Energy Tidbits

June 2, 2024

Produced by: Dan Tsubouchi

Imagine if Toyota or GM, not BYD, had Announced its Hybrids Had a Range of >2,000 Km Without Refueling/Recharging

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. My priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is the review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector. My target is to write on 50 weekends per year and to post by noon MT on Sunday. The Sunday noon timing was because PMs said they didn't have research to read on Sundays and Sundays are a day when they start to think about the investing week ahead.

This week's memo highlights:

1. BYD's announcement that its new hybrids had a range >2,000 km without refueling/recharging could be a potential game changer to peak oil demand. [click here]

2. OPEC+ agrees to extend group-ide cuts thru 2025, extra voluntary cuts reportedly extended thru 2024. [click here]

3. BloombergNEF's updated forecast is for Europe natural gas storage to be full by Sept 30. [click here]

4. China's formal manufacturing PMI is back to contraction after two months of expansion [click here]

5. Iraq, Kurdistan and oil producers in Kurdistan finally are meeting to discuss a return of Kurdistan oil to export markets via Turkey [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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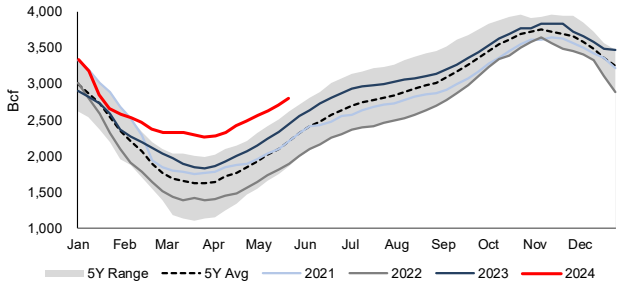
Natural Gas: Warning for risk US natural gas storage gets filled early

US natural gas storage to be filled early?

It's been really hot in the US for the last week or two and US natural gas production growth seems stalled but we still see significantly higher YoY US gas storage. And, with the forecast for Europe gas storage to be fill by Sept 30, we still see the risk for US gas storage to also be full before winter. And our concern is that if there is the visibility to US storage being full early, then there will be a hit to HH prices in Sept/Oct ahead of the winter. There may very well be items such as hurricane interruptions, a big spike up in natural gas for data centers, etc. that will change this outlook but when we see natural gas storage this much higher YoY and forecasts for Europe storge full by Sept 30, we still see the risk for an early fill to US natural gas storage. As noted below, US natural gas storage is now +380 bcf YoY, which is down WoW from +402 bcf YoY last week.

Figure 1: US Natural Gas Storage



Source: EIA

Natural Gas: +84 bcf build in US gas storage; now +380 bcf YoY

+84 bcf build in US gas storage

For the week ending May 24, the EIA reported a +84 bcf build. Total storage is now 2.795 tcf, representing a surplus of +380 bcf YoY compared to a surplus of +402 bcf last week. Since February, total storage has remained well above the top end of the 5-yr range. Total storage is +586 bcf above the 5-year average, slightly below last week's +606 bcf surplus. Below is the EIA's storage table from its Weekly Natural Gas Storage report [LINK].

Figure 2: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons: Year ago (05/24/23)		5-year average (2019-23)	
Region	05/24/24	05/17/24	net change	implied flow	Bcf	% change	Bcf	% change
East	538	511	27	27	513	4.9	428	25.7
Midwest	652	628	24	24	568	14.8	500	30.4
Mountain	210	202	8	8	125	68.0	122	72.1
Pacific	267	259	8	8	148	80.4	214	24.8
South Central	1,128	1,112	16	16	1,062	6.2	944	19.5
Salt	324	319	5	5	301	7.6	290	11.7
Nonsalt	804	793	11	11	761	5.7	654	22.9
Total	2,795	2,711	84	84	2,415	15.7	2,209	26.5

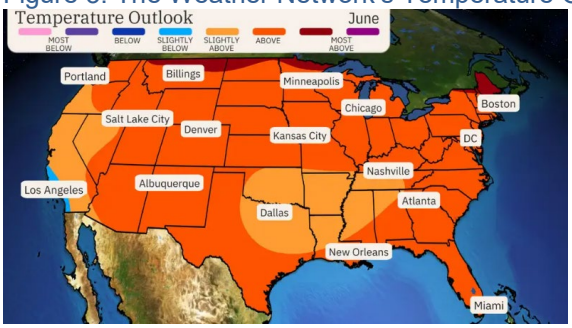
Source: EIA

Natural Gas: The Weather Network forecasts hotter than average June in the Lower 48

On Friday, The Weather Network posted their forecast for the month of June, expecting above normal temperatures for the month of June in the Lower 48 [LINK]. This forecast reflects warmer expectations than their previous outlook issued earlier in May and now calls for warmer than normal temperatures across of the Lower 48. Below is the Weather Network's forecast for June. Our Supplemental Documents package includes The Weather Network June outlook.

A hot June across the Lower 48

Figure 3: The Weather Network's Temperature Outlook for June



Source: The Weather Network

Natural Gas: US March gas production down -3.2 bcf/d MoM in March

On Friday, the EIA released its Natural Gas Monthly [LINK], which includes its estimated "actuals" for March dry gas production. Key items to note are as follows: (i) January and February's data was revised up small, from 103.4 and 105.7 bcf/d to 103.6 and 105.8 bcf/d, respectfully. (iii) March's production of 102.6 bcf/d was -3.2 bcf/d MoM and -0.3 bcf/d YoY from March 2023 of 102.9 bcf/d. The EIA does not provide any commentary but recall March is when some of the natural gas producers began to shut iun natural gas due to low prices. Our Supplemental Documents package includes the EIA Natural Gas Monthly.

US gas production 102.6 bcf/d in March

Figure 4: US dry natural gas production

bcf/d	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Jan	65.3	66.8	73.4	73.6	70.6	78.7	89.3	97.4	92.6	96.2	101.9	103.6
Feb	65.4	68.4	73.8	74.6	71.5	80.4	89.9	95.5	85.8	96.0	102.0	105.8
March	65.3	68.9	74.1	73.8	73.2	81.3	90.3	95.3	93.6	97.6	102.9	102.6
Apr	66.1	70.5	75.2	73.7	73.3	81.2	90.7	95.0	94.3	98.3	102.6	
May	65.9	70.2	74.1	72.9	73.3	82.1	91.4	87.9	94.2	99.1	103.6	
June	65.8	70.5	74.0	72.2	74.0	82.5	91.7	90.4	93.9	99.3	103.3	
July	67.1	72.0	74.2	72.8	74.7	84.2	92.2	90.3	94.8	100.4	103.4	
Aug	66.9	72.4	74.3	72.2	74.7	85.9	94.4	90.4	95.0	100.9	104.5	
Sept	66.8	72.4	74.7	71.7	76.0	87.3	94.8	91.3	95.7	102.4	104.5	
Oct	67.0	73.1	74.2	71.4	77.3	88.4	95.6	89.7	97.2	102.2	104.3	
Nov	67.7	72.6	73.9	72.0	79.8	89.9	97.2	92.5	98.3	102.2	105.9	
Dec	66.5	73.2	73.9	71.2	80.4	89.5	97.1	93.1	99.1	100.2	106.5	
Average	66.3	70.9	74.2	72.7	74.9	84.3	92.9	92.4	94.5	99.6	103.8	104.0

Source: EIA

Natural Gas: US pipeline exports to Mexico at 5.9 bcf/d in March, up YoY

As a reminder, the DOE normally posts the US LNG export data one or two days before the more commonly referenced US LNG exports from the EIA's Natural Gas Monthly. In this case, it was posted last week, a week earlier than the EIA's Natural Gas Monthly that was posted on Friday. . The EIA is part of the DOE so the data is the same source. The only difference is that the EIA Natural Gas Imports and Exports data is for both US pipeline natural gas exports to Mexico and LNG exports to Mexico. On Friday, the EIA released its Natural

US pipeline exports to Mexico up MoM, up YoY

Gas Monthly, which also provides its "actuals" for gas pipeline exports to Mexico [LINK], which were 5.9 bcf/d in March, up +0.1 bcf/d MoM from 5.8 bcf/d in February and is up +0.2 bcf/d YoY from 5.7 bcf/d in March 2023. These are the same numbers that we reported in last week's (May 26,2024) Energy Tidbits memo. The EIA doesn't provide explanations for the numbers. Mexico's relatively unchanged domestic production over the past seven years has created the need for increased US pipeline exports as Mexico builds out its domestic natural gas infrastructure. Below is our table of the EIA's monthly gas exports to Mexico.

Figure 5: US Pipeline Exports to Mexico

bcf/d	2017	2018	2019	2020	2021	2022	2023	2024
Jan	3.9	4.4	4.9	5.2	5.6	5.7	5.4	6.0
Feb	4.0	4.5	4.8	5.2	4.9	5.5	5.5	5.8
March	4.2	4.3	4.8	5.4	5.9	5.5	5.7	5.9
Apr	3.7	4.4	4.7	4.6	6.1	5.9	5.6	
May	4.0	4.4	5.0	4.7	6.2	6.0	6.2	
June	4.5	4.6	5.2	5.4	6.6	6.1	6.8	
July	4.4	4.9	5.4	5.8	6.4	6.1	6.7	
Aug	4.4	5.0	5.4	6.0	6.2	5.8	6.9	
Sept	4.2	5.0	5.4	6.1	6.0	5.6	6.7	
Oct	4.2	4.9	5.5	6.0	6.0	5.5	6.5	
Nov	4.5	4.7	5.3	5.5	5.5	5.4	6.0	
Dec	4.4	4.5	4.9	5.3	5.4	5.1	5.6	
Average	4.2	4.6	5.1	5.4	5.9	5.7	6.1	5.9

Source: EIA

Natural Gas: US LNG exports down -0.5 bcf/d MoM to in March; up +0.1 bcf/d YoY

US March LNG exports

As a reminder, the US LNG export data was available about a week earlier in the DOE's Natural Gas Import and Export report. The EIA is part of the DOE so the numbers are the same and we reported on the Mach data in last week's (May 26, 2024) Energy Tidbits memo. On Friday, the EIA's Natural Gas Monthly reported the same data, US LNG exports for March were 11.9 bcf/d, down -0.5 bcf/d MoM from 12.4 bcf/d in February but up +0.1 bcf/d from 11.8 bcf/d in March 2023. This matches our commentary from May 26, 2024's Energy Tidbit Memo regarding the DOE's monthly LNG exports. We also noted last week that the major issue for LNG exports in Feb and March 2024 is that Freeport LNG was partially down. Below is a table of the EIA reported US monthly LNG exports..

Figure 6: US Monthly LNG Exports

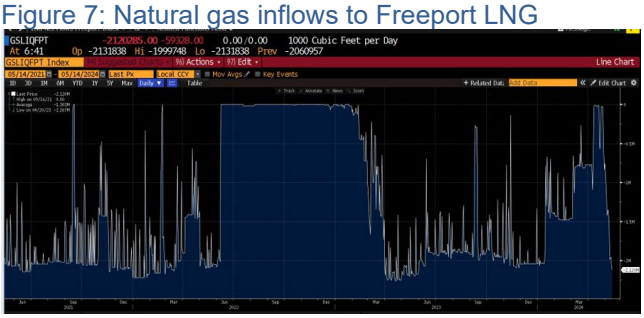
(bcf/d)	2019	2020	2021	2022	2023	2024
Jan	4.1	8.1	9.8	11.4	10.9	12.8
Feb	3.7	7.8	7.4	11.3	11.7	12.4
March	4.2	7.9	10.4	11.7	11.8	11.9
Apr	4.2	7.0	10.2	11.0	12.5	
May	4.7	5.9	10.2	11.3	11.8	
June	4.7	3.6	9.0	10.0	10.9	
July	5.1	3.1	9.7	9.7	11.3	
Aug	4.5	3.6	9.6	9.7	11.4	
Sept	5.3	5.0	9.5	9.8	11.7	
Oct	5.7	7.2	9.6	10.0	12.4	
Nov	6.4	9.4	10.2	10.1	12.9	
Dec	7.1	9.8	11.1	11.0	13.6	
Average	5.0	6.5	9.7	10.6	11.9	12.4

Source: EIA

Freeport LNG back to running at 2.1 bdf/d capacity

Here is what we wrote in our May 19, 2024 Energy Tidbits memo on Freeport LNG. "*On Tuesday, we tweeted [LINK] "Freeport LNG is back! #NatGas supplying Freeport LNG is back to its capacity of ~2.1 bcf/d. Thx @ruthcoverslng #OOTT. Bloomberg reported that repairs and maintenance were completed and natural gas flows had returned to full capacity of 2.1 bcf/d. Our tweet included the below Bloomberg graph of natural as flows into Freeport LNG.* "

Figure 7: Natural gas inflows to Freeport LNG



Source: Bloomberg

Natural Gas: AMNS & Shell, Santos & Hokkaido sign LT LNG deals

2 LT LNG Deals

There were 2 major LT LNG deals signed since we last wrote on LT LNG deals on May 12, 2024. (i) On Thursday, May 23, India's AMNS signed a 10-year LT LNG deal with Shell for 0.5mm tons per year (0.05 bcf per year) starting in 2027. This deal involves flexibilities, including one additional cargo per year, and there is no downward quality tolerance. Late in the memo, we provide additional comments on the AMNS/Shell deal. [LINK] (ii) On Tuesday, May 28, Australia's Santos announced a 10-year LT LNG Supply and Purchase Agreement with Japan's Hokkaido Gas to supply a total of 0.4mm tons per year (0.05 bcf per year) beginning in 2027 [LINK].The deal aligns with Santos' strategy of maintaining long-term LNG pricing and provides an opportunity for collaboration with Hokkaido regarding carbon sequestration and e-methane opportunities to reduce carbon emissions. Santos Managing Director and Chief Executive Officer Kevin Gallagher said, "*This SPA is a significant step in developing Santos' equity LNG portfolio and establishes a long-term relationship with Hokkaido Gas, a Japanese gas utility providing natural gas within the Hokkaido region of Japan…..Our agreement with Hokkaido Gas demonstrates Santos' commitment to providing reliable, competitive energy supplies to support our valued customers in Asia. We also look forward to working together to explore CCS and e-methane opportunities to support Japan's and Santos' decarbonization targets*." Our Supplemental Documents Package includes the press release from Santos, and an article on the AMNS deal.

