	178	248	280	233	-47
Libya	0	86	0	204	0	32	50	189	56	-133
Top 10	5,703	6,737	5,657	6,333	5,491	6,147	5,844	5,765	6,016	251
Others	806	947	426	957	493	502	627	1,161	412	-749
Total US	**6,509**	**7,684**	**6,083**	**7,290**	**5,984**	**6,649**	**6,471**	**6,926**	**6,428**	-498

Source: EIA, SAF

Oil: Colombia oil production still well below pre-Covid, October was 0.765 mmb/d

Ever since 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 Wednesday, Bloomberg published Colombian production data for October. Production in October was up +1.9% MoM to 0.765 mmb/d from 0.751 mmb/d in September. This puts October's production down -1.7% YoY vs 0.778 mmb/d in October 2023. Production is now -13.6% below pre-Covid levels of 0.886 mmb/d in 2019.

Colombia oil production stuck below 800,000 b/d

Figure 34: 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	0.888	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	0.765	-1.7%
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 35: Colombia's Oil Production (mmb/d)

Source: Bloomberg

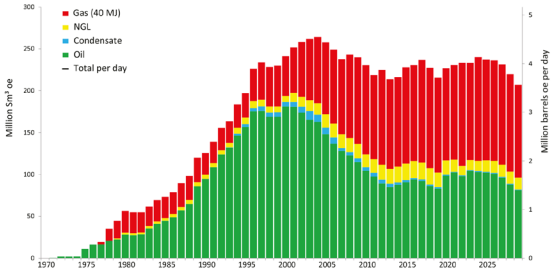
Oil: Norway oil production plateau in 2025/26, then start to decline

On Thursday, we posted [LINK] "*Norway's new fcast for peak #Oil #NatGas production. Oil. peak 2023 1.79 mmbd, plateaus 2023-26, then declines. to 1.40 mmbd in 2029. NatGas, peak 2024 12.00 bcfd, modest drop to plateau 2025-27, then decline to 10.72 bcfd in 2029. Decline accelerates as mostly older fields. #OOTT.*" (i) It is not a surprise to see this

Norway's oil & natural gas production to peak soon

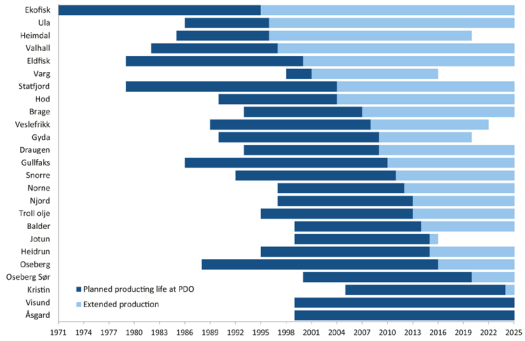
forecast, which is in line with Norwegian Offshore Directorate's Aug forecast. (ii) On Thursday, the Norwegian Offshore Directorate posted its "*The Shelf in 2024*", which included the NOD's forecast for oil, condensate, NGLs and natural gas production through 2025. Our post included a table we created from the NOD backup excel to give the actual forecast numbers. (iii) For oil, the NOD estimates peak oil was 2.02 mmb/d in 2023, but that is essentially unchanged with a plateau production thru 2026 at 2.00 mmb/d in 2024, 2.01 mmb/d in 2025 and 2.00 mmb/d in 2026. Then declines hit with 1.92 mmb/d in 2027, 1.78 mmb/d in 2028 and 1.66 mmb/d in 2029. (iv) Natural gas. NOD forecasts peak natural gas production of 12.00 bcf/d in 2024, then down modestly to a plateau production of 11.64 bcf/d in 2025, 11.62 bcf/d in 2026, and 11.59 bcf/d in 2027. Then declines hit with 11.26 bcf/d in 2028 and 10.72 bcf/d in 2029. (v) The reason why declines start to kick in despite ongoing exploration and development is that a lot of the base production is old. Our post included the below NOD graph that NOD described as "*The figure below shows a number of fields that are producing between 10 and 30 years longer than originally planned. Several of these fields will continue to produce until 2030, and some even to 2040. This provides a significant contribution to production and value creation on the shelf."* So it's good news that technology and development is allowing longer life for old fields, but the reality is that the age of these fields will start to kick in. Our Supplemental Documents package includes excerpts from the NOD "*The Shelf in 2024*".

Figure 36: Norway's forecast oil and natural gas production thru 2029



Source: Norwegian Offshore Directorate

Figure 37: Norway's oil and gas fields, original planned life vs current life expectation



Source: Norwegian Offshore Directorate

10/24/24, Equinor, 755,000 b/d Johan Sverdrup to begin to decline in early 2025

The reason why Norway oil production is peaking is simple – Norway's largest oil field, the 755,000 b/d Johan Sverdrup, is operated by Equinor who has stated they expect Johan Sverdrup would come off plateau in early 2025 and then begin to decline. Here is what we wrote in our Oct 27, 2024 Energy Tidbits memo. "*Johan Sverdrup is Norway's biggest oilfield and it is currently at ~755,000 b/d, which is approx. half of Norway's total oil production. On Feb 8, 2024, we first tweeted how Aker BP, a partner in Johan Sverdrup, was the first to note that Johan Sverdrup was moving from plateau to decline in late 24/early 25 as water was starting to hit some wells. That view hasn't changed all year. Our view is simple – when a country's giant oilfield that accounts for half of a country's production, it normally means the country's total oil production will start to decline. It is why, since Feb, we have warned that Norway oil production is about to start to decline. On Thursday, Equinor held its Q3 call and it also reminded how the best insights come from the Q&A portion of conference calls. Equinor confirmed that they see the 755,000 b/d Johan Sverdrup oilfield will come off plateau in early 2025, which is the way to say Johan Sverdrup oil production will begin to decline in early 2025. On Thursday, we tweeted [LINK] "Norway on track for peak #Oil production in 2025 & then decline. @Equinor CEO confirms Norway's 755,000 b/d field "will be on plateau until early 2025" ie. after plateau is decline. Fits 👇08/21, 03/11 & 02/08 tweets, Norway sees its oil production peaking in 2025. #OOTT." In the Q&A, mgmt replied "Your second question, Henri, on Johan Sverdrup. Yes. So far, so good. We see that we are now in a position where we can say that the plateau, we will be on plateau until early 2025. I think it's very important for me to say that we are not surprised at all that we will come off plateau in 2025. It is a function of that we have invested in higher capaciy, the 755,000 barrels per day pushing cash flow and net present value higher. And that leads to that we will get off plateau earlier."*

08/21/24: Norway forecast reaching peak oil production in 2025, then declining

Norwegian Offshore Directorate has previously forecast Norway oil production would peak and begin to decline in 2025. Here is what we wrote in our Aug 25, 2024 Energy Tidbits memo. "*Equinor's confirming the 755,000 b/d Johan Sverdrup oilfield will begin to decline in early 2025 is in line with Norway's forecasts that its total country oil production will reach peak oil production in 2025 and then decline. Here is what we wrote in our Aug 25, 2024 Energy Tidbits memo. "Norway still forecasts reaching peak oil production in 2025, then declining. On Wednesday, Norway posted its "Resource report 2024", which is a report encouraging an increase in exploration. And it starts with their unchanged long-term oil production forecast from March that forecasts Norway' s peak oil production is in 2025 and then decline under current levels of exploration ie. include ongoing new field discoveries. Early Wednesday morning, we tweeted [LINK]: "Norway still forecasts peak #Oil production in 2025 & then decline. EVEN WITH "multiple discoveries are made and brought on stream, accompanied by investments aimed at increasing recovery from existing fields. Despite this, resource growth will not be sufficient to offset the overall gradual decline, due to diminishing production from the major, mature fields." See 👇*

03/11/24 & 02/08/24 tweet, can't make up for giant Johan Sverdrup hitting peak oil in six mths. #OOTT" Norway is warning that, even with new discoveries and production enhancement, peak oil supply is in 2025. Norway wrote that even with ""multiple discoveries are made and brought on stream, accompanied by investments aimed at increasing recovery from existing fields. Despite this, resource growth will not be sufficient to offset the overall gradual decline, due to diminishing production from the major, mature fields." Despite this, resource growth will not be sufficient to offset the overall gradual decline, due to diminishing production from the major, mature fields." Norway is highlighting the reality that has been seen in other global basins that have a giant oil field – when the giant oilfield starts to decline, it normally points to decline in a country production. And that is the case in Norway with the giant Joahn Sverdrup expected to start to decline in late 2024 or early 2025. Norway does says that a big increase in exploration and oil and gas spending could lead to some modest growth and push back in oil decline."

Figure 38: Norway forecast long term Norway oil production

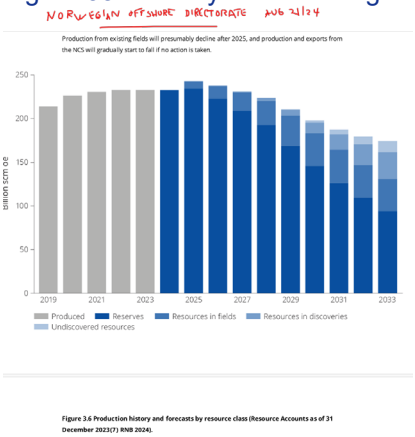


Figure 3.6 Production history and forecasts by resource class (Resource Accounts as of 31 December 2023(7) RNB 2024).

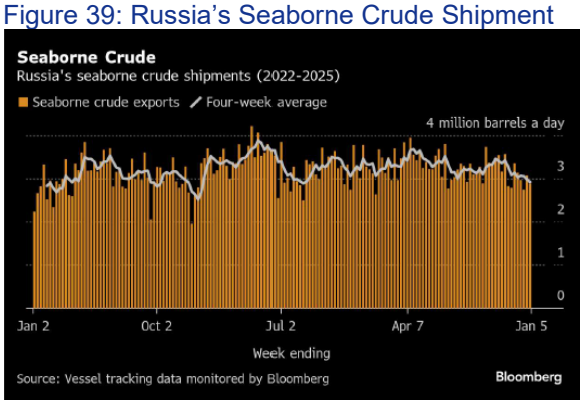
Source: Norwegian Offshore Directorate

Oil: Russia's seaborne crude oil exports slide to lowest in 16 months

Russia's seaborne crude exports

Bloomberg didn't post its weekly Russia seaborn crude tracker over the holidays. But, on Tuesday, Bloomberg released their weekly Russian Seaborne crude tracker, this week, titled *"Russia's Crude Shipments Tumble to the Lowest in 16 Months"*. This week, exports slumped to the lowest level since August 2023, stretching the loss to -0.540 mmb/d since an October peak. We expect there were two key for the lower oil shipments: Russia reducing its oil production as promised to OPEC+ and exports being hit by increasing number of dark fleet tankers being sanctioned by US. The daily crude flows fell -0.190 mmb/d WoW to 2.880 mmb/d for Jan 5, driven by lower flows from the country's Baltic and Arctic port. The four-week average volumes also fell for a third week, down by -0.060 mmb/d for the week of Jan. 5. Bloomberg reported "*The drop in shipments over the two-and-a-half month period has been concentrated at ports in western Russia, and was accentuated by a decline in the number of cargoes leaving Ust-Luga since mid-December*." Our Supplemental Documents package includes the Bloomberg report.

Figure 39: Russia's Seaborne Crude Shipment



Source: Bloomberg

Russia oil exports to China have been stable, but expected to decline

It sounds like we should be expecting to see a decline in China oil imports from Russia with Biden's new sanctions on Russian energy announced on Friday. Bloomberg's crude oil shipments from Russia to China have been relatively stable as of late. Bloomberg highlighted the four-week average of Russia oil shipments to China were down to 1.320 mmb/d for the week ending January 5, 2025, down from last week's 1.340 mmb/d for the week of December 29, 2024. December 1 shipments were 1.32 mmb/d as well. Below is the table from Bloomberg's Russia oil exports report this week.

Figure 40: Russian Crude Exports to Asia

Crude Shipments to Asia
Shipments of Russian crude to Asian buyers in million barrels a day

4 weeks ending	China	India	Other	Unknown Asia	Other Unknown	Total
December 1, 2024	1.32	1.39	0.00	0.00	0.00	2.71
December 8, 2024	1.26	1.41	0.00	0.00	0.00	2.68
December 15, 2024	1.35	1.41	0.00	0.00	0.00	2.77
December 22, 2024	1.29	1.36	0.00	0.10	0.00	2.76
December 29, 2024	1.34	1.14	0.00	0.24	0.08	2.80
January 5, 2025	1.32	1.06	0.00	0.26	0.08	2.71

Source: Vessel tracking data compiled by Bloomberg
Bloomberg

Source: Bloomberg

Oil: Biden new sanctions on Russia energy drove Brent +$2.84 on Fri to $79.76

Biden's new Russia sanctions

Brent oil was +$2.84 on Friday to close at $79.76 following the new Biden sanctions on Russia as the market believes these sanctions will actually hurt Russia's oil exports. We probably should have specifically called for Biden to lay on his strongest sanctions on Russia energy as he was going out the door. He had been lax on sanctions enforcing because he didn't want to have gasoline prices be a big election issue in the 2022 mid-terms or 2024

election. But post the Trump loss, it made sense he would finally try to hit Russia energy hard. Plus, there would be the added benefit that, if he believed Trump wanted to be a little easier on Putin, Biden knows it is tough for Trump to pull back on sanctions on Putin given both Democrats and Republicans are to the most part anti Putin. We read the Treasury Department 26-pg sanctions detail. It's really only about half that long as probably half of is lists specific individuals and companies that are being sanctioned and we didn't go thru the names. The sanctions are broad and even hit two LNG projects. Here are a few of the Treasury Department summary comments. "*Today's actions also impose sanctions on an unprecedented number of oil-carrying vessels, many of which are part of the "shadow fleet," opaque traders of Russian oil, Russia-based oilfield service providers, and Russian energy officials*." *"Russia has grown increasingly reliant on vessels that participate in high-risk shipping practices to facilitate illicit or sanctionable activity, often called the "shadow fleet." Today's action sanctions 183 vessels, largely oil tankers that are part of the shadow fleet as well as oil tankers owned by Russia-based fleet operators." "the Department of State is also taking steps to reduce Russia's energy revenues by blocking two active liquefied natural gas projects, a large Russian oil project, and third-country entities supporting Russia's energy exports. State is also designating numerous Russia-based oilfield service providers and senior officials of State Atomic Energy Corporation Rosatom."* Our Supplemental Documents package includes the White House and Treasury Dept releases.

Oil: Bloomberg OPEC production -0.120 mmb/d MoM to 27.050 mmb/d in December

OPEC Dec production -0.120 mmb/d

On Monday, Bloomberg posted its monthly survey of OPEC production. (i) The Bloomberg survey estimates OPEC production in Dec was down -0.120 mmb/d MoM to 27.050 mmb/d. (ii) Nov's production estimates were revised, increasing +0.150 mmb/d to 27.170 mmb/d. Iraq was revised +60,000 b/d to 4.120 mmb/d (was 4.060). Libya was revised +50,000 b/d to 1.190 mmb/d (was 1.140). UAE was revised +40,000 b/d to 3.300 mmb/d (was 3.260). (iii) The largest MoM change in Dec vs Nov was U.A.E. down -0.100 mmb/d to 3.200 mmb/d. Libya and Nigeria were up +0.400 mmb/d MoM but offset by similar-sized reductions of -0.40 mmb/d in Iran and Kuwait. Below is the Bloomberg survey table.