There have been 22.23 bcf/d of long-term LNG supply deals since July 1, 2021

Here is what we wrote in May 12, 2024's Energy Tidbits memo. "*The big wave in buyers locking up long term supply started in July 2021. We first highlighted this abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg "Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs". We included a table of the deals done*

in that short two week period." We continue to update that table, which now shows 22.23 bcf/d of long-term LNG deals since July 1, 2021. 63% of the deals have been by Asian LNG buyers, but we are now seeing rest of world locking up long term supply deals post Russia/Ukraine. Note in our non-Asian LNG deals will major LNG players (ie. Chevron, Shell, etc) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 52% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long-term supply deals since July 1, 2021.

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

Long-Term LNG Buyer Deals Since July 1, 2021

Date	Buyer	Seller	Country	Volume	Duration	Start	End
			Buyer / Seller	(bcf/d)	Years		
Asian LNG Deals							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipec	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.
Mar 6, 2023	Gunvor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
May 16, 2023	KOSPO	Cheniere	Korea / US	0.05	19.0	2027	2046
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh / Qatar	0.24	15.0	2026	2031
Jun 21, 2023	Petro Bangle	Oman	Bangledesh / Oman	0.20	10.0	2026	2036
Jun 21, 2023	CNPC	QatarEnergy	China / Qatar	0.53	27.0	2027	2054
Jun 26, 2023	ENN LNG	Cheniere	Singapore / US	0.24	20.0	2026	2046
Jul 5, 2023	Zhejiang Energy	Mexico Pacific Ltd	China / Mexico	0.13	20.0	2027	2047
Aug 8, 2023	LNG Japan	Woodside	Japan / Australia	0.12	10.0	2026	2036
Sep 7, 2023	Petrochina	ADNOC	China / UAE	n.a.	n.a.	n.a.	n.a.
Nov 2, 2023	Foran	Cheniere	China / US	0.12	20.0	n.a.	n.a.
Nov 4, 2023	Sinopec	QatarEnergy	China/Qatar	0.39	27.0	2026	2053
Nov 27, 2023	Gunvor Singapore Pte	Delfin Midstream	Singapore / US	0.10	15.0	n.a.	n.a.
Dec 20, 2023	ENN	ADNOC	Singapore / UAE	0.13	15.0	2028	2043
Jan 5, 2024	GAIL	Vitol	India / Singapore	0.13	10.0	2026	2036
Jan 8, 2024	Shell	Ksi Lisims LNG	Singapore / Canada	0.26	20.0	2027	2047
Jan 16, 2024	ExxonMobil	Mexico Pacific Ltd	Singapore / Mexico	0.16	20.0	2024	2044
Jan 29, 2024	Excelerate	QatarEnergy	Bangladesh / Qatar	0.13	15.0	2026	2041
Jan 30, 2024	ADNOC	GAIL India	UAE / India	0.07	10.0	2024	2034
Feb 6, 2024	Petronet LNG	QatarEnergy	India / Qatar	0.99	20.0	2028	2048
Feb 19,2024	Deepak Fertilisers	Equinor	India / Norway	0.09	15.0	2026	2041
Feb 28, 2024	Kogas	Woodside	Korea / Australia	0.07	10.5	2026	2037
Feb 29, 2024	Sembcorp	TotalEnergies	Singapore / France	0.11	16.0	2027	2043
Apr 29, 2024	Kogas	BP	Korea / Singapore	0.12	11.0	2026	2037
May 26, 2024	AMNS	Shell	India / Canada	0.05	10.0	2027	2037
May 28, 2024	Hokkaido	Santos	Japan / Australia	0.05	10.0	2027	2037
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				**13.97**			

Long-Term LNG Buyer Deals Since July 1, 2021

Date	Buyer	Seller	Country	Volume	Duration	Start	End
			Buyer / US	(bcf/d)	Years		
Non-Asian LNG Deals							
Jul 28, 2021	PGNiG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNiG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU//US	0.13	20.0	2027	2047
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046
Apr 24, 2023	Hartree Partners LP	Delfin Midstream	US / US	0.08	20.0	n.a.	n.a.
Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042
Jun 22, 2023	SEFE	Venture Global LNG	EU//US	0.30	20.0	2026	2046
Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036
Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040
Jul 28, 2023	OMV	BP	Austira/UK	0.13	10.0	2026	2036
Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045
Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043
Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035
Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053
Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qata	0.46	27.0	2026	2053
Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053
Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043
Nov 29, 2023	OMV	Cheniere	Netherlands / US	0.11	15.0	2029	2044
Dec 5, 2023	Woodside Energy	Mexico Pacific Ltd	Australia / Mexico	0.17	20.0	2024	2044
Mar 18, 2024	SEFE	ADNOC	Germany / UAE	0.13	20.0	2024	2044
Apr 17, 2024	Shell	Oman LNG	US / Oman	0.21	10.0	2025	2035
Apr 22, 2024	TotalEnergies	Oman LNG	France / Oman	0.11	10.0	2025	2035
May 8, 2024	EnBW	Adnoc	Germany / UAE	0.08	15.0	2028	2043
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21				**8.26**			

Total New Long Term LNG Contracts since Jul/21	**22.23**

*Excludes Asian short term/spot deals
*on Dec 20, 2021 CNOOC agreed to buy an additional 0.13 bcf/d from Venture Global for an undisclosed shorter period
Source: Bloomberg, Company Reports
Prepared by SAF Group https://safgroup.ca/news-insights/

Source: SAF

Natural Gas: Gorgon LNG train is back on after one-month outage

Gorgon LNG back to 2.1 bcf/d

On Friday, Bloomberg reported that Chevron had gone back to full production at the 3-train Gorgon LNG offshore NW Australia. One of the trains had gone down on April 30 due to a mechanical fault. This train was restarted on Wed May 29. The remaining two LNG trains

were not impacted and continued to produce during the one train outage period. The , and it was restarted on Wed May 29. As a result, Gorgon is back at its full LNG production of ~2.1 bf/d.

Natural Gas: Does AMNS/Shell LNG deal fit LNG temporary over supply in late 2020s?

AMNS/Shell long term LNG deal

Last week, Platts reported "*India's AMNS signs 500,000 mt/year LNG deal with Shell at 11.5% slope to crude oil*". [LINK]. When we saw the deal, our first thought was that it would fit the concept of buyer and seller recognizing an LNG outlook similar to Qatar Energy and TotalEnergies – LNG over supply in late 2020s but returning to balance in early 2030s. We tweeted [LINK] "*India's AMNS buys 10-yr LNG starting in 2027 from Shell. Why would AMNS take LNG starting in peak of oversupply unless they agree with 👇05/18 Qatar/TotalEnergies view late 2020s oversupply is gone in early 2030s? Plus ANBS locks in low 11.5% slope to 2037. Thx @suyashp26 #OOTT."* India's AMNS is a joint venture between ArcelorMittal and Nippon Steel. Their 10-year LNG purchase doesn't start until 2027, which would be right at the start of the LNG oversupply period expected by Qatar Energy, TotalEnergies and others. Yet AMNS locked in a 10-year LNG supply. If there was going to be LNG oversupply for a long time, we don't believe they would feel the need to commit to a 10-year deal that only starts when the LNG oversupply starts. If there was LNG oversupply forever, we wouldn't see sophisticated price conscious buyers like AMNS paying to lock in LNG supply starting in 2027. They would wait and keep taking advantage of soft LNG prices. But AMNS signed a 10-year deal. However, we think there is a bit of a quid pro quo for the taking LNG in the oversupply period, they got a 11.5% slope the first time below 12% since Russia invaded Ukraine. So India based AMNS gets lower LNG pricing for the long term in return for committing to take LNG supply starting in a period expected to be in LNG oversupply but getting the benefit of the lower LNG pricing in the last half or so of their deal when LNG markets have returned to balance. That is why we look at this deal as sophisticated buyer and seller finding a win/win deal covering periods of LNG oversupply and LNG back to balance.

Explaining "slope" in LNG contracts

Above we note how AMNS was able to get the first LNG deal with slope below 12% since Russia invaded Ukraine. Look at the slope very simply as a percentage ratio to a reference oil price. Take the slope and call it a percentage so a slope of 12 is a 12% of a reference oil price. If the reference oil price is Brent, and Brent is $80, then a slope of 12 would be a LNG price of 12% of $80 or $9.60. If the slope is 11.5, then that would be a LNG price of 11.5% of $80 or $9.20. Lower slope equals lower LNG price.

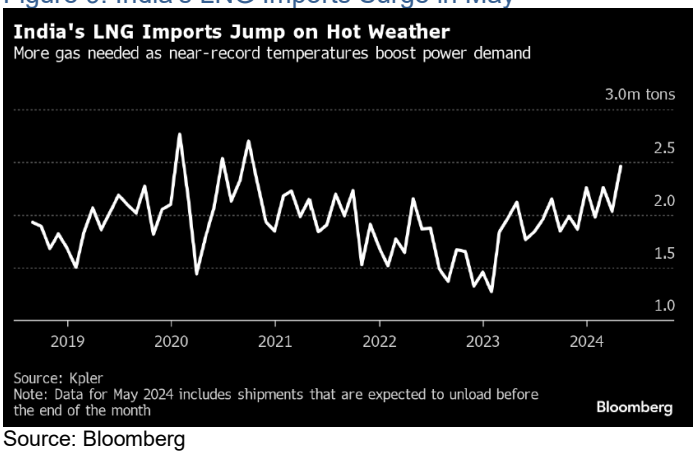
Natural Gas: India's May LNG imports at highest since 2020 on extreme heat

India's LNG imports at highest since 2020

On Friday, Bloomberg reported that, based on Kpler tanker tracking, India's LNG imports are expected to rise to 3.87 bcf/d for the month of May, reflecting a YoY increase of nearly 20%. The surge in LNG imports can be mostly attributed to the near-record breaking high temperatures over the last month, as houses and businesses have increased their use of air conditioners and other cooling appliances. Note that India is still a relatively small LNG importer compared to Japan and China. The rest of the increase can be attributed to deliveries previously scheduled, while LNG was at a lower price. Bloomberg writes "*The strong buying in South Asia and supply disruptions in Brunei and Malaysia have pushed*

Asian spot LNG prices to near the highest level so far this year. The rising prices may prompt LNG traders in China — the world's top importer — to resell cargoes for higher profits instead of bringing them to the domestic market where rates are lower. Cnooc released a tender offering to sell a strip of cargoes for August delivery." Below is a chart showing the change in LNG imports. Our Supplemental Documents package contains the Bloomberg report.

Figure 9: India's LNG Imports Surge in May



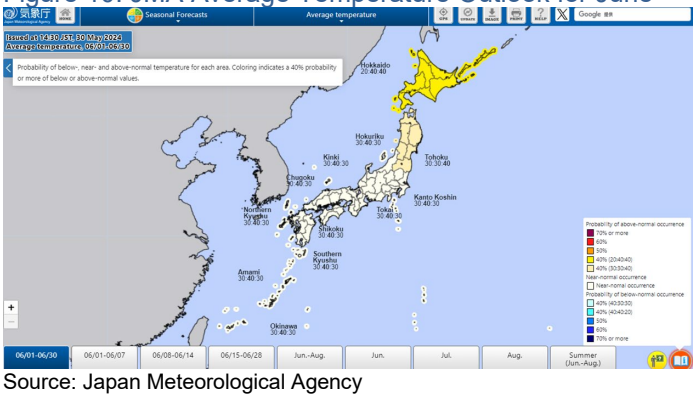
Source: Bloomberg

Natural Gas: Japan expects normal temperatures in June

JMA temperature forecast for June

On Thursday, the Japan Meteorological Agency updated its forecast for June in Japan [LINK]. There is no JMA commentary on the forecast. JMA is calling for normal temperatures for the month of June. In the forecast is colder than normal temperatures so start June before turning to much warmer than normal temperatures over the last half of June. We checked AccuWeather and they are forecasting daily highs in the 22-26C range thru the first two weeks of June before rising to daily highs of 27-28C for the last two weeks of June. In Japan, that isn't normally a temperature that drives a lot of electricity demand as Japanese offices and houses tend to have air conditioning turned way higher than in North America. Below is the JMA temperature forecast for June.

Figure 10: JMA Average Temperature Outlook for June

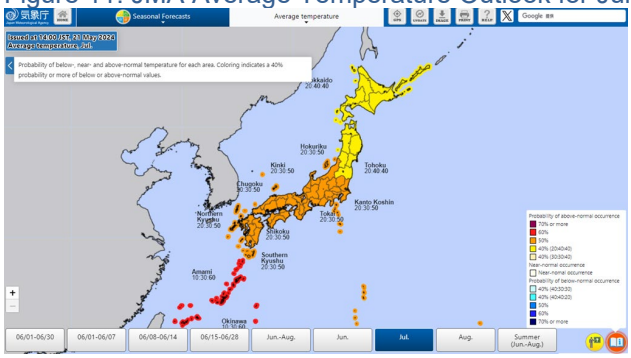


Source: Japan Meteorological Agency

Natural Gas: Japan expects much warmer than normal July and Aug

Last week, the Japan Meteorological Agency updated its forecast for July in Japan [LINK] and for August in Japan [LINK]. There is no JMA commentary on the forecast. JMA is calling for much warmer than normal temperatures for both July and August. This updated for July and August is in line with the JMA's first temperature forecast for July and Aug that was posed on Feb 20. Although the new JMA temperature forecast is for much warmer than normal whereas the JMA Feb 20 forecast was for very hot Jun/Jul/Aug. High temperatures in July tend to be over 30c and that should increase weather driven demand. Below is the JMA temperature forecast for July and August.