Figure 41: Bloomberg Survey OPEC production in December (mmb/d)

Production ('000 b/d)	Dec	Nov	Chg	Capacity
▾ Total OPEC	27,050	27,170	-120	33,490
Algeria	900	890	+10	1,060
Congo, Republic	250	230	+20	300
Equatorial Guinea	70	80	-10	120
Gabon	220	230	-10	220
Iran	3,320	3,360	-40	3,830
Iraq	4,120	4,120	0	4,800
Kuwait	2,430	2,470	-40	2,820
Libya	1,230	1,190	+40	1,200
Nigeria	1,510	1,470	+40	1,600
Saudi Arabia	8,950	8,950	0	12,000
U.A.E.	3,200	3,300	-100	4,650
Venezuela	850	880	-30	890

Source: Bloomberg

Oil: Saudi/Russia/UAE win if Trump once again hammers Iran & Venezuela oil exports

Will Trump hit Iran oil?

It seems like the potential for Trump to cut Iran's oil exports is a key reason for the strength of

oil prices this week. Last Sunday afternoon, we were asked on last Sunday morning's post reminding how Trump, in his first term, cut Iran and Venezuela oil exports down to very low levels. The question was "*Can Trump crush Venezuelan and Iranian oil exports at the same time without causing a surge of the oil price? I doubt it"* Last Sunday, we replied [LINK] "I *have always thought Trump would see cutting Iran/VEN barrels as giving him an opportunity to reward his friends ie. give Saudi, RUS, UAE, etc room to finally bring back some voluntary cut barrels as an offset. 1 mmb/d for Saudi at $70 is $25.5b & their approved borrowing plan for 2025 is $37.2b."* We agree that absent other supply replacing Iran and Venezuela oil on the market, oil prices would surge higher. However, we previously stated that we saw Trump cutting Iran and Venezuela oil as a way to reward his friends such as Saudi Arabia by providing the demand for OPEC+ to bring back some voluntary barrels to offset. Because at least right now, the market expectation is that there won't be room to do so in 2025. So, it would provide a reason for Saudi Arabia, Russia, UAE and others to have to owe Trump and Trump would like that. As a follow up, we posted [LINK] "*Forgot to include these Nov graphs of how Trump crushed Venezuela oil production and exports to US. Positive to #Oil if Trump reverts to what he did in his first term. #OOTT.'* Our post included the graphs a couple items below that show how Trump crushed Iran and Venezuela oil production in his first term

Trump's officials have been clear Trump plans to cut off Iran oil exports

From the right after Trump was elected, his advisors and planned cabinet members have been clear that Trump plans to return to the maximum pressure campaign on Iran and that means cutting its oil exports. 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 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."

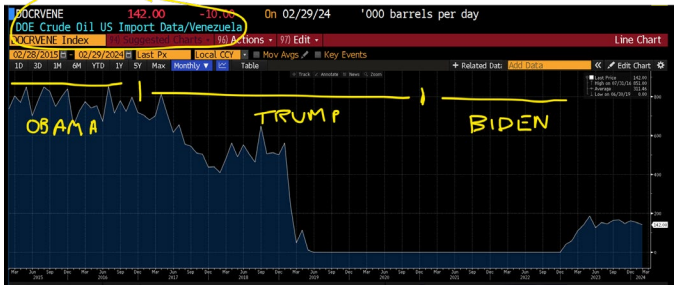
Trump's big impact on oil will be from what he does on Iran and Venezuela

We have consistently believed that Trump's big impact on oil will be if he goes back to his first term playback of cutting back Iran and Venezuela oil. Please note that both Iran and Venezuela have increased oil production since we wrote the following comments. Even in the summer, we wrote 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 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 Ifan oil exports off global oil markets and likely at least 150,000 b/d of Venezuela oil out of US oil imports."*

Figure 42: Iran oil exports (as of July 2024)

Source: Bloomberg

Figure 43: US oil imports from Venezuela (as of July 2024)



Source: Bloomberg

Oil: Saudi approves annual borrowing plan of $37.b for 2025

Saudi annual borrowing plan

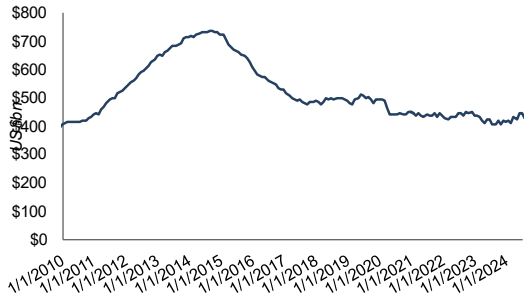
For the past several years, we have stated that the #1 financial theme for Saudi Arabia will be the increasing use of Other People's Money "OPM" to fund their government and MBS Vision 2030 plan. It is also why we continue to believe Saudi Arabia will be working to keep oil prices strong and not crash oil prices for a few months to regain oil market share. If Saudi Arabia is going to keep increasing the use of OPM, they can't afford to crash oil prices and hit their own economy without cause the cost of capital to increase. So they need more OPM means they need to keep oil prices stable and not crashing. Last Sunday afternoon, we posted [LINK] "*Here's why Saudi will keep working to support #Oil prices. Approved 2025 annual borrowing plan of $37.2b ie. Other People's Money. Lower oil prices is negative for Saudi economy which will increase the cost to access OPM. Fits #1 financial theme for KSA for 2020s - increasing need for OPM to fund its transition under Vision 2030. #OOTT.*" Saudi Arabia Minister of Finance approved the 2025 Annual Borrowing Plan, which approves "*the projected funding needs for 2025 are estimated at approximately SAR 139 Bn*", which is $37.2b. The Minister of Finance noted they are going to be looking at a wide range of OPM "*To enhance the sustainability of the Kingdom's access to various debt markets and broaden the investor base, Saudi Arabia aims in 2025 to continue diversifying local and international financing channels to efficiently meet funding needs. This will be achieved through the issuance of sovereign debt instruments at fair pricing, guided by well-defined and robust risk management frameworks. Additionally, the Kingdom plans to benefit from market opportunities by executing private transactions that can promote economic growth, such as export credit agency financing, infrastructure development project financing, capital*

expenditure (CAPEX) financing, and exploring tapping into new markets and currencies based on market conditions." Our Supplemental Documents package includes the Saudi Arabia release.

Saudi nest egg, its net foreign assets are down $310.2b in the last decade

Here is what we wrote in last week's (Jan 5, 2025) Energy Tidbits on how Saudi net foreign assets are down $310.b in the last decade. "*For the past several years, we have stated that the #1 financial theme for Saudi Arabia will be the increasing use of Other People's Money "OPM" to fund their government and MBS Vision 2030 plan. This is because they have seen a $310.2b reduction in their net foreign assets in the last decade. It is also why we continue to believe Saudi Arabia will be working to keep oil prices strong and not crash oil prices for a few months to regain oil market share. We believe that will be an action of last resort. We also expect to see OPM deals in the near term to add to the piggy bank. Every month, we track Saud net foreign assets, which we have described as their piggy bank for the future. Please note that the Net Foreign Assets have seen very big swings, both up and down, in the last couple years. For November, there was a big MoM increase of +$15.0b, a big increase but that followed largest 2-month decrease in Sept/Oct of $34.2b. On Sunday, the Saudi Central Bank (SAMA) released its Monthly Statistical Bulletin for the month of November [LINK]. Our long-stated view is that the #1 financial theme for Saudi Arabia in the 2020s will be their continued, and increasing, use of Other People's Money as they try to fund MBS's Vision 2030. It continues to play out as expected. We believe this has been obvious with how Saudi Arabia's net foreign assets dropped by -42% or -$310.2b since the peak of $737.0b on Aug 31, 2014. We are surprised that markets and oil watchers did not seem to pay attention to the Saudi net foreign assets data i.e., what we call their nest egg to help them their push to MBS's Vision 2030. Recently we have been seeing much larger MoM changes, both up and down. In November there was a +$15.0b MoM increase to Saudi Arabia's net foreign assets which are now $426.8b vs $411.7b in October. Last month's data saw a decrease of -$21.6b MoM for October. The thesis and big picture remains that Saudi net foreign assets as of November 30 of $426.8b is a decline of ~-42% or -$310.2b from its peak of $737.0b on Aug 31, 2014. That is an average of -$2.5b per month for the last 123 months since the peak. Saudi Arabia is far from going broke but there has been a huge decline in the last 10 years. This net foreign asset depletion is why we have been highlighting that the primary financial theme for Saudi Arabia in the 2020s is getting Other People's Money (OPM) to fund as much of their Vision 2030 as possible. And no question, accessing OPM has helped to slow down and temporarily pause the decline in net foreign assets. Below is our graph of Saudi Arabia net foreign assets updated for the October data."*

Figure 44: Saudi Arabia Net Foreign Assets



Source: Saudi Central Bank, Bloomberg

Oil: Saudi Aramco raises OSP for Asia, NW Europe and Mediterranean

OPEC Dec production -0.120 mmb/d

The other bullish signal for oil markets was how Saudi Aramco raised its Official Selling Prices for February for Asia, NW Europe and Mediterranean. This plus reports of countries like India increasing oil imports from UAE gave the support for the market believing Trump will be impacting Iran oil exports. Last Sunday night, Energy Intelligence's Amena Bakr posted the Saudi Aramco OSP for Feb. Compared to Jan OSP, Aramco's Feb OSPs for Asia are +$0.50 to +$0.60 for grades medium thru super light, and down $0.40 for heavy. For NW Europe, Aramco raised its OSP for Feb by +$1.30 for all grades. For Mediterranean, Aramco raised its OSP for Feb by $0.40 to $0.60 depending on the grade. The exception was for North America where Aramco reduced its OSP for Feb by $0.30 to $0.40 depending on the grade. Our Supplemental Documents package includes the Saudi Aramco OSP table.

Oil: US/UK/Israel keep pounding the Houthis, Houthis say aren't stopping

Israel vs Houthis

It's been another week of the US/UK and also Israel pounding the Houthis in Yemen and for the Houthis to fire drones/missiles at the US and Israel and keep saying they aren't stopping. We continue to be somewhat amazed that the Houthis keep hanging in there given the accumulated number of US/UK/Israel strikes taking out Houthis military and industrial sites. The US/UK/Israel are using air strikes and precision missiles and are hitting targets. But the Houthis still keep hanging in there. We have to think that sooner or later, the US and Israel attacks have to start to slow down the Houthis?

Oil: China sees significant increase in its fiscal deficit in 2025

Significant increase in China fiscal deficit

On Friday, we posted [LINK] "*Can China get to sustained decent growth? Xinhua: "China to see significant increase in fiscal deficit" "total fiscal expenditure will further be expanded, and countercyclical adjustment efforts will also be stepped up to provide solid support for the sustained recovery of the economy." #OOTT."* No one should have been surprised to see the Xinhua (state media) report that China would have a significant increase in its fiscal deficit in 2025. We recognize that we are still waiting for a lot of specific fiscal support items for the economy but, when we saw the Xinhua report, we can't help wonder how much dry powder China has to try to prop up the economy. There are still huge doubts about the China recovery, and this was before Trump takes office with his anti-China cabinet ministers. China has been waiting to see what Trump does but no question it has less dry powder.

Oil: Reminder Chinese new year and spring festival is early this year

Chinese New Year is Jan 29

As a reminder, Chinese New Year is early in 2025 on January 29, whereas last year it was on Feb 10, 2024. This means all the normal city/economic activity slows down in January as opposed to the beginning of Feb. The Chinese New Year is also known as Lunar New Year or Spring Festival and normally includes at least a week of holidays starting with Jan 27 or 28 ie. the Shanghai stock market starts its week long New Year holiday days on Mon Jan 27. Spring Festival is the major holiday so many seem to take much more than a week of holidays.

Oil: Chinese high-end consumer - Mercedes Top-End car sales down in China

Mercedes weak China car sales

There was another sign that the high income, but not wealthy, Chinese consumers have been cutting back. Mercedes says Top-End car sales are down in China. Part of this is no doubt increased China competition for buyers of both ICE and BEVs and reduced BEV demand. But the reality is that those Chinese that wanted to drive a luxury European car would still buy a Mercedes if they could afford it. On Friday, we posted [LINK] "*Chinese consumer weakness and PHEVs winning over BEVs. Mercedes Q4 sales. "Top-End vehicle sales were below 2023 levels, reaching 281,500 units, mainly impacted by market conditions in China, model changes and weak EV demand." "#PHEV sales grew by 13% year-on-year across all regions, while slower EV adoption in core markets led to lower #BEV sales in 2024." #OOTT.*"

China big city consumers are not spending

No one should be surprised to see weak Mercedes sales in China as big city consumers aren't spending and China retail sales are weaker than normal. Here is what we wrote in last week's (Jan 5, 2025) Energy Tidbits memo. "*China big city consumers are not spending. We have been highlighting how the Chinese consumer has been holding back on spending and it appears that is being driven more so by Chinese big city consumers. China retail sales have been disappointing and far below the pre-Covid retail sales YoY growth rates. But it looks like within the disappointing retail sales growth, the laggards are Chinese big city consumers. Earlier this morning, we posted [LINK] "China big city consumers are not spending. Within weak national retail sales (see 👇11/15 post), China's big city consumers are underperforming. "Consumption in China's county-level cities and rural areas is growing faster than that in the bigger first- and second-tier municipalities ...." @yicaichina." Yicai reported "Consumption in China's county-level cities and rural areas is growing faster than that in the bigger first- and second-tier municipalities thanks to an expanding middle class with more spending power, according to the latest data. Only six out of China's 31 provincial-level regions logged more than 5 percent growth in the retail sales of consumer goods in the first three quarters from a year earlier, according to the National Bureau of Statistics. These were Xizang Autonomous Region, Henan province, Hunan province, Shandong province, Jiangxi province and Hubei province, and most of them are in the less-developed central and western parts of the country with lower urbanization rates. This far outstripped the national average of 3.3 percent growth in the first nine months to CNY35.3 trillion (USD4.9 trillion), according to NBS' figures." Our Supplemental Documents package includes the Yicai report."*

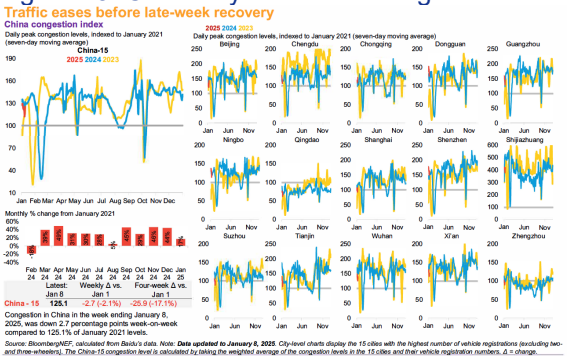
China retail sales only +3.0% YoY in Nov, lowest YoY increase since Aug

Here is what we wrote in our Dec 22, 2024 Energy Tidbits memo on the disappointing China retail sales data in Nov. "*China retail sales +3.0% YoY in Nov, lowest YoY increase since Aug. Last Sunday night, Bloomberg reported on the China retail sales data in Nov. It was the market story on Monday as retail sales were less than expected and pointed to a pull back in the still cautious Chinese consumer. We have to wonder if part of this is worrying about the incoming Trump administration. Another key factor is that the YoY growth rates in retail sales is well below where they were pre Covid which saw +8-11% YoY retail sales growth. In Nov, China retail sales were up +3.0% YoY, which is the lowest YoY growth since Aug, and far below expectations of +5.0%. We continue to highlight that the Chinese consumer may remain cautious due to the Trump administration. On Sunday, we posted [LINK] "Negative Chinese consumer indicator. Trump factor? Retail sales YoY % Nov +3.0% YoY vs est +5.0% Oct +4.8% Sep +3.2% Aug +2.1% July +2.7% Jun +2.0% May +3.7% Apr +2.3% Mar +3.1% No Jan/Feb data 2023 Dec +7.4% Nov +10.1% Nowhere near pre-Covid steady +8-11%. #OOTT Thx @business". Below is the Bloomberg graph we included with our tweet."*

Oil: Baidu China city-level road congestion in Jan was down -12.3% YoY

On Thursday, BloombergNEF posted its China Road Traffic Indicators Weekly Jan 9 report, which includes the Baidu city-level road congestion for the week ended Jan 8. BloombergNEF reported Baidu city-level road congestion saw a decrease of -2.1% WoW to 125.1% of Jan 2021 levels. January 2025 data saw average daily peak congestion down -12.3% YoY when compared to January 2024. We noted in last week's memo that Chinese New Year and Spring Festival is early this year and that means China city-level road congestion will see a huge decline in January and not in February as happened in 2024. 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 eases post-holiday with partial rebound*". Below are the BloombergNEF key figures.