Figure 11: JMA Average Temperature Outlook for July



Source: Japan Meteorological Agency

Figure 12: JMA Average Temperature Outlook for August

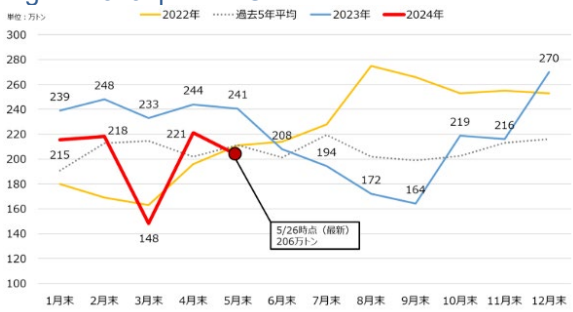
Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks down WoW, still down YoY

Japan LNG stocks down WoW

Japan's LNG stocks continue to be down YoY, and are below the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK]. LNG stocks on May 26 were 98.9 bcf, down -8.8% WoW from May 19 of 108.5 bcf, and down -14.5% YoY from 115.7 bcf a year earlier. Stocks are down -2.4% below the 5-year average for the end of May of 101.3 bcf. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 13: Japan LNG Stocks



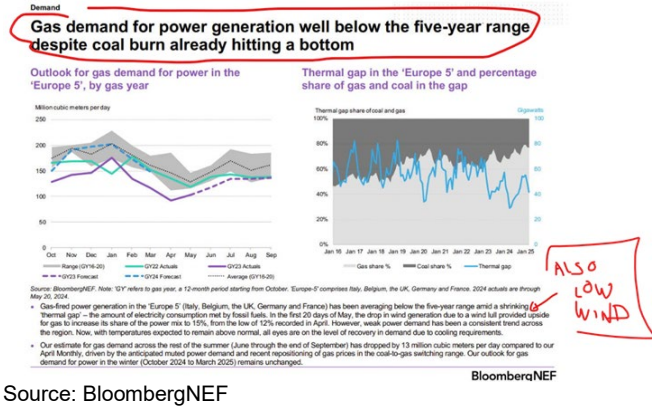
Source: METI

Natural Gas: Europe industrial natural gas demand -20% or -1.8 bcf/d YoY

EU industrial natural gas demand

There were a number of good natural gas insights from BloombergNEF's European Gas Monthly that was posted on Tuesday. (i) On Tuesday, we tweeted [LINK] "*Good indicator Europe heavy industry still hurting. Industrial demand for #NatGas -20% or -1.8 bcf/d vs 2016-20 average. Separately. low weather driven NatGas demand despite low Wind generation & low coal burn. EU gas storage should be full before winter. Thx @BloombergNEF #OOTT."* (ii) Industrial natural gas demand is way below 2016-2020 average. It started in 2019 when Europe natural gas prices exploded and industrial gas users pulled back on industrial activity. And then when Russia invaded Ukraine, German industrial users lost their source of inexpensive Russian pipeline gas. So no surprise, Europe industrial gas demand so far in May is still down 20% (~.8 bcf/d) below the 2016 -20 average. (ii) Low natural gas power generation due to weather. We have been highlighting how the weather has been great shoulder season weather with no real weather driven demand. BloombergNEF's slide "*Gas demand for power generation well below the five-year range despite coal burn already hitting a bottom."* The weak demand for natural gas was despite low coal generation. It was also helped in the first 20 days of May by a drop in generation. BloombergNEF had a separate slide "*mild shoulder month in May slashed any marginal demand requirement.*" Our Supplemental Documents package includes excerpts from BloombergNEF European Gas Monthly.

Figure 14: Natural gas demand for power generation



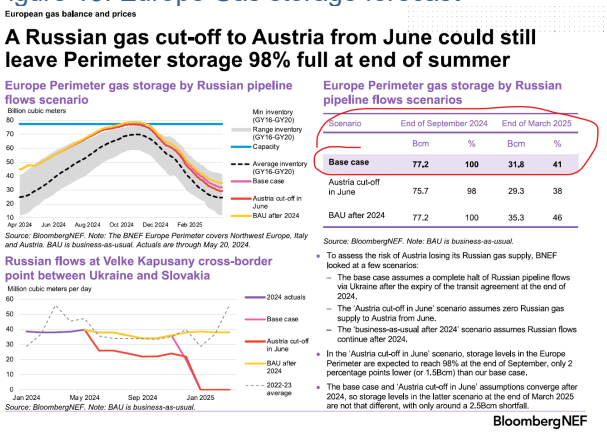
Source: BloombergNEF

Natural Gas: BloombergNEF forecast Europe gas storage full by end of Sept

EU industrial natural gas demand

On Friday, we tweeted [LINK] "*ICYMI. @BloombergNEF base case forecasts Europe #NatGas storage full by Sept 30! If so, it won't just hurt Europe TTF prices but also push back on US #HH prices. #OOTT."* BloombergNEF's European Gas Monthly also had its base case forecsat for Europe natural gas storage and they call for storage to be full by Sept 30. BloombergNEF also highlights that Eruope natural gas storage would still be 98% by Sept 30 if there is a cut off of any Russian natural gas to Austria in June. IF Europe natural ags storage is full by Sept 30, there should be some strong downward price pressure on Europe natural gas prices in Sept and Oct. And if so, there should also be some push back on US HH natural gas prices.

Figure 15: Europe Gas storage forecast



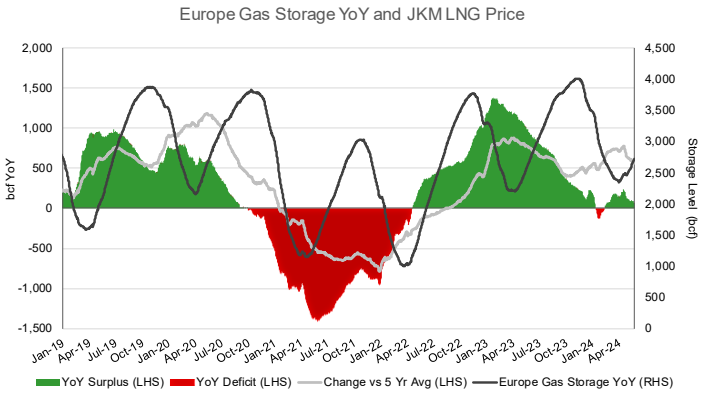
Source: BloombergNEF

Natural Gas: Europe storage builds WoW to 69.7%, now +1.0% higher YoY

Europe gas storage

This week, Europe storage increased by +1.7% Wow to 68.0% vs 66.3% on May 23. Storage is now +1.0% higher than last year's levels of 66.6% on May 30, 2023, and up huge vs the 5-year average of 57.0%. As noted above, BloombergNEF's updated forecast is for Europe gas storage to be full by Sept 30. This would be early and would bring low Europe gas prices in Sept/Oct. The big wildcard for Europe natural gas markets over the coming months will be if Russia can damage or put out of operation any Ukraine natural gas storage. Below is our graph of European Gas Storage Level.

Figure 16: European Gas Storage Level

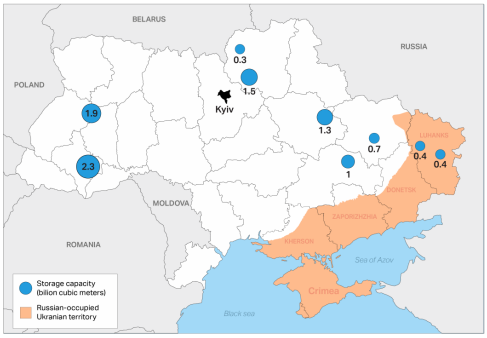


Source: Bloomberg, SAF

Ukraine storage is currently ~6% of total Europe gas storage volume

The reason why natural gas markets reacted to the Mar/Apr Russian bombing of the Ukraine natural gas storage was that Ukraine's natural gas storage is an important part of Europe natural gas storage. The good news was that the recent Russian bombing only affected above ground infrastructure. We broke out the Ukraine storage data from the above Europe data we monitor weekly from the GIE AGSI website [LINK], and we found that on May 30th natural gas in Ukraine storage was at 15.06% of its total capacity, up from 14.34% of its total capacity as of May 23rd. Last year, Ukraine storage started the winter on Nov 1, 2023 at 39.38%. 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 17: Ukraine Gas Storage Facilities as of July 2023



Source: Bruegel

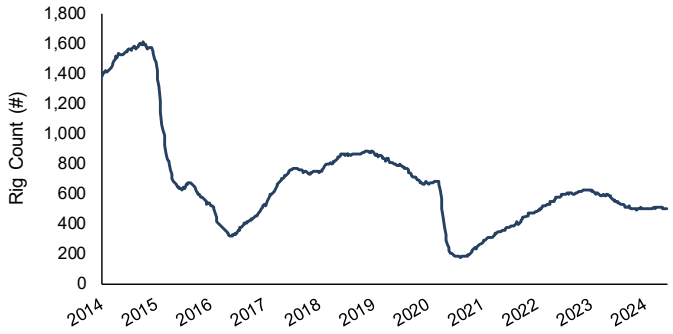
Oil: US oil rigs down -1 rig WoW at 496 rigs, US gas rigs up +1 rig WoW to 100 rigs

US oil rigs down WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note, after we recently sent them an email, Baker Hughes confirmed they wouldn't be returning to the

old format which previously allowed us to break out the basin changes by oil vs gas rig type. (ii) Total US oil rigs were down -1 rig WoW to 496 oil rigs as of May 31. US oil rigs went below 520 rigs on Aug 25 and has been around 490-510 rigs for the past several months. (iii) Note we are able to see the basin changes but not by type of rig. The major changes were Ardmore Woodford +3 rigs WoW to 7 rigs, Cana Woodford -4 rigs WoW to 17 rigs, Eagle Ford +1 rig WoW to 51 rigs, Marcellus +1 rig WoW to 27 rigs and Permian -2 rigs WoW to 310 total rigs. (iv) The overlooked US rig theme is the YoY declines. Total US rigs are -96 rigs YoY to 600 rigs including US oil rigs -59 oil rigs YoY to 496 oi rigs. And for the key basins, the Permian is -38 rigs YoY, Haynesville is -16 rigs YoY and Marcellus -12 rigs YoY. (v) US gas rigs were up +1 rig this week to 100 gas rigs.

Figure 18: Baker Hughes Total US Oil Rigs



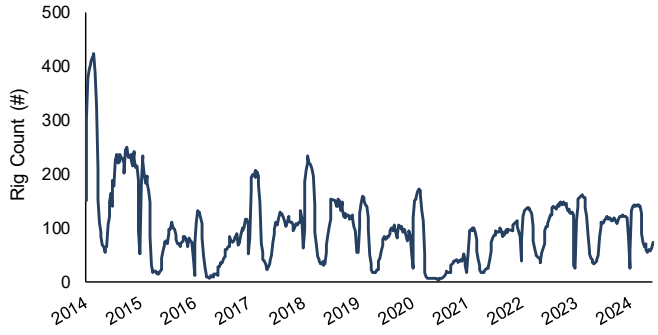
Source: Baker Hughes, SAF

Oil: Total Cdn rigs up +8 rigs WoW, ramping up post spring breakup

Cdn total rigs up WoW

As happens every year in Canada, the rig count drops dramatically from early March thru the end of April/beginning of May as winter drilling season ends and the industry moves into spring break up. Spring break up is the period when it warms up and road access becomes limited/restricted in many parts of Western Canada. Total Cdn rigs declined from 231 at the beginning of March to 114 two weeks ago. This week's increase in rigs looks to signal the beginning of the big ramp up that follows every spring break up. Cdn oil rigs were up +10 rigs WoW this week to 74 rigs and are up +32 rigs YoY. Gas rigs are down -2 rig WoW this week to 56 rigs and are up +9 YoY. Baker Hughes did not update their old format report, so we weren't able to see the provincial breakouts.

Figure 19: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

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

It's worth noting that historically, the EIA weekly estimates have been off of the Form 914 actuals, which sometimes require re-benchmarking. Here's what the EIA wrote on their website last month with the April STEO: "*When we release the Short-Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude oil production are reviewed to identify any differences between recent trends in survey-based domestic production reported in the Petroleum Supply Monthly (PSM) and other current data. If we find a large difference between the two series, we may re-benchmark the weekly production estimate on weeks when we release STEO. This week's domestic crude oil production estimate incorporates a re-benchmarking that decreased estimated volumes by 177,000 barrels per day, which is about 1.3% of this week's estimated production total".* On May 7, the EIA released its May STEO and they'd revised up Q1/24 production estimates to 12.96 mmb/d from 12.84 mmb/d in April's STEO, so this message is consistent. The latest Form 914 (with March actuals) was +0.062 mmb/d higher than the weekly estimates of 13.120 mmb/d. This week, the EIA's production estimates were flat WoW at 13.100 mmb/d for the week ended May 24. Alaska was up +0.006 mmb/d WoW to 0.422 mmb/d from 0.416 mmb/d last week. Below is a table of the EIA's weekly oil production estimates.

US oil production flat WoW

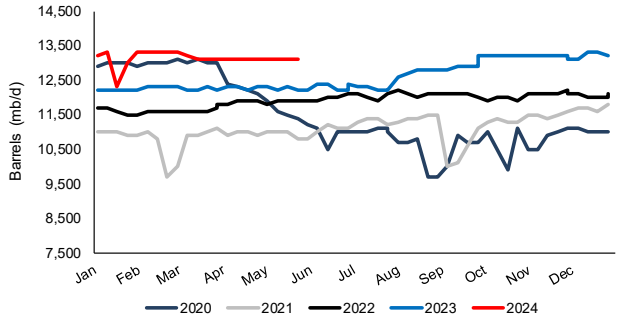
Figure 20: EIA's Estimated Weekly US Field Oil Production (mb/d)

Weekly U.S. Field Production of Crude Oil (Thousand Barrels per Day)

	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		

Source: EIA

Figure 21: EIA's Estimated Weekly US Oil Production



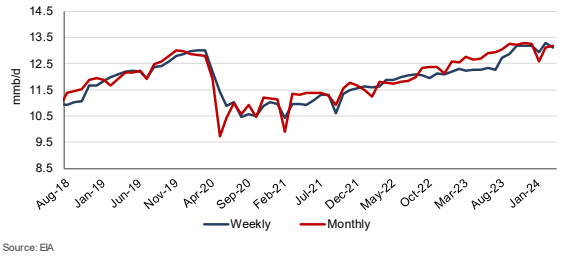
Source: EIA, SAF

Oil: EIA Form 914 – US March oil production actuals flat MoM, up YoY

EIA Form 914 March

On Friday, the EIA released its Form 914 data [LINK], which is the EIA's "actuals" for March US oil and natural gas production. As noted previously, over the past four months the EIA has had to make big upward adjustments to their weekly oil supply estimates to bring them more in line with the Form 914 actuals, however, this month we saw a downwards revision. February's data was revised down by -49,000 b/d from 13,154 mmb/d to 13,105 mmb/d. (ii) March actuals. March's "actuals" came in at 13.182 mmb/d according to the EIA's form 914. (iii) Weekly EIA estimates for February were at 13.120 mmb/d, up +0.6% MoM from February and +3.2% YoY from 12,770 mmb/d in March 2023. The Form 914 actuals are therefore +0.062 mmb/d above the weekly estimates. Below is a chart of monthly actuals vs. weekly estimates. Our Supplemental Documents package includes an excerpt from the Form 914 figures.

Figure 22: EIA Form 914 US Oil Production vs Weekly Estimates



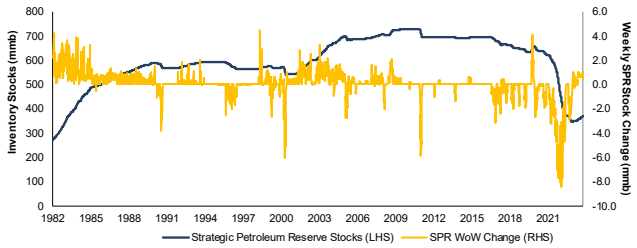
Source: EIA, SAF

Oil: US SPR less commercial reserve deficit narrows, now -85.400 mmb

US SPR reserves

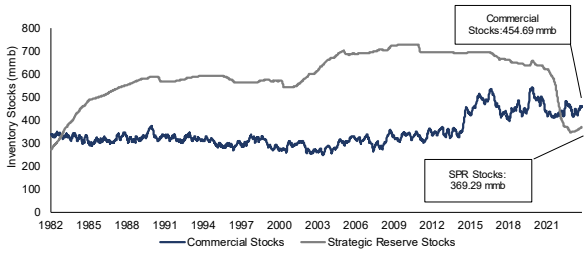
The US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sep 16, 2022 week. This week, we saw a build on the SPR side and a draw on the commercial side. The EIA's weekly oil data for May 24 [LINK] saw the SPR reserves increase +0.485 mmb WoW to 369.289 mmb, while commercial crude oil reserves decreased -4.156 mmb to 454.689 mmb. There is now an -85.400 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 23: Strategic Petroleum Reserve Stocks and SPR WoW Change



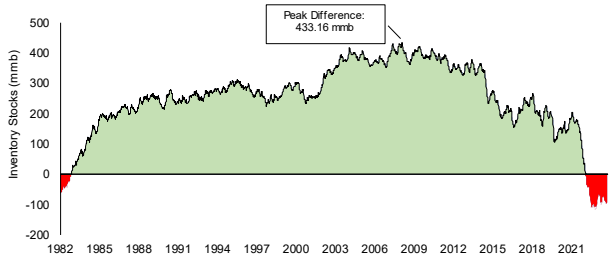
Source: EIA

Figure 24: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 25: US Oil Inventories: SPR Less Commercial



Source: EIA

US gasoline prices

Oil: US national average gasoline prices -$0.06 WoW to $3.54

Yesterday, we tweeted [LINK] "*US gasoline prices keep drifting down. At $3.54, -$0.06 WoW, $0.12 MoM and -$0.03 YoY. California at $5.06 is -$0.07 WoW, -$0.33 MoM. See 👇05/24 @GusBuddy expects "progressive decreases between Memorial Day, July 7 & Labor Day" Good news for Biden. Thx @AAAnews #OOTT.*" Yesterday, AAA reported that US national average prices were $3.54 on June 1, which was -$0.06 WoW, -$0.12 MoM and -$0.03 YoY. As of yesterday, the California average gasoline prices were -$0.07 WoW to $5.06, which is a $1.62 premium to the national average price of $3.54. California gas prices are -$0.33 MoM and +$0.18 YoY.

GasBuddy forecasts US gasoline prices to decline thru Labor Day

Our tweet on AAA national average gas prices linked to our May 24 tweet on GasBuddy's forecast for US gasoline prices to decline thru Labor Day. Here is what we wrote in last week's (May 26, 2024) Energy Tidbits memo. "*On Friday, we tweeted [LINK] "Biden hopes this forecast turns out true! US #Gasoline prices +$0.06 YoY BUT well followed @GasBuddyGuy expects "progressive decreases between Memorial Day, July 4 and Labor Day" subject to typical caveats ie. hurricanes. refinery issues. #OOTT @andrewrsorkin @SquawkCNBC". GasBuddy is Patrick De Haan and is well followed for his ground up market following and reap of US gasoline prices. This forecast, if it turns out accurate, will be a big plus for Biden's re-election hopes if US asoline prices are going lower and closer to $3 than $4. Our tweet included a clip of De Haan's comments. Here is a transcript we created of his reply on CNBC Squawk Box on Friday. "Prices [are] up modestly, just 6 cents from last year. It is interesting to watch the trends though, TSA predicting and already seeing some record number of travelers via air. Our week-to-date gasoline demand data showing that week to date through Thursday compared to last year, gasoline demand down about 7.7% so it looks like 2024 might be skewing towards air travel. Not necessarily on the road, but certainly there will still be millions of Americans out there, they will be paying about $3.61 a gallon as down from $3.69. The good news for anyone hitting the road this summer is we expect progressive decreases between Memorial Day, July 4, and then Labor Day. Of course there are the typical caveats, mother nature, hurricane season is a big wild card, and we have seen a rash of minor refinery issues in the great lakes. That is going to be something that could bother*

motorists this summer. If there are refinery outages, that could temporarily drive prices up locally."

Oil: Crack spreads down $1.61 WoW to $24.04

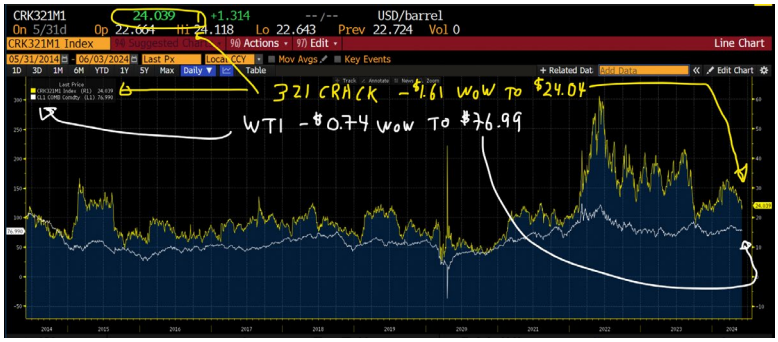
Crack spreads closed at $24.04

On Friday, we tweeted [LINK] "*321 crack spreads down again this week, -$1.61 WoW to $24.04 and WTI was -$0.74 WoW to $76.99 at close on May 31. Crack spreads have drifted down for past 5 weeks so keep pointing to near term WTI softness. Key wildcard is OPEC+ on Sunday. Thx @business #OOTT.*" Crack spreads were down again this week to $24.04 and are now down $4.92 over the past five weeks. We have always said crack spreads around $30 are a big incentive for refiners to buy as much crude as possible. But drifting lowering crack spreads and now at $24.04 may provide an okay margin for refiners but aren't high enough to point to higher WTI ahead. Crack spreads were -$1.61 WoW to close at $24.04 on Friday and WTI was -$0.74 WoW to close at $76.99. Crack spreads followed $25.65 on May 24, $27.04 on May 17, $25.89 on May 10, $27.59 on May 3, $28.96 on Apr 26, $28.30 on Apr 19, $30.39 on Apr 12, and $29.45 on Apr 5. Crack spreads at $24.04 are still solidly above the high end of the more normal pre-Covid that was more like $15-$20 ie. still okay margins for refiners. Our concern is that spreads keep drifing down and that normally points to softer WTI to follow.

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

We have focused on crack spreads for since the 90s as they are an unchanged fundamental of refineries – big crack spreads provide incentives for refineries to buy more crude because there are big profit margins to be made. People often just say "cracks", which refers to the 321 crack spread. This is the spread or margin that refiners make from buying crude at a certain price and then selling the finished petroleum products at their respective prices. The 321 crack spread is meant to represent what a typical US refinery produces. It assumes that for every three barrels of crude oil, the refinery will produce two barrels of gasoline and one barrel of distillates. So the crack spread is based on that formula and worked back to a crack spread per barrel. Below is the current 321 crack spread vs WTI that we put in our tweet where we marked the gaps where the crack spread normally drags up oil prices. The crack spread was $76.99 as of the Friday May 31, 2024 close.

Figure 26: Cushing Oil 321 Crack Spread & WTI May 31, 2014 to May 31, 2024



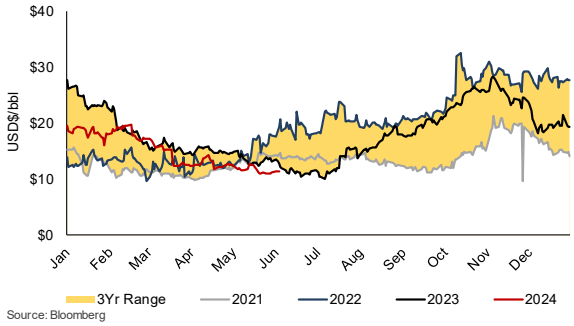
Source: Bloomberg

Oil: Cdn heavy oil differentials widens +$0.45 WoW to close at $11.50 on May 31

WCS differential widens

We believe the key test for how the startup of the 590,000 b/d TMX expansion will help Cdn WCS less WTI differentials is coming up in July/Aug /Sept to see if there will be less of the normal seasonal widening in WCS less WTI differentials. Right now, we are in the normal Feb thru May period that normally sees a narrowing of WCS less WTI differentials as US refiners maximize production of asphalt for annual paving season and to maximize production of summer grade fuels as well as asphalt ahead of the annual summer driving and paving season. So it's hard to determine how much of an impact TMX has had on WCS less WTI differentials although with the last two weeks have been below the bottom end of the 3-yr range. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials from Feb thru May. The seasonal narrowing is in motion. The WCS less WTI differential closed on May 31 at $11.50, which was a widening of -$0.45/bbl WoW vs $11.05/bbl on May 24. These are both below the bottom of the 3-yr range.

Figure 27: WCS less WTI oil differentials to May 31 close



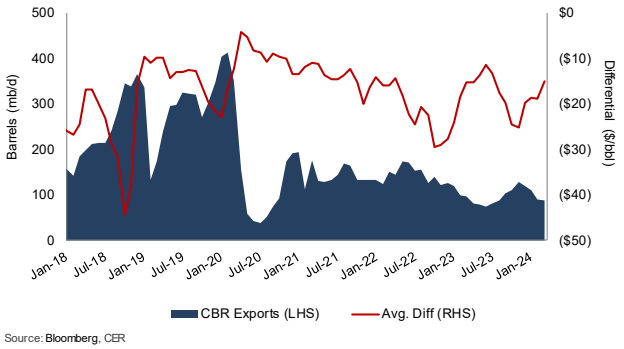
Source: Bloomberg

Oil: CER reports Cdn crude by rail exports at 86,766 b/d in March, down -11.3% YoY

Cdn crude by rail down YoY in March

We have reached out a couple times to the EIA (but never get a response) as to why their crude by rail imports from Canada data are so much lower than the CER data for Cdn crude by rail exports to the US. Our assumption is that the major reason for the difference is likely that Cdn crude by rail that goes directly to the Gulf Coast and then onto tankers for export will show up in Cdn crude by rail exports but not in US crude by rail imports from Canada, ie. the oil never stay in the US. On May 27, the CER released their Canadian crude exports by rail figures for March [LINK]. March crude exports by rail were 86,766 b/d, down -3.7% MoM from 90,137 b/d in February and are down -11.3% YoY from 97,817 b/d in March 2023. As noted below, the EIA estimates crude by rail imports from Canada were only 73,258 b/d in March. The CER doesn't provide any explanation for the MoM changes. Below is our graph of Cdn crude by rail exports compared to the WCS–WTI differential.

Figure 28: Cdn Crude By Rail Exports vs WCS Differential



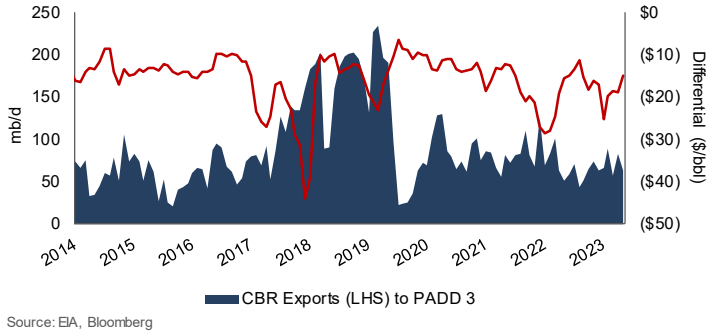
Source: Canadian Energy Regulator, Bloomberg

Oil: EIA reports total Cdn crude by rail imports -30,156 b/d MoM in Mar, PADD 3 down

EIA Cdn crude by rail imports

On Friday, the EIA posted its "*U.S. Movements of Crude Oil by Rail*" [LINK], which includes the EIA data on US imports of Cdn crude by rail. EIA estimates total US imports of Cdn crude by rail were 73,258 b/d in March, which was -30,156 b/d MoM from 103,414 b/d (revised) in February. The EIA estimates Cdn crude by rail into PADD 3 (Gulf Coast) was 63,613 b/d in March, which was -18,835 b/d MoM from 82,448 b/d (revised) in February. As noted above, we have been highlighting how the EIA imports of oil by rail from Canada are less than the CER estimates of Cdn oil exports by crude to the US. That continues in the March data. . The CER reported that 86,766 b/d of crude was exported by rail out of Canada during Marc vs the EIA estimates of 73,258 b/d of Cdn oil imported by rail in March. Below is our graph of Cdn CBR exports to the Gulf Coast and WCS differential over time.

Figure 29: US Imports of Canada CBR to US Gulf Coast vs WCS Differential



Source: EIA, Bloomberg

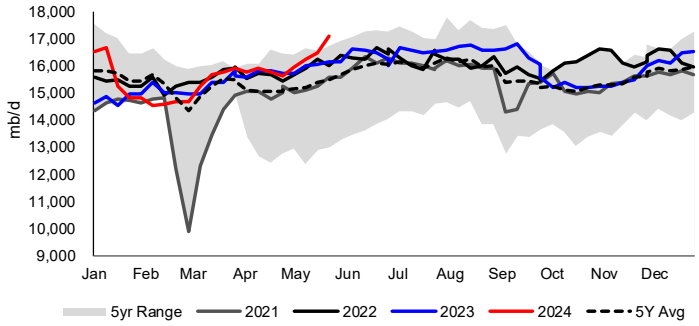
Oil: Refinery Inputs up +0.601 mmb/d WoW to 17.083 mmb/d

Refinery inputs +0.601 mmb/d WoW

There are always unplanned refinery items that impact crude oil inputs into refineries. And there are always different timing for refinery turnarounds. And this week. Bloomberg reported the restart of the 120,000 b/d crude unit at Exxon Baton Rouge refinery and a 106,000 b/d

gasoil hydrotreater at Marathon Garyville refinery. But, as a general rule, this is the normal seasonal ramp up in refinery runs for the summer that normally peaks in August. On Thursday, the EIA released its estimated crude oil input to refinery data for the week ended May 24 [LINK]. The EIA reported crude inputs to refineries were up +0.601 mmb/d this week to 17.083 mmb/d and are up +0.413 mmb/d YoY. Refinery utilization was up +2.6% WoW to 94.3%, which is up +1.2% YoY.