Figure 45: China city-level road congestion for the week ended Jan 8, 2025



Source: Bloomberg

Figure 46: China city-level road congestion for the week ended Jan 8, 2025

Indexed to January 2021 = 100

	Jan 24	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 25
China-15	133	81	138	148	130	129	127	104	144	128	145	143	116
Beijing	145	73	151	169	143	141	146	123	171	147	163	163	130
Chengdu	120	68	134	140	125	119	126	98	135	113	126	141	109
Chongqing	111	80	112	138	122	129	119	75	119	119	133	124	114
Dongguan	121	52	129	138	138	126	103	141	123	151	148	130	258
Guangzhou	161	76	171	195	174	170	162	158	179	159	183	179	135
Ningbo	127	79	144	146	120	128	121	94	140	119	131	135	119
Qingdao	78	51	71	78	72	75	91	80	87	79	81	77	68
Shanghai	115	79	146	152	130	132	119	93	151	121	136	131	97
Shenzhen	149	68	160	164	172	163	162	155	184	159	193	196	154
Shijiazhuang	494	350	400	390	311	329	334	306	364	356	422	405	363
Suzhou	118	79	134	137	113	112	105	96	115	106	114	113	92
Tianjin	133	85	160	165	145	132	106	98	186	150	163	162	112
Wuhan	167	105	174	171	146	144	141	117	168	154	167	163	129
Xi'an	152	98	141	147	129	123	135	107	145	136	158	148	113
Zhengzhou	110	85	95	96	80	78	86	68	91	83	103	103	90

Indexed to the same month in previous year = 100

	Jan 24	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 25
China-15	151	55	100	114	110	96	104	87	94	99	99	98	88
Beijing	135	42	92	113	103	93	106	90	95	92	97	101	90
Chengdu	144	51	106	107	115	91	116	85	104	93	102	122	91
Chongqing	136	64	101	125	125	112	113	85	94	107	110	107	103
Dongguan	258	41	99	127	120	108	108	101	96	94	107	103	108
Guangzhou	199	45	99	127	127	107	107	106	98	99	102	99	84
Ningbo	203	59	115	140	121	112	106	81	110	101	90	95	93
Qingdao	175	62	94	97	98	87	95	76	82	85	81	74	87
Shanghai	156	54	98	117	105	101	98	76	93	95	88	87	84
Shenzhen	169	41	96	120	132	99	113	106	102	105	114	115	103
Shijiazhuang	156	69	93	85	81	77	89	70	75	104	86	88	77
Suzhou	171	60	111	130	117	97	99	88	86	98	90	83	78
Tianjin	136	60	114	121	119	100	96	86	107	100	97	85	85
Wuhan	151	55	94	100	97	85	95	86	88	107	105	103	77
Xi'an	132	66	110	112	105	91	110	97	96	101	101	96	75
Zhengzhou	119	76	98	102	90	82	94	72	86	103	106	96	82

Source: BloombergNEF calculations based on Baidu data. Note: Data updated to ***January 8, 2025. 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

There is a Spring Festival travel rush from Jan 14 to Feb 22

As a reminder city-level road congestion is about to crash with Spring Festival around the corner and the Chinese leave cities for Spring Festival holiday. Here is what we wrote in last week's (Jan 5, 2025) Energy Tidbits memo. "*On January 3, Xinhua posted "China expects record-high air travel during Spring Festival travel rush" [LINK]. Xinhua reminded of this extended Spring Festival 40-day travel rush. They wrote "China's civil aviation sector is expected to handle a record number of 90 million passenger trips during the upcoming Spring Festival travel season, an official from the Civil Aviation Administration of China (CAAC) said on Friday. During the 40-day travel rush, which runs from Jan. 14 to Feb. 22, the sector will handle an average of 18,500 flights per day, an 8.4 percent increase from the 2024 level, said Xu Qing, head of the transport department of CAAC, during a press conference. Xu noted that the Spring Festival is increasingly becoming a time for travel and leisure for many Chinese citizens. Ticketing data indicates a sharp rise in demand for northern "ice-and-snow" destinations like Harbin, Changchun and Urumqi, as well as warm southern cities such as Haikou and Sanya.;" And if more people are travelling, it means city economic activity and road congestion will have its annual big drop*."

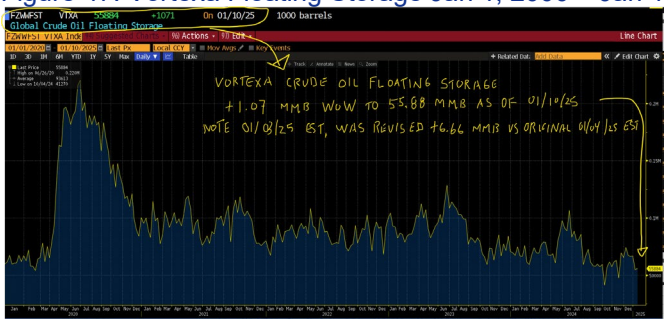
Oil: Vortexa crude oil floating storage est 55.88 mmb at Jan 10, +1.07 mmb WoW

Vortexa floating storage

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 Jan 4 at 9am MT. (i) Yesterday, we posted [LINK] [LINK] "*Revisions up to really low Vortexa crude #Oil floating storage at Jan 3 but still at levels supportive of oil prices. Total est 55.88 mmb at Jan 10, + 1.07 mmb WoW vs revised up +6.66 mmb of 54.81 mmb at Jan 3. Asia est 25.74 mmb at Jan 10, +4.31 mmb WoW vs revised up +5.68 mmb of 25.74 mmb at Jan 3. Thx @vortexa @business #OOTT."* (ii) As of 9am MT Jan 11, Bloomberg posted Vortexa crude oil floating storage estimate for Jan 10 was 55.88 mmb, which was +1.07 mmb vs revised up Jan 3 of 54.81 mmb. Note Jan 3 was revised +6.66 mmb vs 48.15 mmb originally posted at 9am on Jan 4. (iii) The Sat am Vortexa estimates are their first estimates for Fri floating storage and get revised. So last Sat, the first estimates for floating storage were very low especially at 15.75 mmb for Asia. We said it was too early to celebrate as the Vortexa estimates get regularly revised up and down. There were revisions up but the revised-up Jan 3 were still supportive of oil prices. (iv) Revisions. Jan 3 was revised +6.66 mmb but the rest of the prior seven weeks revisions were either +/-

less than 2 mmb in any week. The average revision for the prior seven weeks was +0.61 mmb. Here are the revisions for the prior seven weeks compared to the estimates originally posted on Bloomberg at 9am MT on Jan 4. Jan 3 revised +6.66 mmb. Dec 27 revised -0.11 mmb. mmb. Dec 20 revised -0.13 mmb. Dec 13 revised -0.17 mmb. Dec 6 revised +1.15 mmb. Nov 29 revised -1.18 mmb. Nov 22 revised -1.94 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 Jan 10 is 64.43 mmb vs last week's then 7-week moving average of 65.78 mmb. (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) Jan 10 estimate of 55.88 mmb is -72.79 mmb vs the 2023 peak on June 25, 2023 of 128.67 mmb. Recall Saudi Arabia stepped in on July 1, 2023 with its voluntary cuts. (ix) Jan 10 estimate of 55.88 mmb is -11.41 mmb YoY vs Jan 12, 2024 at 67.29 mmb. Below are the last several weeks of estimates posted on Bloomberg as of 9am on Jan 11, Jan 4, and Dec 28.

Figure 47: Vortexa Floating Storage Jan 1, 2000 – Jan 10, 2025, posted Jan 11 at 9am MT



Source: Bloomberg, Vortexa

Figure 48: Vortexa Estimates Posted 9am MT on Jan 11, Jan 4, and Dec 28

Posted Jan 11, 9am MT

Date	FZWWFST VT... Last Px
Fr 01/10/2025	55884
Fr 01/03/2025	54813
Fr 12/27/2024	66846
Fr 12/20/2024	66446
Fr 12/13/2024	67121
Fr 12/06/2024	74314
Fr 11/29/2024	65611
Fr 11/22/2024	69599
Fr 11/15/2024	47538
Fr 11/08/2024	62884
Fr 11/01/2024	61811
Fr 10/25/2024	57575

Jan 4, 9am MT

Date	FZWWFST VT... Last Px
Fr 01/03/2025	48145
Fr 12/27/2024	66961
Fr 12/20/2024	66580
Fr 12/13/2024	67287
Fr 12/06/2024	73164
Fr 11/29/2024	66794
Fr 11/22/2024	71544
Fr 11/15/2024	51267
Fr 11/08/2024	64207
Fr 11/01/2024	64490
Fr 10/25/2024	62721
Fr 10/18/2024	65386

Dec 28, 9am MT

Date	FZWWFST VT... Last Px
Fr 12/27/2024	53752
Fr 12/20/2024	68142
Fr 12/13/2024	65369
Fr 12/06/2024	72089
Fr 11/29/2024	69140
Fr 11/22/2024	74135
Fr 11/15/2024	56723
Fr 11/08/2024	62820
Fr 11/01/2024	62952
Fr 10/25/2024	61340
Fr 10/18/2024	63741
Fr 10/11/2024	57834

Source: Bloomberg, Vortexa

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Vortexa floating storage by region

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 Jan 3 was revised up +6.66 mmb. The major revision was Asia +5.68 mm. (ii) Total floating storage at Jan 10 of 55.88 mmb was +1.07 mmb WoW vs revised up Jan 3 of 54.81 mmb. The major WoW changes were Asia +4.31 mmb WoW, West Africa -3.80 mmb WoW and Europe +2.50 mmb WoW. (iii) Last week, we highlighted the very low 15.75 mmb in Asia as of Jan 3. Looks like ti was too good to be true with Jan 3 revised up to 21.43 mmb (vs originally estimated 15.75 mmb) and with Asia +4.31 mmb this week to 25.74 mmb. (iv) Jan 10 estimate of 55.88 mmb is -72.79 mmb vs the 2023 high on June 23, 2023 of 128.67 mmb. Recall Saudi Arabia started its voluntary 1 mmb/d production cuts on July 1, 2023. The major changes by region vs the June 23, 2023 peak are Asia -47.52 mmb and Other -19.71 mmb. (iv) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for Jan 3 that was posted on Bloomberg at 9am MT on Jan 4.

Figure 49: Vortexa crude oil floating by region

Vortexa crude oil floating storage by region				Original Posted	Recent Peak	
Region	Jan 10/25	Jan 3/25	WoW	Jan 3/25	Jun 23/23	Jan 3 vs Jun 23/23
Asia	25.74	21.43	4.31	15.75	73.26	-47.52
North Sea	0.76	0.71	0.05	0.94	4.71	-3.95
Europe	5.07	2.57	2.50	2.88	6.05	-0.98
Middle East	8.74	9.86	-1.12	8.41	6.59	2.15
West Africa	5.86	9.66	-3.80	9.81	7.62	-1.76
US Gulf Coast	0.00	0.15	-0.15	0.00	1.02	-1.02
Other	9.71	10.43	-0.72	10.36	29.42	-19.71
Global Total	55.88	54.81	1.07	48.15	128.67	-72.79
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Jan 11						
Source: Vortexa, Bloomberg						

Source: Bloomberg, Vortexa

Oil: Bloomberg Oil Demand Monitor, *The Jury is Out on 2025's Market Balance*

Bloomberg oil demand monitor

The Bloomberg Oil Demand Monitor is a good recap of key oil demand indicators around the world. This week's report discusses the differing views of major forecasting agencies on the market balance for 2025. Bloomberg noted that the previous narrative of a significant surplus has started to fray in recent weeks with some analysts suggesting that a "big glut" could have been overstated. The OPEC+ has continued to take a more optimistic view than IEA and EIA, with the organization's December report having demand at 105.3 million barrels a day in 2025. Additionally, the demand monitor states that there is optimism in recent days with the inclusion of cold snaps in many parts of the world to provide short-term boost for heating fuels. Bloomberg reported "*There's no consensus among the major forecasting agencies. In its December report, the International Energy Agency saw a supply overhang of between 950,000 and 1.4 million barrels a day in 2025, depending on the OPEC+ alliance's output strategy. In its equivalent report, the US's Energy Information Administration saw global consumption of liquid fuels at 104.3 million barrels a day this year, marginally higher than production of 104.2 million, reversing earlier predictions for a surplus…The market has seen some bullish signals in recent days, including Saudi Arabia hiking prices for buyers in Asia next month. China's services activity expanded at the fastest pace in nine months in December, while the manufacturing sector grew for a third straight month, signaling*

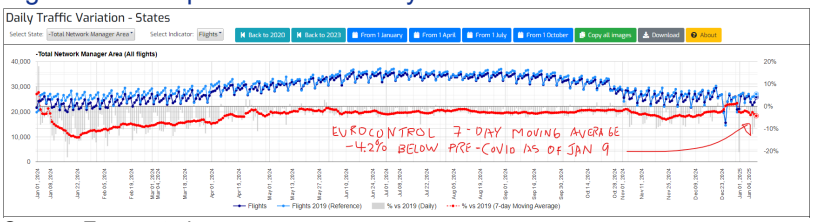
improving domestic demand after Beijing's stimulus blitz. And forecasts for a cold snap in many parts of the globe may spell a seasonal boost for heating fuels." Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Europe airports daily traffic

Oil: Europe airports daily traffic 7-day moving average back below pre-Covid

Yesterday, we posted [LINK] "*Xmas Europe air travel above pre-Covid didn't last. Flying always seasonally declines post Xmas. But +0.8% vs pre-Covid on Dec 26 is now -4.2% below pre-Covid on Jan 9. 7-day moving average as of: Jan 9: -4.2% below pre-Covid. Jan 2: -2.6%. Dec 26: +0.8%. Dec 19: -2.4%. Dec 12: -3.6%. Dec 5: -4.0%. Nov 28: -4.3%. Nov 21: -5.5%. Nov 14: -3.8%. Nov 7: -2.9% .Thx @eurocontrol #OOTT."* The Xmas rush for the 7-day moving average as of Dec 26 was the first week above pre-Covid since the Jan 2024. Air travel always goes up for Xmas, but the Dec 26 week was above pre-Covid Xmas levels. And air travel always declines after Xmas but being above pre-Covid for Xmas didn't continue and air traffic has been back below pre-Covid the past two weeks. Other than last Xmas/New Year, European daily traffic at airports has been stuck below pre-Covid. Last year, European air traffic fell off right after New Year and got close to pre-Covid at -0.8% below pre Covid as of May 30 but that was the closest until this week. The 7-day moving average was -4.2% as of Jan 9, which followed -2/6% as of Jan 2, +0.8% as of Dec 26, -2.4% below pre-Covid as of Dec 19, -3.6% 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, and -2.9% as of Nov 7. 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].