Figure 30: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports up +0.611 mmb/d WoW as oil exports down -0.505 mmb/d WoW

US net oil imports

The EIA reported US "NET" imports were up +0.611 mmb/d to 2.544 mmb/d for the May 24 week. US imports were up +0.106 mmb/d to 6.769 mmb/d, while exports were down -0.505 mmb/d WoW to 4.2225 mmb/d. (i) Venezuela weekly imports. We know why the EIA doesn't have any data in the row for Venezuela weekly oil imports but we still don't know if the weekly oil imports are off or if Venezuela is included in the weekly oil imports in the Others number. But we do know the EIA monthly data shows Padd 3 imports from Venezuela around 150,000 b/d. Give the EIA credit for putting out weekly oil import estimates, but it's a reminder that we have to be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. Top 10 was up +0.226 mmb/d. Some items to note on the country data: (i) Canada was up +0.171 mmb/d to 3.666 mmb/d. (ii) Saudi Arabia was down -0.064 mmb/d to 0.422 mmb/d. (iii) Mexico was up +0.367 mmb/d to 0.551 mmb/d from last week's extremely low level of 0.184 mmb/d, which was being mostly driven by the increasing refinery runs at the existing Pemex refineries. (iv) Colombia was down -0.183 mmb/d to 0.032 mmb/d. (v) Iraq was down -0.006 mmb/d to 0.233 mmb/d. (vi) Ecuador was down -0.060 mmb/d to 0.103 mmb/d. (vii) Nigeria was down -0.073 mmb/d to 0.071 mmb/d.

Figure 31: US Weekly Preliminary Imports by Major Country

	Mar 29/24	Apr 5/24	Apr 12/24	Apr 19/24	Apr 26/24	May 3/24	May 10/24	May 17/24	May 24/24	WoW
Canada	3,874	3,546	3,458	3,423	3,847	3,659	3,812	3,495	3,666	171
Saudi Arabia	321	531	229	398	402	355	196	486	422	-64
Venezuela	0	0	0	0	0	0	0	0	0	0
Mexico	263	209	208	351	459	805	507	184	551	367
Colombia	316	114	246	215	363	183	211	215	32	-183
Iraq	91	142	308	309	307	326	123	239	233	-6
Ecuador	146	231	0	124	0	129	207	163	103	-60
Nigeria	136	43	173	136	89	322	212	144	71	-73
Brazil	147	257	189	492	0	217	293	315	127	-188
Libya	117	24	21	100	98	1	86	0	262	262
Top 10	5,411	5,097	4,832	5,548	5,565	5,997	5,647	5,241	5,467	226
Others	1,207	1,337	1,629	949	1,207	972	1,097	1,422	1,302	325
Total US	**6,618**	**6,434**	**6,461**	**6,497**	**6,772**	**6,969**	**6,744**	**6,663**	**6,769**	**106**

Source: EIA, SAF

Oil: Pemex's Salamanca refinery fault led to deaths of 3 refinery workers

Pemex Salamanca refinery deaths

On Friday, El Financiero reported that faults at Pemex's Salamanca refinery led to the release of some toxic gas and the death of three refinery workers. El Financiero wrote "*A fault caused an accident at the Salamanca refinery, located in Guanajuato, on Friday afternoon. At least three workers have been reported to have died and three others have been injured due to sulfuric acid inhalation poisoning. The incident at Pemex's 'Antonio M. Amor' refinery occurred due to a failure in the catalytic plant and in Unit 12 of the site."* And "*The 'Antonio M. Amor' refinery in Salamanca suffered power failures on Friday, which caused alterations in its operations, including a toxic gas leak, which left at least three people dead, according to local media."* There is no word as to the extent of the damage to the operations, how long the refinery operations will be impacted as there is nothing posted, as of our 7am MT news cut off, on Pemex's English website, Spanish website or its X page. El Financiero reported that Salamanca started refinery operations in 1950, has a capacity to process 245,000 b/d, and processed 140,300 b/d in April. Our Supplemental Documents package includes the El Financiero report. [LINK]

Oil: Claudia Sheinbaum expected to be Mexico's new President

Mexico election today

It's election day in Mexico and the clear favorite to succeed AMLO as President is Claudia Sheinbaum. On Friday, Bloomberg posted the New Republic report on Sheinbaum that started "*a left-wing climate scientist, contributing author to a report of the Intergovernmental Panel on Climate Change, and former mayor of Mexico City. Claudia Sheinbaum, who's running in a coalition led by her ruling Morena party, is widely favored."* Sheinbaum served as Environmental Secretary under AMLO. The New Republic wrote *"Sheinbaum unveiled her climate platform on March 18, a national holiday commemorating the 1938 nationalization of Mexico's oil reserves. Her platform includes a goal to have 50 percent of Mexico's electricity demand met through zero-carbon sources by 2030, using a mix of wind and solar as well as hydroelectric and geothermal power; investing $13.6 billion in renewable energy; adding nearly 2,400 miles of transmission lines; and expanding on her work as mayor of Mexico City in expanding electrified mass transit via buses and passenger trains. Sheinbaum's climate campaign leans heavily on strengthening and transforming Mexico's state-owned enterprises, including beleaguered oil producer Pemex and the utility Comisión Federal de Electricidad, or CFA."* So a clear priority on moving Mexico towards more renewables. At the same time, she also plans to keep growing Pemex to a slightly higher level of oil production. The New Republic had comments from Alonso Romero, the Sheinbaum campaign's energy

ambassador of dialogues for transformation. The New Republic wrote *"Not all of Sheinbaum's plans will be great news for climate advocates. Her plan for PEMEX involves boosting refinery capacity, investing heavily in petrochemicals, and increasing oil production to 1.8 million barrels per day before stabilizing it there. "We believe that Pemex needs to continue to produce oil and gas," Romero told me, noting that Pemex won't follow a similar path to Dong Energy, the Danish state-owned fossil fuel firm that has transformed into a major wind power developer, Ørsted."* Our Supplemental Documents package includes the New Republic report.

Oil: Russia says Temryuk oil depot hit but no destruction at Novorossiysk port

Another Russian oil depot hit

It is hard to determine exactly what is being hit or not hit, or the extent of any damages by Ukraine and Russia drone attacks as we do not rely on posts/reports from unknown sources. On the evening of May 30/31, Ukraine reportedly launched a large missile/drone attack on key areas on the Black Sea – the Russian major port city of Novorossiysk and the adjoining Temyrk. Whenever we see missile/drone attack at Novorossiysk, we pay attention as this is the major Russia oil export port on the Black Sea. We relied on the Russian governor public statements. Early Friday morning, we tweeted [LINK] "*Russia says massive drone attack but "all of them suppressed". "no casualties or destruction" at major #Oil export city of Novorossiysk. but nearby Temryuk "infrastructure of the oil depot was damaged by an air strike. 3 tanks with oil products were damaged & burning" #OOTT."* Russia is saying no destruction at Novorossiysk but confirming 3 storage tanks holding petroleum products were hit.

Oil: Russia retaliates with massive drone attack against Ukraine power infrastructure

Russia keeps going after Ukraine power

Russia didn't wait long to retaliate with what was reported as a massive drone/missile attack on Ukraine power infrastructure on the evening of May 31/June 1. Yesterday, Politico reported [LINK] "*Russia launched a large-scale missile and drone attack — the most extensive in more than three weeks — against Ukraine overnight, damaging the country's power system, Ukrainian officials said on Saturday. The strike damaged equipment at facilities in five regions across Ukraine, according to national grid operator Ukrenergo. Ukraine's air force reported that its air defenses shot down 35 of the 53 missiles and 46 of the 47 attack drones launched by Moscow in the overnight attack."* Note we checked Ukraine's natural gas company, Naftogaz, Telegraph last night and its latest post was May 29 so before the May 31/June 1 missile attack.

Will Ukraine escalate its drones to target after Russia oil/LNG export terminals

Even before Russia's swift retaliation on Ukraine's power infrastructure, we thought the Ukraine May 30/31 drone attacks on Novorossiysk were significant as Novorossiysk is the major Russia oil export port on the Black Sea. As noted, Russia said there was no destruction. But it reminded of a key risk to Russia and a key upside to oil markets – What if Ukraine escalated its drone/missile attacks to focus on Russia's oil and LNG export infrastructure. Here is what we wrote in last week's (May 26, 2024) Energy Tidbits memo. "*Our tweet on the Platts map noted "Reminds UKR can also hit RUS major export terminals in Baltic & Black Seas." We followed up with a reply tweet "Agreed. Ukraine has so far attacked refineries to hurt RUS supply of diesel, jet fuel, to hurt supply to military & economy. But has avoided export terminals/infra, which would be what impact global #Oil prices. See*

👇@CroftHelima 03/27 highlight this as the big risk #OOTT." The reminder is that Ukraine has not gone after Russian oil and LNG export terminals that are basically right near refineries on the Black Sea and Baltic Sea. And Ukraine hitting refineries has hurt Russian fuel supplies to domestic uses but it really hasn't had a huge impact on Russian oil exports as Ukraine hasn't really disrupted Russia's oil export terminal infrastructure. There is no reason why Ukraine can't hit the Russian oil export terminals if it is hitting close nearby refineries. And hitting the export terminals would be what will drive up oil prices. We have been highlighting this risk scenario for the past two months. Here is what we wrote in our March 31, 2024 Energy Tidbits memo was titled "Helima Croft "closely watching whether Ukraine moves at some stage to target actual [Russian] export facilities." Here is what we wrote in our March 31, 2024 Energy Tidbits memo. " We couldn't help think of the above RBC Helima Croft comment this morning when start looking at overnight news and seeing more Russian escalating drone attacks on Ukraine energy/power infrastructure. Earlier this morning, we tweeted [LINK] "This 👇Must Read from @CroftHelima looks even more relevant with the last 4 days, incl last night, of escalating Russia drone attacks on Ukraine energy/power infra. Will Ukraine expand its drone attacks to target RUS oil export facilities? has to be at least a risk? #OOTT." The news of the last four days, including last night, was on escalating Russian drone attacks on Ukraine energy and power infrastructure. Bloomberg reported "Russia continues almost daily strikes at Ukraine's critical infrastructure, and hit energy facilities in the country's south and in the far western region of Lviv on Sunday, local authorities said. Kremlin forces targeted high-voltage electricity substations in the Odesa region, damaging equipment, which caused power to be cut off to more than 170,000 households in Ukraine's third largest city, according to electricity provider DTEK." Ukraine hasn't gone along with the reported US request to not go after Russian refineries and so we have to believe there is at least a risk they expand their drone attacks to go after Russian oil and LNG export facilities." Our Supplemental Documents package includes the cover page of the Helima Croft note.

Oil: Good Russian refinery & terminals map within Ukrainian drone range

Russia refinery map

The Ukrainian drone attacks on the night on May 30/31 remind that Ukraine continues to target Russia oil refineries and depots. Here is another item from last week's (May 26, 2024) Energy Tidbits memo. "*On Tuesday, we tweeted [LINK] "Great map! 4.8 mmb/d refining capacity & 0.99 mmb/d of "gross capacity hit by drones to May 20 of Russian refineries within "current strike zone" of Ukrainian drones. Reminds UKR can also hit RUS major export terminals in Baltic & Black Seas. Thx @ncoleman100 @SPGCIOil #OOTT." The map shows the current proven range of Ukrainian drones and all the refineries and terminals with that range. It also notes the "gross capacity" of the Russian refineries that have been hit ie. it doesn't note how much of the gross capacity has been out and for how long."*

Figure 32: Russian refineries & terminals within Ukrainian drone reach

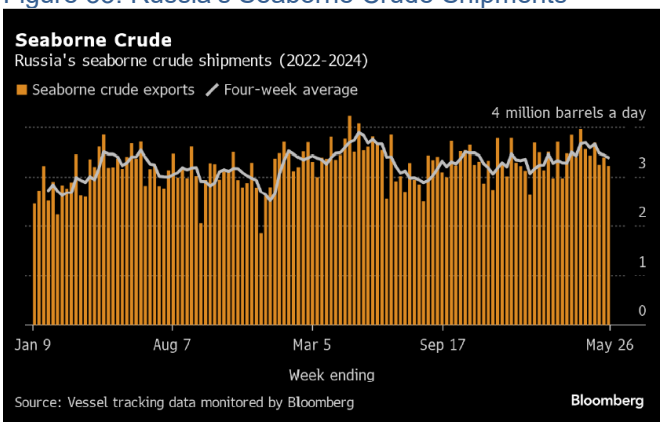
Source: Platts

Oil: Russia's seaborne crude oil exports down ahead of OPEC+ meeting

Russia's seaborne crude exports decrease WoW

Information on the impacts on Russian oil infrastructure and its impact on moving crude is still a black hole. So it's far from clear how drone strikes reducing refinery capacity in Russia would free up crude for export assuming the crude oil volumes can be moved to export terminals. And as noted previously, Russia has also been moving more crude and products via rail. On Tuesday, Bloomberg reported *"Russia's four-week average crude exports fell for a third week, with shipments hitting a two-month low before a virtual meeting of the OPEC+ producer group to be held on Sunday….The decline in the weekly figures was driven by fewer shipments from the Black Sea port of Novorossiysk and the Arctic terminals at Murmansk, which were partly offset by two more departures from the Pacific ports of Kozmino and Prigorodnoye."* Cargoes from Russia's Baltic Ports were flat WoW, but are scheduled to be lower in May compared to April. Russia has pledged to compensate for overproduction against its April target, which was attributed to "technicalities of making significant output cuts". In the week to May 26, Russia exported 3.22 mmb/d via tankers, down ~ -170,000b/d WoW from 3.39 mmb/d for the week to May 19. The four-week average also fell by ~ -52,000 b/d to 3.38 mmb/d, for the third straight decline. Our Supplemental Documents package includes the Bloomberg report.

Figure 33: Russia's Seaborne Crude Shipments



Source: Bloomberg

Russia oil exports to China down with lesser discounts

Bloomberg's above weekly report on Russia oil shipments to China, vs the 1.36 mmb/d in the first three weeks of April, are still down ~130,000 b/d for the May 26 week, after being down ~190,000 b/d two weeks ago. We were warned on reduced China oil imports from Russia a month ago by one of our favorites commentators on the Gulf Intelligence Daily Energy Podcasts is Victor Yang, Senior Analyst JLC Network Technology. He is based in China so we like hear his on-the-ground views on oil, natural gas and markets in China. Here is what we wrote in our April 28, 2024 Energy Tidbits memo referencing Yang's comments from our April 22, 2024 tweet [LINK] that included a transcript we made of Yang's comments. "*And for the second quarter, we see a lot of refinery maintenance, is imports will actually come down. And for now, the premium for Russian cargoes have strengthened this year, from -0.5 barrels to -0.3 barrels. And now it's flat to Brent, meaning 0 now. So this has dampened refiners, particularly independents, interest in Russian crude. Their margins for imported crude, including Russian crude, actually turned negative late last month and the beginning of this month. So it's now kind of [inaudible] slightly above the breakeven point. So the interest in this has been dampened too. So we are not expecting imports to grow much in the second quarter, yes."* Note Bloomberg previously reported Russia oil shipments to China averaged 1.36 mmb/d for the Apr 7 and Apr 14 weeks. Below is the table from Bloomberg's Russia oil exports report this week.