Figure 50: Europe Air Traffic: Daily Traffic Variation to end of Jan 9



Source: Eurocontrol

Asian Pacific air traffic in Nov

Oil: Asia/Pacific international Nov passenger air travel up +19.8% YoY

On Monday, the Association of Asia Pacific Airlines (AAPA) released its Nov traffic results [LINK] which is comprised of aggregate data across a total of 40 Asia Pacific airline carriers. (i) Air travel. International passenger air travel on the 40 airlines is up big YoY. The AAPA reports preliminary Nov 2024 travel figures were up +19.8% YoY from Nov 2023. The AAPA wrote *"In the air cargo segment, growth in shipment volumes was driven by sustained e-commerce demand and the front-loading of export orders ahead of anticipated US tariff hikes. International air cargo demand, measured in freight tonne kilometres (FTK), increased by 10.5% year-on-year, slightly outpacing a 10.0% rise in offered freight capacity. Consequently, the average international freight load factor edged up by 0.2 percentage points to 62.3% for the month."* (ii) Air cargo was up +10.5% YoY, measured in Freight Tonne Kilometres (FTK), and the load factor edged up by +0.2% to 62.3%. Meanwhile, headline capacity measured in Available Seat Kilometres (ASK) rose +17.6% YoY. (iii) Subhas Menon, Director General of the AAPA, said *"Asia Pacific airlines have led growth in international*

travel markets this year, benefitting from strong demand for both business and leisure travel. Demand has now fully recovered to prepandemic levels. Overall, for the first eleven months of the year, the region's carriers recorded a 31% increase in the number of international passengers carried to a combined total of 334 million." Below is a snapshot of the APAA's traffic update.

Figure 51: APAA Preliminary International Air Traffic Data

International	Nov-24	Nov-23	% Change
Passengers (Thousand)	31,039	25,919	+ 19.8%
RPK (Million)	108,372	89,073	+ 21.7%
ASK (Million)	132,154	112,349	+ 17.6%
Passenger Load Factor	82.0%	79.3%	+ 2.7 pp
FTK (Million)	6,427	5,815	+ 10.5%
FATK (Million)	10,309	9,369	+ 10.0%
Freight Load Factor	62.3%	62.1%	+ 0.2 pp

Source: AAPA

Oil: IATA total air travel & domestic air above pre-Covid

November air travel up YoY

Overall global air travel is above pre-Covid levels for both domestic and international air travel and the one lagging region is international air travel in Asia Pacific. On Thursday, the International Air Transport Association (IATA) released air passenger data for November 2024 [LINK]. (i) Overall air travel. The IATA wrote "*The industry's total Revenue Passenger-Kilometer (RPK) increased by 8.1% year-on-year (YoY) in November, continuing to exceed historical records. Available Seat-Kilometer (ASK) rose by 5.7% YoY lagging demand growth. The Passenger Load Factor (PLF) improved by 1.9 percentage points compared to the previous year, reaching 83.4%, an all-time high for November."* (ii) Domestic air travel. *"Domestic RPK increased 3.1% over the previous year, decelerating from the last month. In actual volume, domestic passenger traffic continues to establish new records while load factors are higher compared to the previous year. Signs of stable growth were shown in all markets, while the US saw a deeper contraction in November compared to the prior month."* (iii) International air travel. "*Compared to 2019 levels, industry total international RPK were 5.2% above the same month's levels in November."* Overall, international air travel is above pre-Covid but one region lagging, but getting closer, is Asia Pacific. "*Asia Pacific is still behind the remaining regions; however, these airlines' international traffic is now only 0.5% under their 2019 levels."* Our Supplemental Documents package includes the official IATA report.

Figure 52: November 2024 Air Passenger Market

	World share [1]	November 2024 (% year-on-year)				November 2024 (% year-to-date)			
		RPK	ASK	PLF (%-pt)	PLF (level)	RPK	ASK	PLF (%-pt)	PLF (level)
TOTAL MARKET	*100.0%*	**8.1%**	**5.7%**	**1.9%**	**83.4%**	**10.6%**	**8.9%**	**1.2%**	**83.5%**
International	*60.1%*	11.6%	8.6%	2.3%	83.4%	13.8%	13.3%	0.4%	83.2%
Domestic	*39.9%*	3.1%	1.5%	1.2%	83.5%	5.7%	2.5%	2.6%	84.0%

[1] % of industry RPKs in 2023

Source: IATA

IATA November global air cargo

Oil: IATA, global air cargo Nov was 16th consecutive month of YoY growth

We look at international air cargo as the data that affirms the level of export orders and trade. On Thursday, the International Air Transport Association (IATA) announced cargo data for the month of November [LINK]. November global air cargo, measured through Cargo Tonne-Kilometers, increased +8.2% YoY. This marks the sixteenth consecutive month of YoY growth. The IATA wrote "*Total demand, measured in cargo tonne-kilometers (CTK), rose by 8.2% compared to November 2023 levels (9.5% for international operations) for a 16th consecutive month of growth. Capacity, measured in available cargo tonne-kilometers (ACTK), increased by 4.6% compared to November 2023 (6.5% for international operations).*" Willie Walsh, IATA's Director General, commented "*It was a good November for air cargo with 8.2% demand growth nearly doubling the 4.6% growth in cargo capacity. Fuel costs tracked at 22% below previous-year levels and tight market conditions supported yield growth at 7.8%. All things considered we are looking to close out 2024 air cargo performance on a profitable note. While this strong performance is very likely to extend into 2025, there are some downside risks that must be carefully watched. These include inflation, geopolitical uncertainties and trade tensions.*" Our Supplemental Documents package includes the official IATA report.

Figure 53: November 2024 Air Cargo Market

	World share [1]	November 2024 (% year-on-year)				November 2024 (% year-to-date)			
		CTK	ACTK	CLF (%-pt)	CLF (level)	CTK	ACTK	CLF (%-pt)	CLF (level)
TOTAL MARKET	*100.0%*	**8.2%**	**4.6%**	**1.6%**	**49.0%**	**11.8%**	**7.7%**	**1.7%**	**45.7%**
International	*86.6%*	9.5%	6.5%	1.5%	54.6%	12.7%	9.9%	0.4%	51.3%

Note 1: % of industry CTKs in 2023

Source: IATA

IATA highlights Asia-North America trade ie. China exports post Trump win

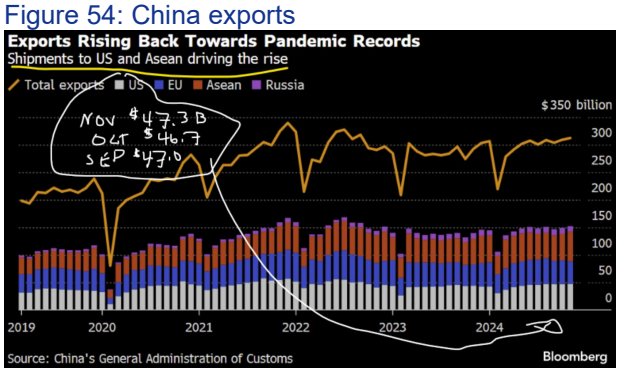
The IATA highlighted the air cargo volumes from Asia to North America but did not specifically mention increasing exports from China in Nov post the Trump election. The IATA wrote "Among major trade lanes, Asia-North America trade led with a 13% annual rise in cargo demand." And "*In November, international air traffic rose by 9.5%, fueled by increased e-commerce demand in the US and Asia Pacific."* Notwithstanding the IATA did not specifically name China for the increasing cargo traffic to North America in Nov, we have seen prior information highlighting that there was a Nov rush for getting Chinese goods to the US to avoid any risk to what Trump does when he takes over on Jan 20.

Bloomberg: China exports to US +$0.6b MoM to $47.3b in Nov

Here is what we wrote in our Dec 15, 2024 Energy Tidbits memo. "*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.

Figure 54: China exports



Source: Bloomberg

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

Here is what we wrote in our Dec 8, 2024 Energy Tidbits on the big jump in Chinese international air freight post the Trump win. "*Big jump in China international air traffic to get goods before Trump. 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 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: IATA reminded average age of global fleet is record high of 14.8 years

An ageing global airplane fleet

When we see the IATA highlight both global air passenger and cargo volumes continue to set new record highs, we like to remind that this is being done with an aging fleet. One of the items that seems to be overlooked in looking at jet fuel consumption is that there is an aging global fleet of planes and older planes are, as a general rule, more fuel inefficient and will use more jet fuel per mile than new planes. The global fleet is at record high of 14.8 yrs. . The IATA reminded of this in their recent Dec 10, 2024 global outlook for air travel. Here is what we wrote in our Dec 15, 2024 Energy Tidbits memo. "*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 int eh 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 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 55: Global air industry statistics

Table 10: Industry statistics

Global airline industry	2019	2020	2021	2022	2023	2024E	2025F
Scgment 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%	59.8%	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 56: Key industry fuel metrics

Table 7: Key industry fuel metrics

Global airline industry	2019	2020	2021	2022	2023	2024E	2025F
Fuel spend, USD billion	190	80	106	215	269	261	248
% change YoY	1.5%	-58.0%	32.3%	103.6%	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: Spain's gasoline, diesel, jet fuel and fuel oil all up YoY for YTD Nov 30

Spain's fuel consumption

Ask any of your friends who have traveled to Spain on business or holiday and they will tell you it seems to be booming. And, as has been in the media all year, the locals are getting tired of all the tourists. And the increased activity is translating into strong YoY increases in petroleum products consumption in 2024. There are always monthly variations but YTD Nov 30 petroleum products consumption growth is strong. On Tuesday, we posted [LINK] *"No peak #Oil demand in sight for Spain. YTD Nov 30/24 petroleum products consumption: Gasoline +7.4% YoY Jet Fuel +11.7% YoY Diesel +1.0% YoY Fuel Oil +7.1% YoY. Thx … #OOTT*". On Jan 7, Cores reported Spain's monthly oil and petroleum consumption for the month of November [LINK]. . Cores wrote "*This month, consumption of gasoline (+5.3%), kerosene (+9.6%) and fuel oil (+0.7%) increased year-on-year, while consumption of LPG (-8.9%) and diesel (-4.8%) decreased. In the year-to-date, consumption of gasoline (+7.4%), kerosenes (jet fuel) (+11.7%), diesel (+1.0%) and fuel oils (+7.1%) has increased, while LPG remains stable."* Below is a table showing the breakdown of demand by fuel type in November. Our Supplemental Documents package includes the Cores report.

Figure 57: Spain's November Oil Demand Product Breakdown (thousand mt)

SPAIN PETROLEUM PRODUCTS & NATURAL GAS CONSUMPTION NOV 2024

YTD NOV — MOVING YEAR

Unidad: miles de toneladas

Productos Petroliferos	Consumos Noviembre 2024	Consumos Acumulado Anual	Consumos Año Móvil	Tasas Variación (%) Interanuales Noviembre 2024	Tasas Variación (%) Interanuales Acumulado Anual	Tasas Variación (%) Interanuales Año Móvil
Gasolinas Automoción (GASOLINE)	507	5.969	6.477	5,3%	7,4%	6,5%
Gasóleos Automoción (DIESEL)	1.782	20.035	21.811	-3,0%	0,7%	-0,1%
Combustibles de Automoción	**2.289**	**26.004**	**28.289**	**-1,3%**	**2,2%**	**1,3%**
GLP (LPG)	139	1.909	2.097	-8,9%	0,0%	-0,7%
Gasolinas* (GASOLINE)	507	5.974	6.482	5,3%	7,4%	6,5%
Querosenos (KEROSENE)	569	6.813	7.357	9,6%	11,7%	12,1%
Gasóleos* (DIESEL)	2.470	27.252	29.816	-4,8%	1,0%	-0,3%
Fuelóleos (FUEL OIL)	696	7.875	8.551	0,7%	7,1%	7,1%

* Productos de automoción incluidos en el grupo de productos correspondiente

Unidad: GWh

Gas natural	Consumos Noviembre 2024	Consumos Acumulado Anual	Consumos Año Móvil	Tasas Variación (%) Interanuales Noviembre 2024	Tasas Variación (%) Interanuales Acumulado Anual	Tasas Variación (%) Interanuales Año Móvil
Consumo convencional	20.063	200.434	222.133	7,5%	2,5%	4,0%
Generación eléctrica	8.445	65.645	72.385	36,8%	-26,9%	-26,6%
GNL de consumo directo	952	9.675	10.458	15,8%	11,6%	12,2%
Total Gas natural	**29.461**	**275.754**	**304.976**	**14,8%**	**-6,2%**	**-5,1%**

El contenido de este informe está basado en datos provisionales disponibles a fecha de su emisión.