Figure 34: 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
April 21, 2024	1.31	1.99	0.04	0.00	0.00	3.33
April 28, 2024	1.23	1.92	0.04	0.05	0.00	3.25
May 5, 2024	1.25	1.96	0.04	0.05	0.00	3.29
May 12, 2024	1.17	1.78	0.04	0.08	0.00	3.06
May 19, 2024	1.20	1.55	0.00	0.17	0.08	3.00
May 26, 2024	1.23	1.49	0.00	0.14	0.10	2.96

Source: Vessel tracking data compiled by Bloomberg Bloomberg

Source: Bloomberg

Oil: OPEC+ extends group-wide cuts thru 2025, extra voluntary cuts thru 2024

OPEC+ extends cuts

The chatter in the last few days leading up to this morning's OPEC+ meeting was that there would be an extension of the OPEC+ cuts and that has happened Plus there was a good reminder this morning that the norm for OPEC+ meetings is for all the key discussions to be held before the formal meeting. That was the case for today's OPEC+ meeting that was essentially a rubber stamp of what was discussed in advance, which meant the OPEC press release came out just before our 7am MT news cut off. Earlier this morning, we tweeted [LINK] "*Saudi Energy Minister Abdulaziz delivers. #OPEC+ extends group-wide cuts thru 2025. Reports the extra voluntary cuts to be extended thru 2024. Waiting on individual company announcements. UAE gets added allotment 300,000 b/d phase in 2025. #OOTT."* Our tweet included the OPEC announcement [LINK] that noted the group-wide cuts are extended thru 2025 and that UAE was allocated an extra 300,000 b/d to be phased in over 2025. As of our 7am MT news cut off, we have only seen the reports from Bloomberg and other key OPEC watchers that the extra voluntary cuts were being extended thru 2024. Our tweet noted that there normally individual country announcements that we still haven't seen as of our 7am MT news cut off. We expect those will all be out before our Energy Tidbits memo is posted before noon MT. Our Supplemental Documents package includes the OPEC press release.

Oil: Saudi Aramco launches $11.5b secondary share issue this morning

Aramco $11.5b share issue

There was a good indicator early this morning that OPEC+ meeting wasn't going to be negative when Saudi Aramco launched the marketing for the $11.5b secondary share issue. Last week's (May 26, 2024) Energy Tidbits highlighted the reports that Aramco was going to launch a $10b equity issue. Early this morning and ahead of the OPEC+ meeting, we tweeted [LINK] "*Shouldn't be negative from #OPEC+ this morning. Saudi Aramco just launched $11.5b secondary share issue. Base deal: - 1.545b shares. Price range $7.12-$7.73. $11.5b at midpoint. 10% Greenshoe would add $1.15b. Pricing on Fri June 7. #OOTT."* Our tweet included excerpts from the Saudi Aramco filing of its 1.545 billion secondary share issue that will be priced on Friday June 7 post the marketing period. At midpoint of the announced price range, the secondary will raise $11.5b and that would be increased by $1.15b if the

10% greenshoe is exercised. Note that at 5:13am MT, Bloomberg reported "*Saudi Aramco's $12 billion share sale sold out shortly after the deal opened on Sunday, in a boon to the government that's seeking funds to help pay for a massive economic transformation plan. The government had demand for all shares on offer in a few hours after books opened, according to terms of the deal seen by Bloomberg News. Books were covered across the price range of 26.70 riyals to 29 riyals."* Our Supplemental Documents package includes the Saudi Aramco filing.

Saudi Arabia $5b bond issue

Oil: It's been a big week for Saudi Arabia accessing Other People's Money

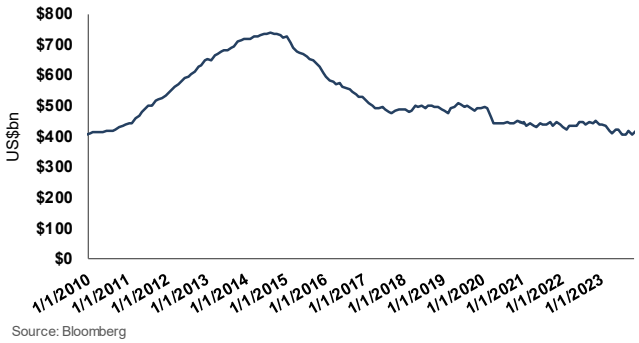
For the last several years, we have been consistent in our view that the #1 financial theme for Saudi Arabia for the 2020s will be accessing Other People's Money to fund its Vision 2030 and more. It's been a big week for Saudi Arabia accessing Othe People's Money with this morning's Saudi Aramco $11.5b secondary share issue. In addition, on Tuesday, Saudi Arabia issued $5b sukuk, or Islamic bond. Bloomberg also reported that the $5b bring the total YTD 2024 international debt sales to $17b, which is more than in any full year since 2017.

Saudi net foreign assets

Oil: Saudi nest egg, its net foreign assets were down -10.6b MoM in April

On Tuesday, the Saudi Central Bank (SAMA) released its Monthly Statistical Bulletin for the month of April [LINK]. We continue to believe in our long stated view 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 transition their country to MBS's Vision 2030. We believe this has been obvious with how Saudi Arabia's net foreign assets dropped by ~37% or $256.2b over the last nine years (since March 2015). We are surprised that markets and oil watchers didn't 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. We are seeing much larger MoM changes, both up and down. There was a -$10.6b MoM decrease to Saudi Arabia's net foreign assets which are now $423.6 in April vs $434.2b in March. This followed a huge $22.1b MoM increase in March. We have to believe this was due to some timing issues or other external fund injections. But the thesis and big picture remains, Saudi net foreign assets as of April 30 of $423.6b is a decline of ~43% or $313.4 over the last 9 years from its peak of $737.0b on Aug 31, 2014. That is an average of $2.8b per month for the last 116 months since the peak. Saudi Arabia is far from going broke but there has been a huge decline in the last 9 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. Our supplemental documents package includes an excerpt from the SAMA monthly bulletin. Below is our graph of Saudi Arabia net foreign assets updated for the April data.

Figure 35: Saudi Arabia Net Foreign Assets



Source: Bloomberg

Oil: Iran says no evidence of sabotage in Raisi's helicopter crash

No evidence of sabotage in Raisi crash

On Wednesday, IRNA (Iran state media) reported [LINK] "*Iranian military investigators have found no evidence of any explosion caused by sabotage or cyberattack in the helicopter crash that resulted in the death of late president Ebrahim Raisi and his entourage this month. The General Staff of the Iranian Armed Forces on Wednesday released its second report on the May 19 crash, which also killed foreign minister Hossein Amirabdollahian and others. Based on sampling and tests conducted on the wreckage and parts of the helicopter, as well as the distribution pattern of the debris from the main body, the occurrence of an explosion caused by sabotage during the flight and moments before the impact with the mountainside is ruled out, the report said. Additionally, investigators carefully examined the vast majority of the documents related to the maintenance of the helicopter and found no issue that could have played a role in the accident, it added. The report also revealed that the helicopter's capacity in terms of the maximum standard load it could carry at the point of take-off and throughout the flight path and the return route was found to have been within the "permissible limit."* This should not have surprised given how Supreme Leader Khamenei first comments on the crash made no inference that there was foul play on Raisi's helicopter crash.

Oil: Iran says oil production reached 3.6 mmb/d under Raisi

Iran says it's at 3.6 mmb/d of oil

One of the holdbacks to oil in the last year has been Iran's increasing oil production. On Tuesday, we tweeted [LINK] "*Today Iran interim president, Mohammad Mokhber says #oil production reached 3.6 mmb/d during Raisi leadership. See 👇05/25 tweet, negative to oil is that Iran says can add 400,000 b/d to get to 4.0 mmb/d at crazy cheap cost of $3b. #OOTT."* Iran reaching 3.6 mmb/d under Raisi is not new news. We reported it in last week's (May 26, 2024) Energy Tidbits memo. But, on Tuesday, Shana (news agency for Iran's oil ministry) reported [LINK] "*Iran's interim president, Mohammad Mokhber, says that boosting oil production to 3.6 million barrels per day was one of the most important achievements of the 13th administration under the leadership of Ibrahim Raisi.*"

Iran says $3b can add 400,000 b/d, a crazy low cost to add oil production

We recognize that some don't believe Iran when it comes to their confidence in Iran's statements on increasing oil production. But, as noted in the following item, that non-belief has been proven wrong in the last 10 months and Iran has been one of the big

holdbacks to oil price since H2/23. Last week's (May 26, 2024) Energy Tidbits memo highlighted Iran's saying they can add 400,000 b/d for $3b. Here is what we wrote last week. "*The headline on Iran's oil update is that it plans to increase its oil capacity from 3.6 to 4.0 mmb/d. But these numbers also remind that Iran has a lot of low risk oil development projects. We have been of the view that the decades of sanctions against Iran that led to very little foreign capex in Iran's oil sector would mean there is still lots of low hanging fruit for Iran to add oil production at low cost. But, yesterday, the numbers that Iran are saying is equal to crazy low costs to add oil production. Yesterday, we tweeted [LINK] "WOW! Decades of sanctions & very low foreign capital = lots of low hanging fruit to add oil b/d. Iran says invest $3b to add 400,000 b/d. That is crazy low cost to add oil production. Compare that to Exxon 04/12/24 invest $12.7b to add 250,000 b/d Whiptail (Guyana).#OOTT." Yesterday, IRNA reported "In the plan to increase crude oil production by the National Iranian Company with an investment of three billion dollars only in 1403 and with an increase of 400,000 barrels per day equivalent to seven billion oil revenues for the country." That is only $3b to add 400,000 b/d, which is crazy low cost to add oil of $7,500 per b/d. Our tweet compared that to the recent Exxon 04/12/24 press release on its latest Guyana development project, Whiptail, that Exxon says it will invest $12.7b to add 250,000 b/d. Our Supplemental Documents package includes the IRNA report and Exxon's Apr 12, 2024 press release."*

No one believed Iran could ramp up oil production in H2/23.

Iran's statement about adding 400,000 b/d at cheap cost reminds us of last August, when Iran said they were going to ramp up oil production and most ignored or just didn't believe they could do so. Our Aug 13, 2023 Energy Tidbits memo was titled "*Can or Will Anyone Stop Iran Adding ~600,000 b/d to Oil Markets in Next Few Months?"* OPEC Monthly Oil Market Report had Iran at 2.828 mmb/d in July and Iran said they could add 600,000 b*/d by year end. Here is what we wrote in our Aug 13, 2023 Energy Tidbits memo. "Will or can anyone stop Iran from adding ~0.6 mmb/d to oil markets in H2/23? Iran looks to be an overlooked risk to oil prices in H2/23 and not because of sanctions removal. Rather because they are adding oil production capacity and we don't know who will or can stop them from adding the new oil capacity to oil markets. (i) Earlier this morning, we tweeted [LINK] "Near term Oil hold back. Another Iran reminder today that at 3.2 mmb/d & to exceed 3.3 mmb/d by late Aug. Vs #OPEC MOMR Secondary Sources had Iran at 2.828 mmb/d in July. Who can or will stop Iran from adding up 0.6 mmb/d to #Oil markets in next few mths? #OOTT." It follows our tweet yesterday [LINK] "Who can or will stop Iran from adding up to 0.6 mmbd to #OIl markets over coming mths? Iran not subject to #OPEC quota. US negotiating with Iran on prisoners & releases of Iranian funds. See 👇08/09/23 thread - Iran is #oil supply risk in H2. #OOTT @DanialRahmat12." Our Aug 8, 2023 tweet was [LINK] "Iran near term #Oil supply adds! Given #Biden doesn't have any stroke over #MBS & tapped SPR, wonder if he effectively turns a blind eye as he sees this as a replacement for an SPR release to try to help keep a lid on oil/#Gasoline prices for 2024. Thx @DanialRahmat12! #OOTT. " (ii) On Wednesday, Tehran-based analyst, Danial Rahmat, tweeted [LINK] "CEO of #NIOC: Iran's crude prod. to increase by 150 k b/d in a week. By the end of Sep. 100k b/d will be added and output will reach 3.5 mil. b/d. In H2, about $8 b deals will be signed to develop 2*

joint fields. #OOTT @Energy_Tidbits @sean_evers @FrankKaneDubai @imannasseri." Rahmat was reporting on comments by National Iranian Oil Company managing director, Khojasteh mehr, at a press conference in Tehran on Aug 9. (iii) Later PressTV (Iran state media) reported on Khojasteh mehr's comments on the press conference. [LINK] "Iran will reach a milestone oil production figure of 3.5 million barrels per day (bpd) in late September, according to the CEO of state oil company NIOC, despite sanctions imposed on the country by the US. Mohsen Khojasteh Mehr said on Wednesday that Iran's oil output will increase by 150,000 bpd within the next week and by another 100,000 bpd by the end of the month to September 22 to reach a total of 3.5 million bpd. The figure would be a major increase from 2.2 million bpd of oil production reported in August 2021 when the current administrative government led by President Raeisi took office, said Khojasteh Mehr. He said the growth in oil output will entirely serve Iran's plans to increase its oil exports." Earlier this morning, our tweet attached the Irna (state media) reporting [LINK] on Iran oil minister saying today that oil production was 3.2 mmb/d and to surpass 3.3 mmb/d by the end of August. (iv) Iran is saying they can hit 3.5 mmb/d in late Sept. Based on this week's OPEC Aug MOMR Secondary Sources production for Iran of 2.828 mmb/d in July, this is an add of >600,000 b/d. We think this is a significant item as we don't see who will or can block Iran from adding these barrels to global markets. Iran is one of three countries not subject to OPEC+ quotas so isn't held back by OPEC+ in increasing production and exports. (v) In theory, Iran is under sanctions but US has turned a blind eye to stopping Iran oil exports. And given the late week breaking news of a potential US/Iran prisoner swap and release of Iran's blocked funds in South Korea, it's hard to see the US stepping up to enforce sanctions. Plus there is the political reality that it's only 15 months to the US 2024 Presidential election. Our Aug 9 tweet said "Given #Biden doesn't have any stroke over #MBS & tapped SPR, wonder if he effectively turns a blind eye as he sees this as a replacement for an SPR release to try to help keep a lid on oil/#Gasoline prices for 2024." US gasoline prices keep inching up. Biden used the SPR to keep a lid on prices in the run up to the 2022 mid-term elections. He doesn't have that cushion now so he can look at Iran's new capacity as a bit of SPR replacement to keep a lid on oil prices."