Fuente: Cores

Actualizado el 07-01-2025

Para más información: cores.institucional@cores.es. Tlf.: +34 91 360 09 10, o visite: www.cores.es

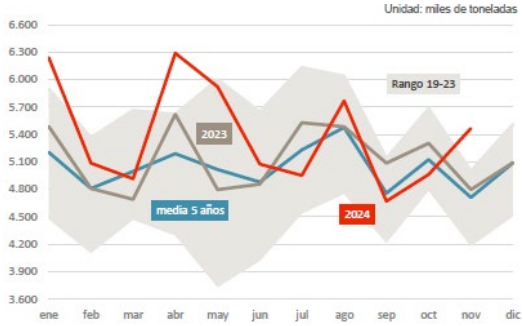
Source: Cores

Oil: Spain's Oil imports were up YoY and up MoM in November

Spain's Oil imports

On Wednesday, Cores reported Spain's oil imports for the month of November [LINK]. The report showed that oil imports increased by +14.0% YoY and +10.2% MoM, while YTD imports are up +5.1%. Cores reported that 34.6% of imports YTD have been from OPEC ("OPEP" here) suppliers. The reports said: "*Crude oil imported into Spain in November stood at 5,468 kt, with crude oil imports increasing year-on-year in the month (+14.0%), in the year-to-date (+5.1%) and in the moving year (+4.0%).*" 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.

Figure 58: Spain's 2024 Oil Imports vs the 5-year Range and 5-year Average (thousand mt)



Source: Core

Figure 59: Spain's 2024 oil imports OPEC breakdown (thousand mt)

Total	**5.468**	**14,0**	**100,0**	**59.354**	**5,1**	**64.447**	**4,0**	**100,0**
OPEP	1.893	-22,1	34,6	21.802	-11,3	24.087	-10,4	37,4
No-OPEP	3.575	51,0	65,4	37.552	17,8	40.361	15,0	62,6
OCDE	1.980	59,6	36,2	20.277	2,7	22.290	2,4	34,6
No-OCDE	3.488	-1,9	63,8	39.077	6,4	42.157	4,8	65,4
UE	57	-1,6	1,0	499	37,2	499	11,2	0,8

Source: Cores

Oil & Natural Gas: Is Trump the catalyst for Greenland to gain independence?

Greenland wants independence

No one know how it will play out but it seems like Trump putting the spotlight on Greenland may well be the catalyst for Greenland to gain independence from Denmark. And, if so, at least create the potential for Trump to make sort of deals with Greenland. Last week, Greenland's PM Mute Bourup Egede reiterated his call for independence from Denmark and that Greenland has twice rejected offers by Trump on Greenland. This week, Greenland was in the news with Donald Trump Jr. brief visit to Greenland. And Greenland's Finance Minister Erik Jensen said it best "*Our wish is to become independent one day. But our ambition is not to go from being governed by one country to another.*" So it seems Greenland won't want to be part of the US, but it is seeming that Trump has forced Denmark to seriously consider Greenland independence.

Trump wants Greenland, would be a big strategic deal

Greenland would be of strategic value to US

Here is what we wrote in our Dec 29, 2024 Energy Tidbits memo on Trump wanting Greenland. "*Trump wants Greenland, would be a big strategic deal. Early Monday morning, we posted [LINK] "Method to Trump madness! Greenland has huge strategic value for US is why Trump wants to buy Greenland again. US would control both ends of Northwest Passage and controlling major international shipping lanes has military and commercial value. See 👇08/18/2019 SAF Group Energy Tidbits memo. But expect Denmark/Greenlanders to reject. #OOTT." Last Sunday, Trump announced the appointment of his ambassador to Denmark and wrote ""For purposes of National Security and Freedom throughout the World, the United States of America feels that the ownership and control of Greenland is an absolute necessity." No surprise on Monday, Greenland Prime Minster Mute Egede rejected Trump's statement and wrote "Greenland is ours. We are not for sale and will never be for sale. We must not lose our long struggle for freedom." Trump raised interest in his first term and was rejected. Our post included what we wrote in our Aug 18, 2019 Energy Tidbits memo on Trump's first buy Greenland desire. It isn't an oil and gas*

upside, rather we see it as a hugely strategic position for the US as it would give the US control over both ends of the Northwest Passage. An, as seen elsewhere, controlling major shipping lanes is a strategic asset for both commercial and military reasons.".

Trump buying Greenland would be of strategic value

Here is what we wrote in our Aug 18, 2019 Energy Tidbits memo. *"Trump buying Greenland would be of strategic value. We recognize Trump was ridiculed for his asking his advisors about buying Greenland. We have no idea if Trump was truly serious about wanting to try to buy Greenland. Surely he would have expected Greenlanders to vote no especially as they are viewed as anti resource development. The primary reason being attributed for his interest is Greenland's mineral and oil potential. We would say no to oil and gas. its not that Greenland doesn't have oil and gas potential, its that it hasn't worked to date (albeit with only limited exploration wells) and the US doesn't need it. We were surprised that Trump defenders didn't try to stop the ribbing by noting Greenland as big strategic value to the US in a world of global warming. Not so much that Greenland would be accessible, rather Greenland's strategic location in a world of global warming and increasing ability for ships/tankers to move thru the Northwest Passage. If Greenland was the US, the US would effectively share the effective control at both ends of the Northwest Passage with Russia on one end and Canada on the other end. Not a bad positioning. As we have seen in 2019, effective control of major waterways has been a major issue in the Strait of Hormuz, Bab el Mandeb, Strait of Gibraltar, and Strait of Malacca*. "

.

Figure 60: Northwest Passage

Source: Geology.com

Greenland wouldn't provide any strategic oil value to the US

Here is another item from our Aug 18, 2019 Energy Tidbits memo on Trump's desire to buy Greenland. "*Greenland wouldn't provide any strategic oil value to the US. From an oil perspective, we don't see the rationale to support why Trump would want Greenland for its oil potential. The US already has the best in world oil growth story,*

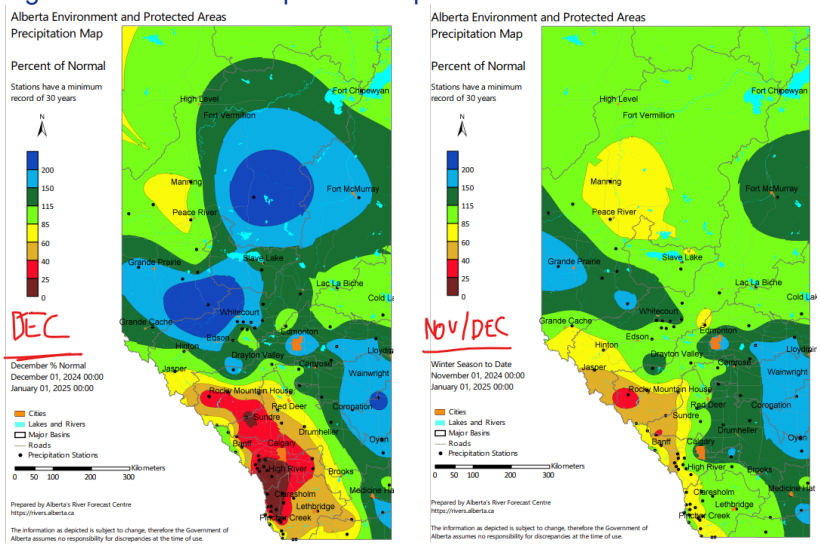
but the US oil story is light oil and not heavy/medium sour oil growth. The one area that US will continue to need is heavy medium sour oil for its refineries in PADD II Midwest, and PADD III Gulf Coast, and Greenland wouldn't do anything to help that need. Rather if Trump really wanted to capture strategic oil, he would want to capture what the US doesn't have – heavy medium sour and the two biggest suppliers are Alberta and then Mexico."

Decent snowfall for the most part in Alberta

Oil & Natural Gas: Decent snowfall in Alberta in Dec other than to the west of Calgary

This week, Alberta posted the accumulated precipitation maps for Dec. To the most part, it was a decent amount of precipitation vs normal through most of Alberta. The exception was to the west of Calgary into the Rockies around Canmore/Banff that had very low precipitation. And there has been very little snowfall in Jan in the Rockies around Canmore/Banff, where the mountain tops look more like Nov than Jan. Everyone knows we need accumulated snowfall in the winter for many reasons but especially to reduce wildfire risks in the summer and for better crops. So, for the most part, the accumulated snowfall from Nov 1 thru Dec 31 is at least around normal. Below are the Alberta accumulated precipitation vs normal for Dec and for Nov/Dec.

Figure 61: Alberta Precipitation Map for Dec & Nov/Dec vs normal



Source: Alberta

Trump to cancel Biden's offshore oil and gas ban

Oil & Natural Gas: Trump to cancel Biden's offshore oil lease & drilling ban

No surprise to see Trump come out right away on how he will cancel Biden's Jan 6 plan to permanently withdraw 625 million acres of offshore lands from oil leasing and drilling. But it isn't clear how quickly he can reverse it as it appears it will take more than a stroke of a pen on an executive order or memorandum. On Monday, Biden announced "*Memorandum on the Withdrawal of Certain Areas of the United States Outer Continental Shelf from Oil or Natural Gas Leasing*". [LINK] Biden's actions "*Using his authority under Section 12(a) of the Outer Continental Shelf Lands Act, President Biden is issuing two Presidential Memoranda to*

protect all U.S. Outer Continental Shelf areas off the East and West coasts, the eastern Gulf of Mexico, and additional portions of the Northern Bering Sea in Alaska from future oil and natural gas leasing. The withdrawals have no expiration date and prohibit all future oil and natural gas leasing in the areas withdrawn. President Biden first used this authority in January of 2021 when he restored protections for part of the Northern Bering Sea, and again in March 2023 to withdraw 2.8 million acres of the Beaufort Sea from future oil and gas leasing, which completed protections for the entire U.S. Arctic Ocean." Biden said there is no expiration date. The comments on the action were that it wouldn't be able to be reversed with a quick stroke of the pen by Trump. On Monday, we posted [LINK] "*Here's why it will likely take more than a stroke of the pen for Trump to reverse Biden's removal of #Oil #NatGas leases/drilling on 625 mm acres of offshore federal lands. See 👇excerpt on 1953 law & 2019 district court ruling from @maxinejoselow @MerylKornfield [LINK] #OOTT."* Our post included an excerpt from the Washington Post report "*The 1953 law gives the president broad powers to withdraw federal waters from future oil and gas leasing, and U.S. District Judge Sharon L. Gleason ruled in 2019 that such withdrawals cannot be undone without an act of Congress. The Trump administration appealed the decision at the time, but the federal government dropped the appeal after Biden took office, so a higher court never weighed in on the matter. Andrew Mergen, a professor at Harvard Law School who previously worked on this offshore drilling litigation as a Justice Department official, said Gleason's ruling took a very expansive view of presidential powers and could have been overturned."*

Energy Transition: "*Every single datacenter is limited by power*" Jensen Huang

"Every single datacenter is limited by power"

We continue to be surprised that most just don't realize the 24/7 electricity problem that is getting larger every year. This is a 2025 problem and growing and not a problem for five years down the road. There is a rapidly growing need for 24/7 power from AI data centers. On Tuesday, we posted [[LINK] ""*Every single datacenter is limited by power" Jensen Huang. This is a 2025 problem that only gets bigger every yr. What else besides new #NatGas & expanding, not retiring #Coal can scale up fast enough to meet increasing AI datacenter thirst for 24/7 electricity? Thx @AP [LINK] #OOTT."* We, like many people, watched the Nvidia CEO Jensen Huang keynote address on Monday at CES 2025. It was about 90 min long keynote [LINK] Huang didn't get into a long discussion of the power shortages for AI datacenters and how their 24/7 power needs will be supplied. . Rather he threw in a simple clear message statement at 1:08:01 min mark "*every single data center is limited by power*"." This is a today issue and not a future forecast issue. And with the speed of AI datacenters, it is a rapidly growing problem. Don't forget AI datacenters need 24/7 power.

Microsoft won't say what powers the AI industrial revolution

Here is what we wrote in last week's (Jan 5, 2025) Energy Tidbits memo. *"Microsoft won't say what power the AI industrial revolution. We may understand why but we continue to be concerned that big tech companies don't to say that they need more natural gas and coal power for their rapidly increasing need for 24/7 electricity. By not saying it, they are creating a bigger power issue in the 2020s and negative impact on the normal grid customers. (i) Yesterday, we posted [LINK] "AI Data Center Dirty Little Secret. Don't want to specifically say only new #NatGas and expanded #Coal can provide electricity in scale in next decade to power their increasing 24/7 power needs for this "great leap forward" historic industrial revolution. 👇Microsoft Pres*

"The Golden Opportunity for American AI" makes zero mention of what will power the "large-scale infrastructure investments that serves as the essential foundation of AI innovation and use" and "the massive datacenters that make all this possible...." If AI data centers could run on intermittent wind and solar, they would be headlining it! Value of #NatGas should keep getting better. #OOTT". (ii) Microsoft President Brad Smith posted a blog on Friday night "The Golden Opportunity for American AI. A vision for technology success during the next four years." [LINK] Smith's blog is all about how AI is creating one of the historic industrial revolutions for the world, much like the start of electricity. It is going to change the world. And he sees Americans as being the leaders in this "great leap forward" in technology. Smith emphasized how this great leap forward in technology is only possible with massive infrastructure investment. Smith highlights "large-scale infrastructure investments that serves as the essential foundation of AI innovation and use" and "the massive datacenters that make all this possible...." (iii) Microsoft is spending $80 billion this year. Smith said "In FY 2025, Microsoft is on track to invest approximately $80 billion to build out AI-enabled datacenters to train AI models…" (iv) Smith made zero mention of what will power these billions in infrastructure. Smith highlights the essential element for this historic industrial revolution is massive investment in infrastructure but nowhere in his 5-pg blog does Smith mention how this will all be powered. We don't think it is wrong to say that Smith would have headlined wind and solar if that was how this would be powered. But, because they need massive 24/7 power that can't be supplied by wind and solar, we believe he didn't want to say they need to tie up a big portion of existing natural gas, coal and nuclear baseload power and their need for these baseload powers sources will only accelerate. It's why we say there is no choice for new 24/7 electricity at scale in the next several years other than more natural gas and even some expanded coal generation. SMRs (mini-nukes) can't be expected to provide 24/7 electricity at scale for at least a decade. Geothermal works but can't provide 24/7 electricity at scale for a decade. (v) It's a good blog on why Microsoft sees this historic industrial revolution. They just excluded a critical factor – where to get the 24/7 power. Our Supplemental Documents package includes Smith's 5-pg blog."