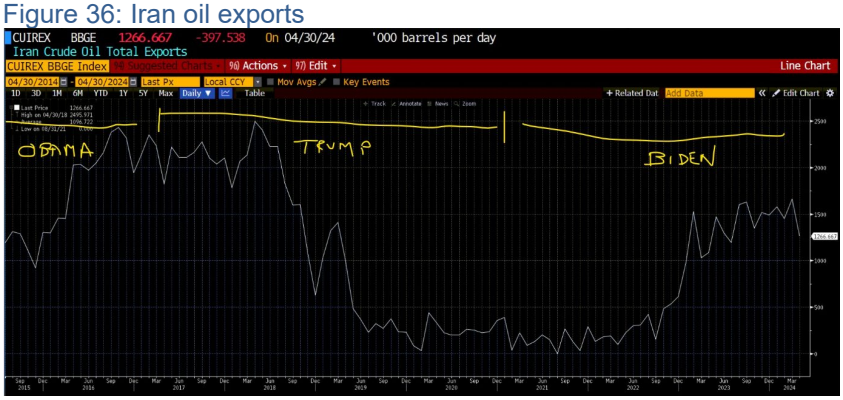
Oil: Biden continues to show he won't enforce oil sanctions on Iran before election

Biden on Iran

We see a continued near term negative or hold back to oil prices that we expect Biden to continue turning a blind eye to enforcing oil sanctions on Iran, which means Iran will continue to increase its oil production and exports. We have been highlighting how Trump, if he wins, could have a very near term big boost to oil prices if he returns to his enforcement of sanctions on Iran and Venezuela oil exports. Both have significantly ramped up under Biden. Biden never says he won't enforce oil sanctions on Iran, rather he just turns a blind eye to Iran's continued ramp up in oil exports as they help hold back oil prices. And keeping oil prices as low as possible ahead of the election is a clear priority for Biden. On Monday, we tweeted [LINK] "*Continued negative on #Oil in 2024. 👇Iran oil exports up big under Biden. Biden Administration Presses Allies Not to Confront Iran on Nuclear Program reports @laurnorman. Reinforces unlikely for Biden to strictly enforce Iran oil sanctions. #OOTT [LINK]."* On Monday, the WSJ wrote "*Biden Administration Presses Allies Not to Confront Iran on Nuclear Program. U.S. is arguing against an effort by Britain and France to censure*

Iran at the IAEA's member-state board". The WSJ wrote "*The Biden administration is pressing European allies to back off plans to rebuke Iran for advances in its nuclear program, even as it expands its stockpile of near-weapons-grade fissile material to a record level, according to diplomats involved in discussions. The U.S. is arguing against an effort by Britain and France to censure Iran at the International Atomic Energy Agency's member-state board in early June, the diplomats said. The U.S. has pressed a number of other countries to abstain in a censure vote, saying that is what Washington will do, they said. U.S. officials deny lobbying against a resolution. The differences are emerging as Western officials' concerns have deepened about Iran's nuclear activities. On Monday, the U.N. atomic-energy agency reported that Iran's stockpile of 60% highly enriched uranium rose 20.6 kilograms to 142.1 kg as of May 11 from three months earlier, its highest level to date. U.S. officials say that material could be converted into weapons-grade enriched uranium in a matter of days. It would then be enough to fuel three nuclear weapons."* It's just another indicator that Biden doesn't want to do anything that could hurt Iran's ability to produce and export oil and condensates. And that is why we believe it is one of the key negatives or holdbacks to oil over the next six months. Our tweet include the below graph showing Iran oil exports under Obama, Trump and Biden. Our Supplemental Documents package includes the WSJ report.

Figure 36: Iran oil exports



Source: Bloomberg

Oil: Houthis keep shooting drones at merchant ships and US navy

Houthis keep attacking ships

We are not seeing any change to the market responding to Houthis drone/missile attacks against merchant and US navy ships with a no impact response. It doesn't matter if the Houthis hit a merchant ship twice on Tuesday and it takes on water, or if the Houthis shoot drones at US navy ships like the Eisenhower. On Friday, Saba (Houthi news) reported that the Houthis "*the naval force of the Yemeni Armed Forces carried out a joint military operation targeting the American aircraft carrier "Eisenhower" in the Red Sea. The operation was carried out with a number of winged and ballistic missiles, the hit was Accurate and direct, thanks to Allah."* There have not been any subsequent reports that the Houthis hit the Eisenhower. The US did not confirm drones were shot at the Eisenhower but did acknowledge that the Houthis launched missiles towards the US navy ships. And then yesterday, the Houthis claimed [LINK] they launched a second attack on the Eisenhowe, separately targeted a US destroy in the Red Sea by a number of drones "*and have achieved a direct hit",* targeted a merchant ship, Aloraiq, in the India Ocean and a merchant ship,

Abliani, in the Red Sea. Last night, U.S. CENTCOM issued an update [LINK] "*Between 9 a.m. and 7:30 p.m. (Sanaa time) June 1, U.S. Central Command (USCENTCOM) forces destroyed one Iranian-backed Houthi uncrewed aerial system (UAS) in the southern Red Sea. USCENTCOM forces also observed two other UAS crash into the Red Sea. No injuries or damage was reported by U.S., coalition, or commercial ships. Additionally, between 7 and 11:30 p.m., USCENTCOM forces successfully engaged two Houthi anti-ship ballistic missiles (ASBM) in the southern Red Sea. The ASBM were fired in the direction of USS Gravely and were destroyed in self-defense, with no damage or injuries reported by U.S., coalition, or commercial ships*." CENTCOM doesn't directly admit the Houthis missiles were directed at their navy ships but does so indirectly by noting there was no damage to US or coalition ships.

US extends aircraft carrier Eisenhower deployment in Red sea.

The Houthis may not have hit the aircraft carrier Eisenhower but on Friday, Bloomberg reported that US Navy is extending the Eisenhower deployment in the Red Sea. Bloomberg wrote "*The U.S. Navy aircraft carrier strike group that for months has launched crucial strikes against Houthi rebels in Yemen to protect military and commercial ships in the Red Sea and Gulf of Aden will remain in the region for at least another month, according to U.S. officials. U.S. Defense Secretary Lloyd Austin signed the order last week to extend the four ships' deployment for a second time, rather than bring the carrier, the USS Dwight D. Eisenhowe r, and its three warships home. The other ships in the strike group are the USS Philippine Sea, a cruiser, and two destroyers, the USS Gravely and the USS Mason. All together they include about 6,000 sailors. The decision means the sailors and the carrier's Air Wing won't be home until the middle of the summer, according to the officials, who spoke on condition of anonymity to discuss a decision not made public. The officials declined to provide exact dates. A normal ship deployment lasts for about seven months, and the ships left their homeport of Norfolk, Virginia, in October. Austin approved the first order to extend their deployment about four weeks ago."*

Oil: Iraq, Kurdistan & oil companies are finally meeting on Tues

Iraq, Kurdistan and oil companies to meet on Tues

There is finally progress towards the potential for a resumption of Kurdistan oil exports to international markets via Turkey. There have been zero discussions directly involving the three key parties – Iraq, Kurdistan and the Kurdistan oil producers. And no discussions is why we believe there has been zero visibility to any restart of Kurdistan oil exports. But now there is at least the start with the first three-party meeting. Yesterday, we tweeted [LINK] "*Finally! @RudawEnglish : Baghdad, Erbil & oil producers to finally meet to try to get to an agreement. Follows @apikur_oil saying its producers are willing to consider contract modifications. 1st step towards resuming 400,000 b/d Kurdistan #Oil to export markets. #OOTT."* There is no guarantee that a deal will happen but we thought it was positive that at least there is the starting point with a long waited for meeting with all three parties at the table – Iraq, Kurdistan and the Kurdistan oil producers. This is what APIKUR (the industry association for the Kurdistan oil producers) has been requesting. Yesterday, Rudaw (Kurdistan news) reported *"Iraq's oil ministry, the Kurdistan Regional Government (KRG), and international oil companies (IOCs) will meet this week with the goal of finally resolving all obstacles preventing the resumption of Kurdish oil exports, a member of parliament said on*

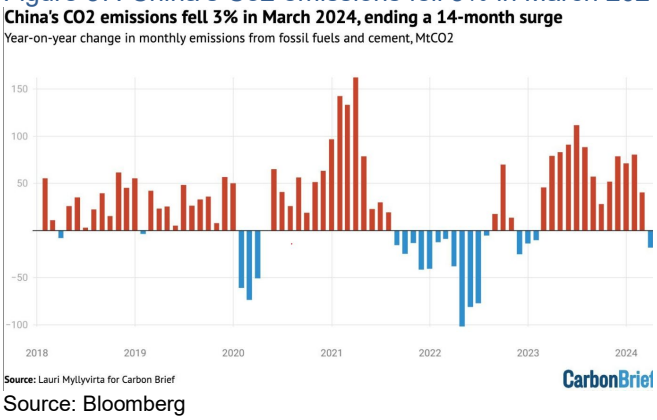
Saturday. "The meeting is to get the process right. The negotiations are in this direction and it is expected to resolve this matter. The oil contracts will be reviewed and an agreement will be reached regarding the entitlements of the IOCs," Yahya al-Issawi, a member of the Iraqi parliament's oil and gas committee, told Rudaw. On Tuesday, the federal oil ministry invited the KRG's natural resources ministry and the IOCs for an urgent meeting to reach an agreement on the resumption of exports. A day later, the natural resources ministry stated that it was ready for the meeting. The Association of the Petroleum Industry of Kurdistan (APIKUR), an association of oil companies working in the Kurdistan Region, also welcomed the invitation." On Monday, APIKUR had released a statement that it was prepared to negotiate and we think that was an important signal to Iraq. We still believe Iraq has the negotiating leverage so the question will be how much the Kurdistan oil producers will have to give up, vs their existing PSCs, to get a deal with Iraq. Our Supplemental Documents package includes the Rudaw report and the APIKUR Monday release.

Oil: Less China construction = Less emissions

China emissions down in March

In China, we have been using emissions as a good indicator for industrial activity. We normally reference the BloombergNEF charts on China emissions by major steel producing region, but we haven't seen those chats in months. Less emissions in these steel producing regions means less steel activity. On Monday, we saw a Carbon Brief report *"Analysis: Monthly drop hints that China's CO2 emissions may have peaked in 2023."* E tweeted [LINK] *"Less China construction = less emissions. 👇China C02 emissions in Mar down YoY, industrial data for Apr indicates Mar trends continued. "largest source of reductions in emissions in March was the continued decline in demand for steel & cement from the construction sector". Thx @CarbonBrief @laurimyllyvirta #OOTT."* Carbon Brief wrote "*China's carbon dioxide (CO2) emissions fell by 3% in March 2024, ending a 14-month surge that began when the economy reopened after the nation's "zero-Covid" controls were lifted in December 2022." "China's carbon dioxide (CO2) emissions fell by 3% in March 2024, ending a 14-month surge that began when the economy reopened after the nation's "zero-Covid" controls were lifted in December 2022."* Our Supplemental Documents package includes the Carbon Brief report. [LINK]

Figure 37: China's Co2 emissions fell 3% in March 2024



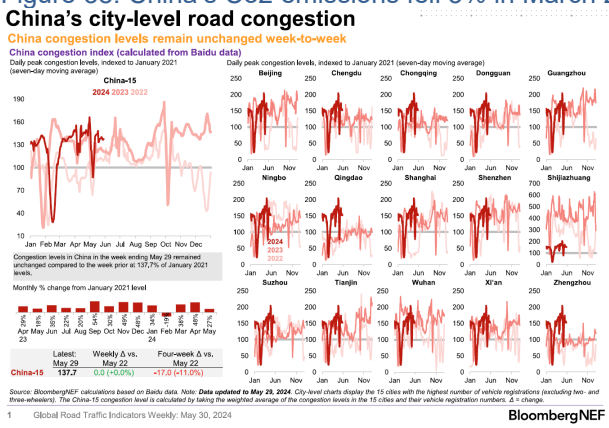
Source: Bloomberg

Oil: Baidu China city-level road congestion continues higher YoY in May

China city-level traffic congestion

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly May 30 report, which includes the Baidu city-level road congestion for the week ended May 29. BloombergNEF's report was titled "*China traffic steady, following seasonal trends"* and its key slide was titled "*China congestion levels remain unchanged week-to-week".* Baidu city-level road congestion was flat WoW at 138% of Jan 2021 levels. The key to the data is that China city-level road congestion was higher YoY in May. The top 15 cities are, in total, +7% YoY in May with 11 of the top 15 cities' road congestion up YoY. Below are the BloombergNEF key graphs.