Energy Transition: Blackrock "*think oil and gas*" to meet growing AI energy demand

BlackRock finally says oil and gas

On Thursday, we posted [LINK] "*Finally, the dirty little AI secret is revealed. BlackRock's #1 theme for the game changing AI industrial revolution is financing the future, says "think solar farms, power grids, oil and gas". 1st time specifically naming oil and gas as a winner in the AI mega trend. BlackRock 2025 global outlook "Meeting growing energy demand (think solar farms, power grids, oil and gas) will generate investment of US$3.5 trillion per year this decade" Prior to this, only used deliberately vague "low-carbon" Bullish for value of #Oil #NatGas going forward. #OOTT."* (i) Positive for oil and natural ga as BlackRock finally comes out of the closet to say the words oil and gas in their key investor theme. As opposed to their purposely vague "low-carbon" words. This is their first mention of think oil and gas when thinking about the biggest transformation theme for capital allocation for the coming years. It's the first mention so look for them to start to include it in their regular disclosure. (ii) BlackRock posted its 2025 Global Outlook this week and highlighted its view that AI is driving a major industrial revolution. Their first theme is "*This fundamentally different landscape upends the nature of investing, in our view. We think investors can find opportunities by*

tapping into the waves of transformation we see ahead in the real economy, with AI and the low-carbon transition requiring investment potentially on par with the Industrial Revolution. That's why our first theme is financing the future." And their "financing the future" page is where they finally specifically name oil and gas for the massive AI energy demand. They say "*Sizable capital will be needed as the transformation unfolds, and that investment is happening now. Major tech companies are starting to rival the U.S. government on research and development spending. But it's not just about the rise of AI and its buildout via data centers. Meeting growing energy demand (think solar farms, power grids, oil and gas) will generate investment of US$3.5 trillion per year this decade, according to the BlackRock Investment Institute Transition Scenario*." (iii) Prior to this disclosure, we have been highlighting how BlackRock has been using the vague "low-carbon" description. So now that they have admitted oil and gas, look for them to use the terms more in the future. We can't believe people didn't realize this long ago but we should now see more investors accept oil and natural gas is key to the AI datacenter growth. Our Supplemental Documents package includes excerpts from the BlackRock 2025 Global Outlook.

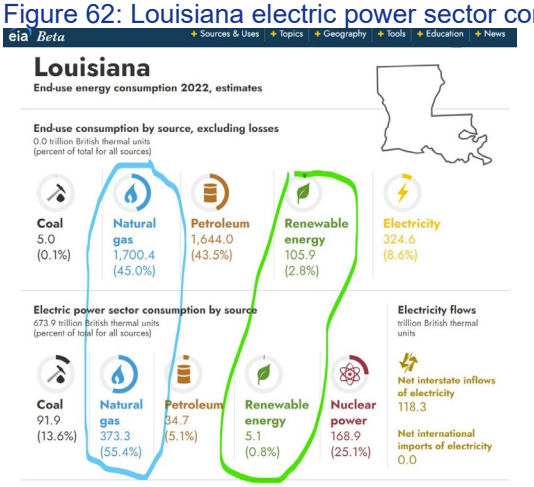
12/09/24: Blackrock, $3.5T/yr in capex, incl low-carbon, to meet energy demand
On Monday, before we saw the BlackRock 2025 Global Outlook, we posted [LINK] "*dirty little secret. low carbon = natural gas. see 👇12/12/24 post. AI Datacenter massive increasing need for 24/7 power is bullish for #NatGas. #OOTT."* Our Monday poste linked to our Dec 11, 2024 post on BlackRock's use of "low-carbon" instead of saying natural gas. Here is what we wrote in our Dec 15, 2024 Energy Tidbits memo. "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 more so 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 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 big tech going out of their way to avoid saying natural gas is the key to fueling datacenters was the big Dec 4 announcement on Meta's $10b AI data center. Here is what we wrote in our Dec 8, 2024 Energy Tidbits memo. *"I's another of the dirty little secrets in the energy transition that companies and agencies 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 tol 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."*

Figure 62: Louisiana electric power sector consumption by sources



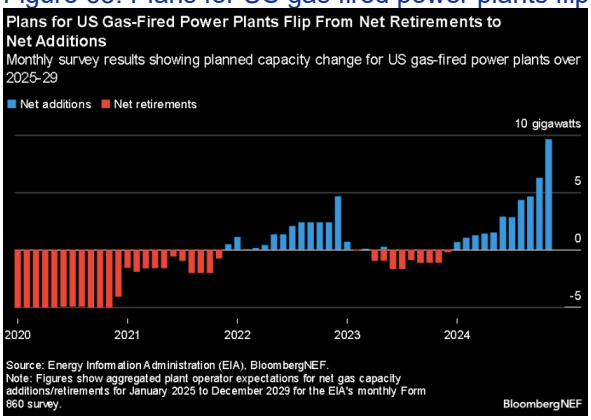
Source: EIA

Energy Transition: AI datacenters growth = flip to big growth in US #NatGas power

Big growth in US #NatGas power plants ahead

One of our key energy themes for the last several years has been the increasing need for natural gas power generation as the Energy Transition would take way longer, cost way more and be a bumpy/rocky road. The need for natural gas generation has only massively increased with the rapid and massive growth in AI datacenters and their need for 24/7 power. Earlier this morning, we posted [LINK] "*AI data centers growth for 24/7 power = #NatGas demand growth. No other reason to explain the about face from US retiring #NatGas power plants to massive planned additions of #NatGas power. Value of #NatGas is going higher. Thx @BloombergNEF David Mohammadi #OOTT.*" Yesterday, Bloomberg posted a short piece "*US Gas-Fired Power Capacity Was Set to Drop. No More: BNEF Chart."* And "*As of the November 2024 survey, the US is expected to see 9.6 gigawatts of net gas capacity additions from January 2025 to December 2029. That's a significant change from earlier survey results, such as the 5GW of net retirements expected in2020, and the 1.7GW of net retirements expected as recently as mid-2023."* We suspect there will be a longer piece this week on these numbers. But the short piece did not say what caused this abrupt change and we simply filled in the blanks by saying what else but AI datacenters need for 24/7 power could cause this. It is a massive increase in natural gas power generation plans. We look at this as being the icing on the cake for a an extended period of increasing need for natural gas power generation and has to point to increasing value of natural gas for the coming decade. Below is the BlooobergNEF graph that was attached to our post.

Figure 63: Plans for US gas fired power plants flip from net retirements to net additions



Source: BloombergNEF

Energy Transition: Centrica CEO warns need natural gas given interruptible wind/solar

Centrica CEO on wind and solar

The UK came close this week a couple times to power outages but made it through but, t no surprise, it was natural gas from Centrica's Rough gas storage that came to the rescue in a low wind generation week. Wind and solar have their place but they have two major shortfalls: they are interruptible in an unpredictable way and they can't peak up to save the day when power supply/demand is tight. Centrica CEO warned this week of the need for natural gas to offset wind and solar shortfalls and the need for more natural gas storage. But his comments also reminded of the basic shortfalls of wind and solar – they are interruptible and can't peak up [when needed. On Friday, we posted [LINK] "*Renewable Energy 101 example. Yes, renewable power exceeded fossil fuels for 1st time in UK. BUT only when sun shines and wind blows. AND can't peak up if more power is needed ie when it's cold. "Energy [#NatGas] storage is what keeps the lights on and homes warm when the sun doesn't shine and the wind doesn't blow ....." Chris O'Shea, Group CEO at Centrica.NatGas can!.*" Our Supplemental Documents package includes the Centrica CEO comments.

Good thing Centrica reopened Rough UK gas storage in Oct 2022

It was a good thing for the UK that Centrica reopened the Rough natural gas storage facility in Oct 2022 after been shut for four years. Here is what we wrote in our Oct 30, 2022 Energy Tidbits memo. "*On Friday, the Centrica announced [LINK] the reopening of the Rough gas storage facility. This comes after having completed significant engineering upgrades over the summer and commissioning over early autumn. Centrica noted that the Rough storage will only be at 30 bcf right now, which is ~20% of the total capacity. Rough is an offshore natural gas storage facility. This is the first gas injection into Rough in over five years and will be used for UK homes and businesses over winter 2022/23, boosting energy resilience in the UK. Chris O'Shea, Centrica CEO stated "our long-term aim remains to turn the Rough field into the world's biggest methane and hydrogen storage facility, bolstering the UK's energy security, delivering a net zero electricity system by 2035." Important to note that this future conversion into methane and hydrogen is to be done "by" 2035, which infers its won't be until then. Even at a 20% operating capacity this winter, it is still*

UK's largest gas storage site once again and adding 50% to the UK's gas storage volume."

Centrica shut down UK largest gas storage, Rough, in 2017

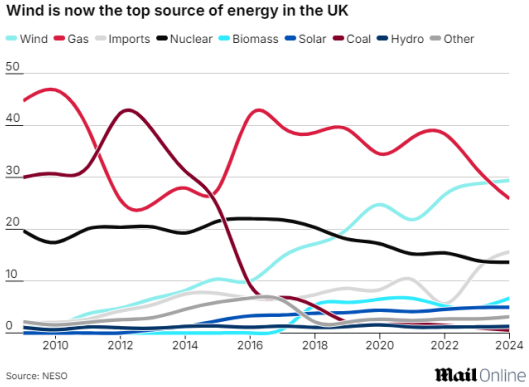
Our October 10, 2021 Energy Tidbits also included a recap of Centrica shutting down its Rough UK gas storage in 2017. At that time, we wrote "*One of the big criticism on the UK natural gas system is that there is a lack of gas storage. In September, Energy UK estimated there was 141 bcf in UK natural gas storage and wrote [LINK] "Britain has over 4bcm of storage capacity that can be called upon to deliver over one quarter of national gas demand on a cold winter's day. Gas is sent to storage facilities throughout the summer and at other times of the year to make sure we have gas supplies available when we need them." UK natural gas storage was much higher in 2017. In 2017, Centrica ceased operations at the largest UK gas storage facility, Rough. Our July 2, 2017 Energy Tidbits noted that, at the time of its cessation, Centrica estimated there was 183 bcf of recoverable cushion gas. They had massive problems with the storage that led to pre tax charge of £176 in 2016 results. Made the decision to shut it down in early 2017. We went back and couldn't see what the "working gas" level was prior to the problems. But Rough was the largest UK storage and believed to have represented something like 70% of the storage send out capacity. Rough was a depleted reservoir being used for storage. As a rule of thumb, we would use 50/50 split between cushion gas and working gas. So its probably reasonable to roughly assume working gas was about the same at 183 bcf. The closing of Rough is why UK has relatively low natural gas storage."*

Energy Transition: Wind generated more electricity than natural gas in UK in 2024

Wind beat natural gas in UK in 2024

UK Secretary of State for Energy Security and Net Zero, El Miliband, took some heat this week for the UK electricity fears as he has been the big pusher in the new Labour govt for the view that energy security is coming because of clean power from wind and solar. He got a lot of negative what are you thinking type replies to his unfortunately timed Tuesday post [LINK] "*Wind power has overtaken gas as Britain's biggest source of electricity. This is a huge moment in our journey away from energy insecurity and towards clean homegrown power.*" Miliband was reposting the Daily Mil report [LINK] "*Wind overtakes gas as Britain's biggest source of electricity for the first time, figures reveal. Britain is well on its way to fully 'clean' energy, new figures have revealed. Wind officially overtook gas to become the UK's biggest source of power for the first time in 2024. Figures released by the National Energy System Operator show that wind was responsible for 29.4 per cent of Britain's power last year. In contrast, gas represented just over a quarter (25.9 per cent) of Britain's power.*" Miliband shouldn't have highlighted how wind power is moving the UK "*away from energy security*" in a week where the energy insecurity is all about being caused by the wind not blowing. No surprise, responses highlighted real time data that showed wind was producing 5% of UK power vs natural gas at 55%. Below is the graph from the Daily Mail report.

Figure 64: Wind generation overtakes natural gas for UK 2024 power generation



Source: Daily Mail

Past week, natural gas has been the primary UK power fuel source

Last night (6:45pm MT), we looked at the National Grid live UK power generation by source to see the relative contributions of wind and natural gas for the past day and past week. The live data is at [LINK]. (i) Please remember that the % for UK generation by source are what % of total UK demand is being provided by a particular fuel source. They do not add up to 100% because, on top of the UK fuel sources, there are imports to get to 100%. The imports are not split out by fuel sources but we would expect Norway imports to be for natural gas generation. (ii) Past day. "Generation by source" was natural gas 53.1% nuclear 12.9%, wind 9.8%, biomass 6.4%, solar 2.1%, and hydroelectric 1.4%. (iii) Past week. Generation by source was natural gas 38.9%, wind 26.8%, nuclear 12.9%, biomass 6.0%, solar 1.6% and hydroelectric 1.6%.

Energy Transition: Mercedes PHEV +13% YoY vs BEV sales -23% YoY

Mercedes PHEV vs BEV sales

We have been highlighting the big change in EVs in 2023/24 was how PHEVs started to dominate BEV sales in many major markets, in particular in China. On Friday, Mercedes posted its Dec auto sales and it reinforced PHEVs are the bright spot for Mercedes. Mercedes PHEV sales in 2024 were +13% YoY whereas its BEVs sales were down big. The Sales overview table [LINK] sub line item *"-thereof Mercedes Benz P.C. BEVs"* reported Q4/24 sales of 49,200 were -26% YoY, and FY 2024 sales of 185,100 were -23% YoY. The sales overview table did not provide a subline for PHEVs. On Friday we posted [LINK] "*Chinese consumer weakness and PHEVs winning over BEVs. Mercedes Q4 sales. "Top-End vehicle sales were below 2023 levels, reaching 281,500 units, mainly impacted by market conditions in China, model changes and weak EV demand." "#PHEV sales grew by 13% year-on-year across all regions, while slower EV adoption in core markets led to lower #BEV sales in 2024." #OOTT."*

Energy Transition: China's BYD Dec PHEV sales continue to dominate vs BEV sales

PHEVs dominate BEVs for BYD sales

Here is what we wrote in last week's (Jan 5, 2025) Energy Tidbits memo on how PHEVs are dominating BEVs within the NEV sales group. "*China's BYD Dec PHEV sales continue to dominate vs BEV sales. On Wednesday, we posted [LINK] "Breaking! PHEVs keep*

dominating BEVs in China. Don't forget NEVs = BEVs + PHEVs. BYD Dec/YTD Dec 31: BEV: 207,734, +8.9% YoY. 1,764,992, +12.1% YoY. PHEV: 301,706, +101.9% YoY. 2,485,378, +72.8% YoY. PHEVs outselling BEV 1.5 to 1. Dirty little secret for PHEVs, what % of kms driven are in ICE vs electric mode. PHEVs are really just more fuel efficient ICE vehicles. See 👇09/04 tweet. Volvo said its PHEVs kms driven are 50/50 ICE vs electric mode. Unknown for Chinese PHEVs. Surely more kms in electric than Volvo but how much more? #OOTT." BYD posts its monthly NEV sales report on the 1st each month and posted its Dec 2024 sales update on New Year's Day. The Dec sales were the same trend as seen over the year – BEV sales are up modestly YoY but PHEV sales are up hugely YoY and dominate BYD's NEV sales. As a reminder in China NEV sales are the sum of BEV + PHEV sales. Our concern is that almost everyone refers to BYD's NEV sales without splitting between BEV and PHEV. We recognize it takes that extra step to go and get the split but there is likely a significant difference to the China gasoline consumption decline forecast if the cars are BEV vs PHEVs. This is not a question that the huge % increase in PHEVs is because the huge % is relative to a low base. BYD's PHEVs reached parity to BEV volumes about a year ago. So the YoY % growth between the two is from a similar bases in 2023. For Dec, BEV sales were +8.9% YoY to 207,734 and a 40.4% share of BYD's NEVs, whereas PHEV sales were +101.9% YoY to 301706 and a 5.6% share. For full year 2024, BEV sales were +12.1% YoY to 1,764,992 and a 41.3% share whereas PHEV sales were +72.8% YoY to 2,485,378 and a 58.2% share. And PHEVs are now about 1.5x BEV sales. Our table below shows the BYD Dec and YTD Dec 31 (full year 2024) NEV sales split into BEV, PHEV, Commercial vehicles – bus and Commercial vehicles – Others. Our Supplemental Documents package includes the BYD release this morning."

Figure 65: BYD New Energy Vehicle Sales for Dec 2024

BYD New Energy Vehicle Sales - Dec 2024

	Dec-24	% Share	Dec-23	% Share	Volume Δ	*% change*
BEV	207,734	40.4%	190,754	55.9%	16,980	*8.9%*
PHEV	301,706	58.6%	149,424	43.8%	152,282	*101.9%*
Commercial Vehicle - Bus	1,385	0.3%	805	0.2%	580	*72.0%*
Commercial Vehicle - Others	3,994	0.8%	60	0.0%	3,934	*6,556.7%*
Total	**514,819**	**100.0%**	**341,043**	**100.0%**	**173,776**	***51.0%***

	YTD Dec 24	% Share	YTD Dec-23	% Share	Volume Δ	*% change*
BEV	1,764,992	41.3%	1,574,822	52.1%	190,170	*12.1%*
PHEV	2,485,378	58.2%	1,438,084	47.5%	1,047,294	*72.8%*
Commercial Vehicle - Bus	5,580	0.1%	4,705	0.2%	875	*18.6%*
Commercial Vehicle - Others	16,195	0.4%	6,806	0.2%	9,389	*138.0%*
Total	**4,272,145**	**100.0%**	**3,024,417**	**100.0%**	**1,247,728**	***41.3%***

Source: BIYD Production and Sales Volumes for December 2024, posted Jan 1, 2025
Prepared by SAF Group

Source: BYD

Big unknown – how much do Chinese drive in ICE vs electric mode

It seems like a dirty little secret for car companies to keep as to how much their PHEVs are driven in ICE mode vs electric mode. It is a split that they must all have but don't disclose whether it is in China, Europe or the US. The only clear statement we have seen was from Volvo and that wasn't in any disclosed reports, And that Volvo disclosure only came in a response in the Q&A of a conference call on how the km driven by their PHEVs is about 50/50 split ICE vs electric mode. Our BYD post highlighted this unknown. Our Wednesday post said "*Dirty little secret for PHEVs, what % of kms driven are in ICE vs electric mode. PHEVs are really just more fuel*

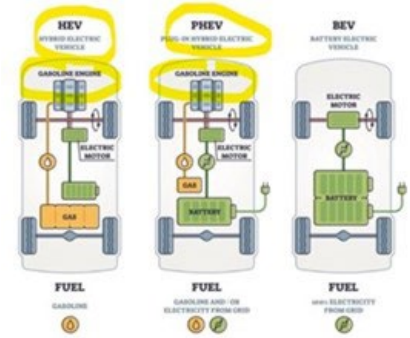
efficient ICE vehicles. See 👇09/04 tweet. Volvo said its PHEVs kms driven are 50/50 ICE vs electric mode. Unknown for Chinese PHEVs. Surely more kms in electric than Volvo but how much more?" BYD newer higher end cars are moving into more extended range electric, which has to help them drive more in electric mode. But we don't know what % of kms are driven in ICE vs electric mode. In our prior posts on the BYD data, we remind that the vast majority of Chinese in cities live in apartments vs single family homes. And given that most of these apartments were built in the big China boom from 2000 to Covid, we doubt that they were set for broad EV charging for most of the residents. Only BYD and therefore Chinese govt knows the data on how many kms these millions of PHEVs are driven in ICE mode vs electric mode.

HEVs & PHEVs are really just more fuel efficient ICE vehicles

We call it a dirty little secret by the car companies but, for some reason, they don't want to disclose what % of kms are their PHEVs driven in ICE mode vs electric mode. They have the data and we would have thought that would be some sort of sales/marketing pitch for the value equation of PHEVs vs ICE if they are driven mostly in electric mode. But that data doesn't seem to be something they disclose. As noted in our BYD post on Wednesday, it is unknown what % of kms are driven in ICE vs electric mode given vast majority of Chinese in cities live in apartments build in prior boom. Although, given that more BYD higher end PHEVs have are extended range electric, we would expect that Chinese drive their PHEVs more in electric mode than driven by Volvo's PHEV owners. We linked to our prior disclosure on Volvo saying their PHEVs are driven about 50/50 in gasoline vs electricity mode. In the western world, HEVs are the big winners as opposed to PHEVs in China. The emergence of HEVs and PHEVs is a win or at least a much lesser loss of gasoline/diesel consumption vs EVs. No one can deny an HEV will burn less gasoline or diesel than its ICE counterpart. However, we still find many don't understand that HEVs and even PHEVs are really just more fuel-efficient ICE vehicles and, in particular, for PHEVs that are generally lumped in with EVs for an electrified car group. HEVs and PHEVs run on gasoline or diesel for likely at least half of the time for PHEVs, at least for Volvo's, and probably 90% for HEVs. On Sept 4, we tweeted [LINK] "*HEV/PHEV 101 - They are really just more fuel efficient ICE. Ford: HEV F150 does 23 mpg vs ICE150 at 19 mpg. Volvo: PHEVs km driven are split 1/2 using battery, 1/2 using petrol/diesel. #OOTT."* Our tweet referenced Ford and Volvo data on HEVs and PHEVs. On Ford F150 Hybrid vs ICE mpg. Our tweet included the EPA rated mileage for the Ford F150 ICE vs Hybrid. The EPA rates the Hybrid fuel efficiency as being only 4 mpg more than the ICE. That increased fuel efficiency would be reduced if it was a full apples-to-apples comparison. The ICE has a much larger towing capacity. The F150 ICE 3.5L cyl F-150 does 19 MPG with a tow capacity of 13,500 lbs. The F150 HEV 3.5L 6 cyl F-150 does 23 MPG with a tow capacity of 11,200 lbs. On Volvo PHEVs, most just lump PHEVs in with EVs because both are electrified. But the reality is that a lot of PHEV is driven in ICE mode. As noted earlier, Volvo backed off its fully electric plans and its press released noted "*Volvo Cars' most recent data shows that around half of the kilometres covered by the latest plug-in hybrid Volvo cars are driven on pure electric power."* So based on the "most recent data", Volvo PHEVs are driven around 50/50 between km driven in

battery mode vs ICE mode. Given the press release was Volvo having to back away from its electrified goals, we have to be believe the "around half" driven by PHEV is likely below half. We also believe that Volvo has likely picked the best time period for PHEVs driving in battery mode. We would assume the most recent data is referring to some spring/early summer period and it does not include winter months where the PHEVs will be driven more in their ICE mode.

Figure 66: HV vs PHEV vs BEV



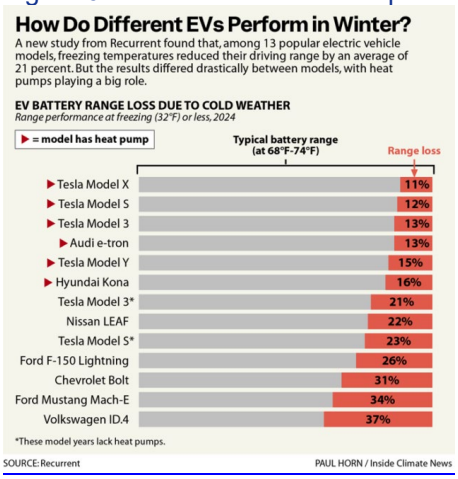
Source: Engineering Infrastructure

Energy Transition: EV range losses in cold weather

EV range losses in winter

On Wednesday, we posted [LINK] "*Should be busy day at #EV charging across the US. It's 32F or below in most of the US. @weatherchannel. At 32F, battery range loss is significant. And will be much worse when temps are below 32F. Thx Kristoffer Teague [LINK] #OOTT.*" We were watching the US temps and, at the time of our post, it was below 32F in most of the Lower 48. And that reminded of the challenge for EVs in most of Canada – EVs lose significant range in winter. Our tweet included the below table that shows their tested EV range loss at 32F or 0C. We don't know how it goes below 32F but we assume it isn't linear so range loss will accelerate below 32F and The Weather Channel temperatures were as of 12:15pm ET so pretty close to maximum warmth for the day. They also highlighted the reduced range loss for those EVs that have heat pumps. Don't forget that any EV owner will also remind that the range loss is greater depending on items like using the heater for the inside car temperature and added weight items beyond the driver. Not to pick on anyone, but the some of the most popular BEVs like Fort F-150 Lightning have 26% range loss at 32F and that would assume the pickup truck wasn't being used for pickup type use. Our Supplemental Documents package includes the Inside Climate News report that was posted by arstechnica.com. [LINK]

Figure 67: How do different EVs perform in winter?



Source: Inside Climate News

Energy Transition: Trump wants policy where no windmills are built

Trump wants no offshore windmills built

On Tuesday, we posted [LINK] "*Offshore windmills lose, #NatGas wins under Trump. "green new scam". "they [offshore windmills] only work if you get subsidy". "many many times more expensive than clean natural gas" Trump today. What else buy #NatGas can scale up to provide 24/7 power in near term? Fits 👇11/06/24 post on Trump Day 1 promise on offshore windmills. Thx @business transcripts #OOTT.*" Trump held a big press conference on Tuesday and included a replay of his negative views on offshore windmills. This should not surprise anyone as his view hasn't changed. Trump said "*And, you know, you can talk about windmills. They litter our country. They're littered all over our country, like dropping paper, like dropping garbage in a field. And that's what happens to them, because in a period of time, they turn to garbage. Most expensive energy ever. They only work if you get subsidy. The only people that want them are the people that are getting rich off windmills, getting massive subsidies from the U.S. government. And it's the most expensive energy there is. It's many, many times more expensive than clean natural gas. So, we're going to try and have a policy where no windmills are being built. You know, off the coast of New Jersey, they want to build like 200 windmills. The people are going crazy. Nobody wants them and they're very expensive. They don't work without subsidy. You don't want energy that needs subsidy.*"

Wind turbine maker stocks down 6% on Wednesday post Trump comments

The Trump offshore windmills views are not new but it seems like markets are finally paying attention given is comments were less than two weeks to him taking office. The major wind turbine makers stocks. On Wednesday, Vestas was down -6.3%, Siemens Energy was down -6.1%, and Nordex was down -6.2%.

05/11/24: Trump Day 1 executive order to end offshore windmills

Our post this week linked to our Nov 6, 2024 post that referenced Trump's big 05/11/24 rally where he laid out his anti windmills views. Here is what we wrote in our Nov 10, 2024 Energy Tidbits memo. "*The other clearly stated energy promise by*

Trump for a Day 1 executive order is get rid of offshore windmills. We have trouble believing how, by executive order, he can get rid of existing offshore wind generation projects. But given that federal authority is needed for offshore wind, he could regulate effectively a halt to new offshore wind. Kind of like how Obama was to keep pushing off Keystone XL for years. Trump's big May 11 rally in New Jersey included his clear promise to hit offshore wind in a Day 1 executive order. And any delays on planned offshore wind projects will leave a big near-term gap for power generation that can really only be filled by natural gas and coal to 2030. On Wednesday morning, we tweeted [LINK] "Offshore wind to be Trump Day 1 executive order priority. 05/11/24: "You won't have to worry about Gov Murphy's 157 windmills …… They ruin the environment …. We are gong to make sure that that ends on Day 1. I'm going to write it oud in an executive order. It's going to end on Day 1." Trump. Any delays to deploy offshore wind means more #NatGas #Coal needed to fill the gap. #OOTT Thx @cspan." Our tweet included our SAF Group created transcript of comments by Donald Trump at a campaign speech in Wildwood, New Jersey on May 11, 2024. C-span video is at [LINK]. At 28:06 min mark. Trump "But unfortunately, the Democrats in New Jersey have embraced Joe Biden's radical pro-China plan plan to eliminate gas-powered cars and trucks. Can you believe it? And force everyone into ultra-expensive electric vehicles that don't go far. I always say, they have a couple of problems – they're too expensive, they're going to be made in China, and they don't go far. Other than that, I think they're wonderful. On Day 1, I will immediately terminate Joe Biden's insane electric vehicle mandate. And there will be no ban on gas cars and gas trucks in the Garden State. There will no ban anywhere in the United States of America on gas. You can buy electric if you want, you can buy gas, you can buy whatever you want, that's the way it should be.""

Need new natural gas & not retiring coal & nuclear to fill gap

Whenever we see risks to adding electricity supply over the next decade like Trump's plan to go after offshore windmills we add what else besides new natural gas and not retiring coal and natural gas can fill the gap over the next decade so the grid has 24/7 baseload electricity. Long term readers know we are big fans of SMRs or what we have called mini-nukes but also that we just don't see scale to SMRs over the next decade. We are also believers in geothermal but again don't see it at scale over the next decade. The reality is that there really isn't anything else but new natural gas generation, not retiring coal and nuclear and possibly expanding some existing coal generation that can scale up to provide 24/7 electricity over the coming decade.

Capital Markets: Liberals to select a new leader on March 9, who will be the next PM

Liberal leadership vote March 9

It looks like Canada will have a new Prime Minister in two months. On Thursday night, the Liberal Party announced the process to select a new leader, which will culminate in the leadership; vote on March 9. And that leader will become the next Prime Minister. We have not seen any reports that the Liberal Party constitution has changed, which means that a short race will likely favor candidates who are known in all ridings. It will be very difficult for a low-profile candidate to build name recognition and branding in the vast majority of ridings in less than two months. The CBC outlined the voting process [LINK] as follows "*How does voting work? The Liberal Party's constitution states that each electoral district is allocated 100 points, which in total creates a "national count" that determines who wins the contest. Voters*

can rank their preferred candidates. Candidates receive district points based on a ratio of how many voters choose them as their first pick against the total number of valid ballots cast in the district. The district points across the country are then totalled up for each candidate. The first contender to receive more than 50 per cent of the points on any national count is selected as the Liberal Party leader. Justin Trudeau won the Liberal leadership by a landslide, grabbing 80 per cent of the required points. If nobody gets more than 50 per cent on the first count, the candidate with the fewest number of points is eliminated and their ballots are distributed among the remaining contenders, according to whom voters chose as their second preference. This elimination process continues until a candidate meets the target of 50 per cent plus one."

A new PM will host the G7 on June 15-17 in Kananaskis

Assuming the proroguing of parliament isn't somehow extended, the likely timetable for a new election is early May assuming a non-confidence vote is held, and the government is defeated. The minimum election time is 36 days so we would expect an election in early May. That means that Justin Trudeau will not be the host of the G7 on June 15-17 in Kananaskis.

Capital Markets: Brutal India Dec vehicle sales, sign of lower growth in India

Brutal India vehicle sales in Dec

Our Dec 15, 2024 Energy Tidbits memo highlighted India's weak Nov vehicle sales and asked "*Are weak India commercial vehicle sales in Nov a one-off*?" It turns out India's weak Nov vehicle sales were not a one-off and India's Dec vehicle sales were way worse. (i) On Wednesday, we posted [LINK] "*Indicator of lower growth India economy. Brutal Dec vehicle sales followed a weak Nov. Dec vehicle sales -43.26% MoM, -12.49% YoY. Reminder India economy grew 5.4% in Jul-Sep qt, slowest pace in 7 qts. But "Auto Dealer sentiment for Jan remains cautiously optimistic" @FADA_India #OOTT.*" (ii) Recall India economy grew 5.4% in the latest July-Sept quarter, which was the slowest pace of expansion in seven quarters. Vehicle sales are just one indicator but Dec is the 2nd consecutive month of weak India vehicle sales. And it shows the deterioration of India consumers in Nov and Dec compared to the first part of the year. (iii) Our post noted the FADA commentary from dealers that they are cautiously optimistic on vehicle sales picking up in Jan. (iv) FADA doesn't provide a split of passenger vehicles into ICE, BEV, PHEV and HEV. India vehicles are dominated by 2W with over 68% of Dec sales, followed by PVs at 17%. (v) Total India Dec vehicle sales of 1,756,419 were -45.26% MoM and -12.49% YoY. The split by type was: 2W sales of 1,197,742 was -54.21% MoM and -17.64% YoY. 3W sales of 93,892 were -13.33% MoM and -4.57% YoY. PV sales of 293,465 were -8.85% MoM and -1.97% YoY. Tractor sales of 99,292 were +23.31% MoM and +25.78% YoY. CV (commercial vehicle) sales of 72,028 were -12.13% MoM and -5.24% YoY. (vi) Note the weak Nov and brutal Dec vehicle sales show how vehicle sales have really weakened since earlier in 2024. Despite the bad Nov/Dec, calendar years sales were up YoY in all categories. (ivi) Calendar year 2024. Total India calendar year 2024 vehicle sales of 26,207,679 were +9.11% YoY. The split by type was: 2W sales 18,912,959 was +10.78% YoY. 3W sales of 1,221,909 were +10.49% YoY. PV sales of 4,073,843 were +5.18% YoY. Tractor sales of 894,112 were +2.55% YoY. CV sales of 1,004,856 were +0.07% YoY. Our Supplemental Documents package includes the FADA release.

Figure 68: India retail vehicle sales Dec 2024

All India Vehicle Retail Data for December'24

CATEGORY	Dec'24	Nov'24	Dec'23	MoM%	YoY%
2W	11,97,742	26,15,953	14,54,353	-54.21%	-17.64%
3W	93,892	1,08,337	98,384	-13.33%	-4.57%
E-RICKSHAW(P)	*40,845*	*40,391*	*45,100*	*1.12%*	*-9.43%*
E-RICKSHAW WITH CART (G)	*5,826*	*5,423*	*3,692*	*7.43%*	*57.80%*
THREE-WHEELER (GOODS)	*9,122*	*10,940*	*9,546*	*-16.62%*	*-4.44%*
THREE-WHEELER (PASSENGER)	*38,031*	*51,466*	*39,962*	*-26.10%*	*-4.83%*
THREE-WHEELER (PERSONAL)	*68*	*117*	*84*	*-41.88%*	*-19.05%*
PV	2,93,465	3,21,943	2,99,351	-8.85%	-1.97%
TRAC	99,292	80,519	78,944	23.31%	25.78%
CV	72,028	81,967	76,010	-12.13%	-5.24%
LCV	*39,794*	*47,530*	*42,814*	*-16.28%*	*-7.05%*
MCV	*4,662*	*5,473*	*4,987*	*-14.82%*	*-6.52%*
HCV	*22,781*	*24,441*	*23,904*	*-6.79%*	*-4.70%*
Others	*4,791*	*4,523*	*4,305*	*5.93%*	*11.29%*
Total	**17,56,419**	**32,08,719**	**20,07,042**	**-45.26%**	**-12.49%**

Source: FADA Research

Source: FADA

12/09/24: Are weak India commercial vehicle sales in Nov a one-off?

Here is what we wrote in our dec 15, 2024 Energy Tidbits memo. "*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 Aor-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."*

Figure 69: 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*	*-8.16%*	*-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*	*-15.15%*	*-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

Demographics: Jensen Huang, AI agents impacting billion knowledge workers

Jensen Huang on AI impacting knowledge workers

We follow as much as we can from the major tech players. It's not from a detailed technology basis. Rather it is to listen so we can try to see where it takes energy, markets, etc. on their impact. For the past few years, our concern has been that AI will have a huge impact on young professionals io a wide range of sectors who start their working careers in learning analysis and digging up info/data. Nvidia CEO warned a billion knowledge workers are at risk. On Tuesday, we posted [LINK] ""*There are a billion knowledge workers in the world. It is very, very clear AI agents is probably the next robotics industry and likely to be a multi-trillion-dollar opportunity." Nvidia CEO Jensen Huang. Can't help worry for young professionals & soon to be grads. #OOTT." W*e, like many people, watched the Nvidia CEO Jensen Huang keynote address on Monday at CES 2025. It was about 90 min long keynote [LINK]. Huang highlighted the next robotics industry is AI agents for knowledge workers. Here is the transcript we made of comments by Nvidia CEO Jensen Huang in his keynote address at CES 2025 on Jan 7, 2025. *[LINK] Items in "italics" are SAF Group created transcript. At 1:15:28 min mark, Huang "The next layer is what we call Nvidia Nemo. Nemo is essentially a digital employee onboarding and training evaluation system. In the future, these AI agents are essentially digital workforce that are working alongside your employees, doing things for you on your behalf. And so the way that you bring these specialized agents into, these special agents into your company is to onboard them, just like you onboard an employee*". At 1:20:09 min mark, Huang *"… this is going to be the next giant AI application. Next giant AI service period is software coding. 30 million software engineers around the world. Everybody is going to have a software assistant helping them code. If not, obviously, you're going to be way less productive and create lesser good code. So this is, 30 million. There are a billion knowledge workers in the world. It is very, very clear AI agents is probably the next robotics industry and likely to be a multi-trillion-dollar opportunity." [Note a video clip follows shows four AI agent examples.] At 1:21:30 min mark, Huang on the video clip "AI agents are domain specific task experts. Let me show you four examples. For the billions of knowledge workers and*

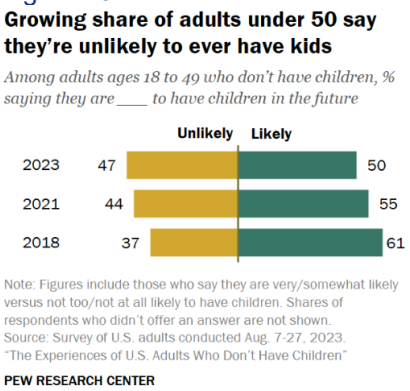
students, AI research assistant agents ingest complex documents like lectures, journals, financial results and generated interactive podcasts for easy learning."

Demographics: Pew, 47% of American adults unlikely to ever have children

47% of American adults unlikely to ever have kids

We recognize it is several years down the road, but we can't help wonder if Trump's mass deportation plan and tougher immigration won't turn out to be the US's Japan/Korea moment and put the US on an irreversible path towards a much faster aging population. The reality is that immigrants tend to have the higher birth rates that are needed to prevent populations from declining. Our concern on this demographic trend was heightened after listening to CNBC Worldwide Exchange on Friday morning when a guest mentioned a statistic that surprised us. She said that 47% of American adults were unlikely to ever have children and this was 10% in five years. That seemed like a high number but we dug around and she was referring to a Pew Research July 25, 2024 blog "*The Experiences of U.S. Adults Who Don't Have Children"* [LINK]. Pew wrote "*The U.S. fertility rate reached a historic low in 2023, with a growing share of women ages 25 to 44 having never given birth. And the share of U.S. adults younger than 50 without children who say they are unlikely to ever have kids rose 10 percentage points between 2018 and 2023 (from 37% to 47%), according to a Pew Research Center survey. In this report, we explore the experiences of two groups of U.S. adults: Those ages 50 and older who don't have children Those younger than 50 who don't have children and say they are unlikely to in the future."* Our Supplemental Documents package includes excerpts from the Pew report.

Figure 70: India retail vehicle sales Dec 2024



Source: Pew Research

Demographics: Japan increasing shortage of nursing care workers up to 250k in 2026

Japan's shortage of nursing care workers

We believe western govts are kicking the can down the road to the most part on the big economic problem of how to deal with the rapidly aging populations. There is both the physical logistics of how do deal with more elderly and the financial aspect of how much money do governments allocate to senior keeping in mind that someone has to pay for it. Canada and the US have real life cases of rapidly aging industrialized countries to learn from but we don't see our politicians trying to look ahead. Japan has a real problem of a rapidly aging population, an increasing shortage of nursing care workers for seniors, how to get them and the cost to do so. On Dec 17, Japan News report "*Japan to Actively Recruit Nursing*

Care Staff from Overseas; Government Plans to Subsidize Costs of Finding Workers". [LINK] Japan News wrote "*About one in five people in Japan will be aged 75 or over next year. There are currently about 2.15 million nursing care workers, but there will be an estimated shortage of about 250,000 workers in fiscal 2026 and about 570,000 in fiscal 2040*." That is a massive shortage of nursing care workers, and the problem is only getting bigger every year.

Demographics: Titans new GM traits remind of the best investment professionals

Titans new GM search

I was reminded this week of how some of my former partners in the investment dealer/banking business use to look at when hiring people when I saw the comments on what Tennessee Titans President of Football Operations Chad Brinker was looking for in his replacement search for fired GM Ron Carthon. I recognize the business world has changed a lot in the last 20 years but I was fortunate to have had some great partners who wanted to be #1 and to be at the top for years. That was what most impressive is they wanted to sustain being #1 for years. The Titans website posted "*President of Football Operations Chad Brinker Shares His Vision for a Titans Turnaround*" [LINK], which quoted Brinker "*It is someone who wakes up every single day and the only thing they think about is building a roster, evaluating players, watching tape, working with the coaching staff." "At the end of the day, this person is going to be all ball, all day. They are going to focus on the roster and the coaching staff, and I'll continue in my role with handling all the other areas that surround the center of our program, scouting and coaches*." It reminded me of working with Mike Wekerle (many regard him as the best trader in the investment business) for 15 years and I was never surprised to get a call at any time of the day if he wanted to ask about oil, a stock or if he was with a client who had a question. And every day, he was determined for us to win the day on the desk. So, Mike was the best at this trade and also a wonderful person.

Energy Tidbits: Thank you for all the great insights/feedback last year

Great insights from readers

I want to give a big thank you to all of the readers and Twitter/X followers who took the time to contact me with insights and feedback on my work. I have had a chance to meet and deal with financial people that I never knew in my years working in investment banking industry with GMP Securities/Griffiths McBurney & Partners. I haven't been able to squeeze in all the meetings when I travel but, hopefully, I can meet even more people in 2025 in my travels. It's been great to set up new relationships and to learn how different financial people look at markets and energy. it has hopefully helped broaden my perspective on issues.

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

@Energy_Tidbits on Twitter

Two months ago, I went over 11,000 followers on Twitter/X and are closing in on 12,000 followers. I really appreciate the support and, more importantly, some excellent insights and items to look at from Twitter/X followers. It helps me do a better job. For new followers to our Twitter/X, 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 25 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/X for early views on energy items. Our Supplemental Documents package includes our tweets this week.

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: Amuse Bouche 2005

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 posted the wine of the week, which was Amuse Bouche 2005, a Pomerol inspired Merlot from Napa Valley. [LINK] I bought the three of her first five vintages from when Heidi Barrett started Amuse Bouche. The 2005 supposed targeted drinking range was pre 2019 but I thought it was still very good. I am down to one of the each of the 2004 and 2006 and i will put them on the to drink list in the next year or two. One of the things I have been finding is that high quality red wines tend to drink better for a lot longer than expected. The Amuse Bouche 2005 fits into that category

Figure 71: Amuse Bouche 2005

Source: SAF Group

Eight AFL teams that merged with the NFL in 1967 have all played 1,000 games

Its one of the best weekend for NFL fans with Wild Card weekend that had two games yesterday, two today and one tomorrow. No surprise, post the regular season, there were many NFL stats. One that was original was the @NFL_DovKleiman post "*Very Cool: 8 NFL franchises that originated in 1960 with the AFL have each played in EXACTLY 1,000 regular season games through 65 seasons*:" Kleiman's post included the below post. We looked at the list to see who was after the Patriots in Super Bowl wins. In terms of Super Bowls wins, the Patriots

are 6-5 ,the Chiefs are 4-2, the Raiders 3-2, the Broncos are 3-5, the Jets are 1-0, the Chargers are 0-1,the Titans are 0-1, and the Bills are 0-4. After yesterday's loss to the Texans, the Chargers won't get a chance for their first Super Bowl this year. How can Bills fans forget the four consecutive Super Bowl losses in the early 90's include the heartbreaking 1991 "wide right" loss to the New York Giants 20-19. Bills kicker Scott Norwood missed a 47-yard field goal with 4 second on the clock when his kick when wide right.

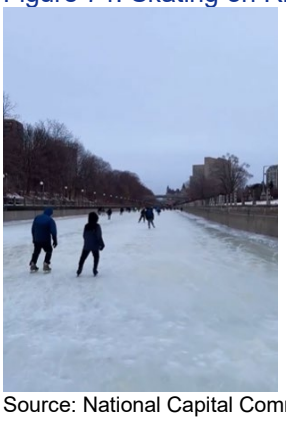
Figure 72: Eight AFL teams each played 1,000 games since the merger

Source: @NFL_DovKleiman

Ottawa's Rideau Canal open for skating yesterday

Yesterday, the National Capital Commission's Rideau Canal Skateway posted [LINK] "*TODAY'S THE DAY! The green flag is up over the #RideauCanal Skateway, and a 4 km section is open between Laurier and Bank."* The full canal skate is 7.8 km when it is fully open. It's a great thing to do when you are visiting Ottawa in the winter to skate the length of the canal and then sit down for a nice warm drink with friends at the end. Our Feb 26, 2023 Energy Tidbits memo noted that it was the first winter in >50 years that the Rideau Canal didn't open for skating as it was a very warm winter and they didn't have safe enough conditions.

Figure 74: Skating on Rideau Canal on Jan 11, 2025



Source: National Capital Commission

Trudeau reminds Liberals Freeland has been his partner in crime

There isn't any doubt that Chrystia Freeland's resignation was the straw that broke the camel's bank for any hope Trudeau had for staying on as Liberal leader and therefore Prime Minister. So, Trudeau got back at her in his resignation press conference by highlighting she was right with him on all items for the last decade. So, for all of the Liberals who are blaming Trudeau and who will be voting for their next leader, he is reminding that Freeland was his partner in crime. Trudeau said "*Chrystia has been by my side for close to 10 years now,*" "*She has been an incredible political partner through just about everything we have done as a government and as a party for the past decade.*"