Figure 38: China's Co2 emissions fell 3% in March 2024



Source: Bloomberg

Figure 39: China city-level road congestion for the week ended May 29

Indexed to the same month in previous year = 100

	Mar 23	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 24	Feb	Mar	Apr	May
China-15	138	130	118	134	122	120	153	130	146	146	133	81	138	148	127
Beijing	164	150	138	152	138	137	180	159	167	161	145	73	151	169	138
Chengdu	126	131	110	131	109	114	130	121	123	116	120	68	134	140	123
Chongqing	111	110	98	115	105	88	127	112	122	116	111	80	112	138	120
Dongguan	130	109	114	128	117	101	147	130	141	144	121	52	129	138	134
Guangzhou	172	154	137	159	151	149	184	160	178	181	161	76	171	195	171
Ningbo	125	104	99	115	114	115	127	118	146	142	127	79	144	146	116
Qingdao	75	80	73	86	96	106	106	92	99	103	78	51	71	78	71
Shanghai	149	129	124	130	121	123	162	127	155	150	115	79	146	152	126
Shenzhen	166	138	130	165	143	146	181	151	169	170	149	68	160	164	168
Shijiazhuang	430	459	383	428	375	439	484	343	491	461	494	350	400	390	305
Suzhou	121	105	97	115	107	109	135	108	127	136	118	79	134	137	110
Tianjin	141	136	122	132	110	114	173	150	169	190	133	85	160	165	143
Wuhan	185	170	150	169	148	136	189	143	159	159	167	105	174	171	141
Xi'an	128	131	122	136	122	111	151	135	156	155	152	98	141	147	127
Zhengzhou	96	95	89	95	88	92	106	80	97	108	110	85	95	96	79

Indexed to the same month in previous year = 100

	Mar 23	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 24	Feb	Mar	Apr	May
China-15	144	145	116	104	110	107	112	126	155	187	151	55	100	114	107
Beijing	149	160	397	146	96	95	106	149	214	275	135	42	92	113	100
Chengdu	108	122	93	101	116	135	174	117	131	124	144	51	106	107	112
Chongqing	115	116	92	99	107	145	98	130	395	224	136	64	101	125	123
Dongguan	178	121	89	96	113	92	105	108	104	156	258	41	99	127	117
Guangzhou	156	200	110	108	127	104	114	146	317	307	199	45	99	127	125
Ningbo	90	100	61	62	78	79	69	95	101	127	203	59	115	140	118
Qingdao	154	113	80	78	105	97	100	96	124	195	175	62	94	97	97
Shanghai	248	446	350	111	106	81	81	115	93	172	156	54	98	117	101
Shenzhen	245	100	74	99	114	97	122	108	97	156	189	41	96	120	129
Shijiazhuang	139	161	113	121	125	173	218	120	459	258	156	69	93	85	80
Suzhou	134	163	72	75	89	84	87	91	88	157	171	60	111	130	114
Tianjin	181	136	139	100	127	122	213	109	137	244	136	60	114	121	117
Wuhan	163	171	118	128	133	138	144	199	192	187	151	55	94	100	94
Xi'an	121	117	92	111	132	119	106	149	139	152	132	66	110	112	104
Zhengzhou	122	146	144	93	111	112	112	171	294	164	119	76	98	102	89

Source: BloombergNEF

Oil: China official Manufacturing PMI back to contractions after 2 expansions

China official Manufacturing in contraction

As a reminder, there are two China manufacturing PMI data reports that come out each month, The Official Manufacturing PMI that the National Bureau of Statistics publishes, and the Caixin Manufacturing PMI from S&P Global. The Caixin Manufacturing PMI is for more smaller, export -oriented companies. The Official Manufacturing PMI normally comes out earlier the same day or the day before the Caixin Manufacturing PMI data that we track, however, only the Official Manufacturing PMI has come out this week, and the Caixin

Manufacturing PMI will be released on June 2. On Friday, we tweeted [LINK] "*Back to contraction after 2 months of expansion. China official National Bureau of Statistics Manufacturing PMI just out. May 49.5. Est. 50.5 Apr 50.4 Mar 50.8 Feb 49.1 Jan 49.2. Export oriented smaller firms Caixin Manufacturing PMI is tomorrow night. #OOTT Thx @business.*" Note that this is the first contraction following two consecutive months of expansion, which interrupted five months of contraction, the Caixin PMI had been in expansion since Nov.

Figure 40: China Official General Manufacturing PMI

Source: Bloomberg

Oil: Vitol sees a little softer outlook for Asian oil demand in H2

Vitol on Asian oil demand

Earlier this morning, we tweeted [LINK] ""*And that's the sentiment right now, which is a little softer" Vitol's @michaelwmuller when asked on outlook for H2 Asian #Oil demand. See 👇SAF Group transcript for longer answer. #OOTT Thx @gulf_intel @vitolnews @ColumbiaUEnergy @sean_evers."* Vitol's Head Asia, Mike Muller, was on the Gulf Intelligence energy podcast this morning and was asked about his outlook on Asian demand for H2. His ending comment was a little softer and he highlighted a number indicators. Our tweet included the transcript we made of his comments that noted these indicators such as Singapore gasoline cracks being at all-time lows. Here is the transcript we made of Muller's and Sean Evers (Gulf Intelligence) comments. Items in '*Italics*" are SAF Group created transcript. At 19:27 min mark, Evers asks "… *your thoughts as a whole. Asia's demand being a supporting pillar that could even grow further in the 2nd half of the year if China starts to come back stronger. The outlook for the 2nd half from an Asian demand point of view and what OPEC+ can think about that?"* Muller "….. *the situation is pretty much as outlined for July and August. We have adequate stocks on the water of refined products. We have slightly and I will emphasize slightly less pull on Atlantic imports from Asia. Maybe as a consequence of a little bit of over-purchasing that you refer to there in May. That said, the outlook in economies like India are and continue to be robust. I mean, you will have seen, not just the elections but the rccord weather temperatures. These, in advanced Asian nations, tend to lead to increased demands in air conditioning usage and therefore place extreme strain on the power grid. Sometimes necessitating uses of energies other than those obvious ones. Japan will go from burning LNG to maybe having to burn fuel in order to make up for local shortfalls. However, the heat is in India, of course. And there it could have different consequences. It could affect crops and harvests and mean less diesel that gets consumed by tractors if the fields aren't fertile. So there many many possible pathways this could take. But, I think on the whole, the outlook for gas feels very much buoyed by these heat events. But, if you want to look any further than what's happening on products, oil products in Asia, you look at refining margins. And look in particular at gasoline cracks and these are trading at multi-year lows if you strip out the Covid period of 2020/2021. Singapore gasoline has been generally trading at double digits per barrel premium to Brent. What we call the crack, a big component of the margin. And that's sunk to negligible single digits. So we're at all time lows on that particular front. And that doesn't bode particularly well even though there was a view that gasoline demand growth is particularly robust in places like China. Then you look at what that means for refinery behaviour. And refiners of course will be very quick to advertise that they might consider cutting runs in order to stopping the view of the crude oil sellers they are facing. And it is that time of month when we are, the beginning of the month, when programs get nominated and people call for how much OPEC oil they wish to see in their buying programs. So you generally hear a little bit more noise at this time of month from those refiners that have marginal capacity as to whether they will be running that capacity or not. And that's the sentiment right now, which is a little softer*."

Oil: Why does India want refiners to lock in long term discounted Russia oil now?

Why now for India to lock in long term RUS oil?

We had the opportunity to speak with a number of people on this item from last week's (May 26, 2024) Energy Tidbits memo. It seems that others agree with the principle that it is interesting when people do something out of character, which is how we described India wanting its refiners to lock in long-term discounted Russian oil. Here is what we wrote last week. "*People are people and over the years, it always makes us wonder when we see*

someone do something that seems out of character. So when we see someone do something out of character, we have to believe there is a reason why. Yesterday, we tweeted [LINK] " Why Now? India is best at opportunistically buying cheap RUS, Iran, VEN oil. So why lock-in long term discounted RUS oil? Does India see tighter oil mkts ahead in 2025, 2026? Or is it insurance in case Trump wins & enforces Iran/Ven sanctions? Or other reason? #OOTT." India has been the best at being an opportunistic buyer of Russian, Iran and some Venezuela crude at discounted prices. And they were clear with the US from Day 1 of sanctions against Russia that India buys oil where it gets the best price. It's worked so far in trying to minimize their oil import costs. So the Wednesday reports that India asked their refiners to lock in discounted Russian oil for long-term oil supply makes us wonder if they see something ahead that could potentially change the level of discounts for Russian oil. One answer could be they see tighter oil markets ahead in 2025 and 2026 and want to lock in the discounts for long-term ahead of the normal seasonal ramp up in global oil consumption. The other reason is if it's an insurance policy approach in case Trump wins the election and moves to enforce Iran sanctions, which could take ~1 mmb/d off global markets. And this would be taking the discounted barrels away from China, India and a few others that take Iran oil. And that would mean more opportunity/lesser discount on Russian oil. It would fit with our warning from last week's (May 19, 2024) Energy Tidbits memo on how Trump could dramatically impact oil markets."

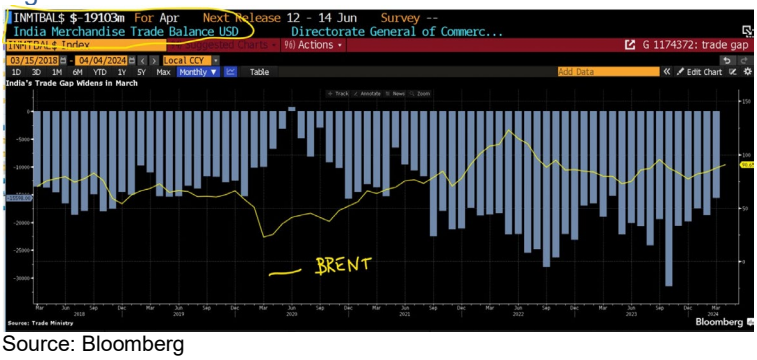
India wants refiners to lock in long term supply of discounted Russia oil

Here is another item from last week's (May 26, 2024) Energy Tidbits memo. "*On Wednesday, we tweeted [LINK] "No surprise, India asks "refiners to lock in >1/3 of their contracted supply from Russia at a fixed discount to help shield the nation's economy from volatile prices" See 👇05/15 tweet on how #Oil prices drive India trade deficit. Thx @journorakesh @sudhiranjansen #OOTT." On Tuesday night, Bloomberg reported "India Makes Rare Request for Refiners to Join on Russia Oil Deal. India has made a rare request to its state-run oil refiners and private processor Reliance Industries Ltd. to jointly negotiate a long-term supply deal with Russia, according to people familiar with the matter. The government wants its refiners to lock in at least a third of their contracted supply from Russia at a fixed discount to help shield the nation's economy from volatile prices, the people said, asking not to be named due to the sensitivity of talks. The appeal to join forces was informal, they added." Our Supplemental Documents package includes the Bloomberg report.*

India will keep buying discounted Iran and Russian oil

Here is what we wrote in our May 19, 2024 Energy Tidbits memo on India continuing to buy discounted Russian oil. "*On Wednesday, we tweeted [LINK] "Here's why India will take as much discounted Russia and Iran #OIl as possible. India trade deficit in Apr was $19.1b. #Oil #PetroleumProducts #LNG imports stood at $16.46b in Apr" reports @shruti838. Added Brent $ to the @business India trade deficit graph. #OOTT." We were watching Bloomberg TV and they were talking about the Indian trade deficit for April and we took their graph and added Brent oil price to the graph because oil imports are probably the #1 monthly import cost for India. So the price of oil is the key wildcard each month to India imports and reinforces why India will continue to buy as much discounted oil as possible from Iran and Russia. Below is the Bloomberg TV graph that we modified to add Brent oil price*."

Figure 41: India trade deficit and Brent oil



Source: Bloomberg

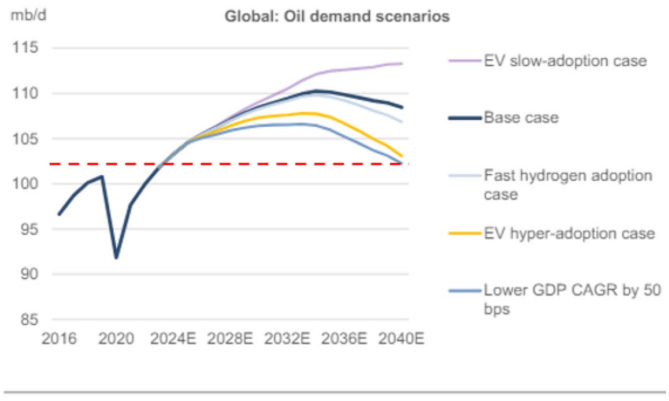
Oil: Goldman increases oil demand forecast &U moves peak oil demand out to 2034

Goldman increases oil demand forecast

On Monday, Goldman Sachs increased their long-term oil demand forecasts and pushed back its expectation for peak oil demand to 2034. One of the advantages of social media is that well established investors and analysts "share" the key excerpts from Goldman Sachs increased oil demand call. Goldman Sachs wrote "*We draw 4 conclusions: 1) Peak oil demand is still a decade away. we raise our 2030E demand forecast to 108.5 mb/d from 106 mb/d, expecting peak oil demand to occur by 2034E at c. 110 mb/d followed by a long plateau till 2040E. Our view is more bullish than the IEA, which assessed that oil demand peaks before 2030. 2)Adding an EV slow-adoption scenario. The recent EV sales stagnation raises the odds of the EV slow-adoption scenario of our Auto team, which implies oil demand would keep increasing towards c. 113 mb/dby 2040E*."

Figure 42: Goldman Sachs Base & EV Slow-Adoption Case for Oil Demand

Exhibit 6: The EV slow-adoption case implies oil demand increasing towards c.113 mb/d by 2040E



Source: Wood Mackenzie, World Bank, BP, Wind, Goldman Sachs Global Investment Research

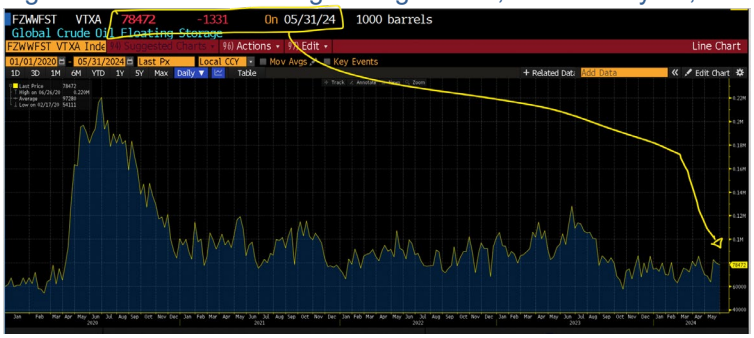
Source: Vortexa

Oil: Vortexa crude oil floating storage est 78.47 mmb at May 31, -1.33 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 May 25 at 9am MT. (i) Yesterday, we tweeted [LINK] "*Vortexa oil floating storage est 78.47 mmb at May 31. Want to watch as last 3 wks probably closer to ~75 mmb, excl Gulf Coast temporary increase, whereas floating storage had been trending more to ~70 mmb. Thx @vortexa @business #OOTT."* (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for May 31 at 78.47 mmb, which is -1.33 mmb WoW vs upwardly revised May 24 of 79.80 mmb. Note May 24 was revised +6.50 mmbto 79.80 mmb vs 73.30 mmb originally posted at 9am MT on May 25. (iii) As noted below, Gulf Coast floating storage was down -3.62 mmb WoW and is backing off the post Covid high of 10.11 mmb that was driven by the high winds in the Gulf Coast and power outages around Houston. (iv) Revisions. The last two weeks were revised up but then the prior five weeks were all revised down. Here are the revisions for the past seven weeks compared to the estimates originally posted on Bloomberg at 9am MT on May 25. May 24 revised +6.50 mmb. May 17 revised +1.22 mmb. May 10 revised -4.12 mmb. May 3 revised -4.70 mmb. Apr 26 revised -1.69 mmb. Apr 19 revised -1.83 mmb. Apr 12 revised -4.46 mmb.. (v) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 74.57 mmb vs last week's then seven-week average of 76.67 mmb. (vi) Also remember Vortexa revises these weekly storage estimates on a regular basis. For example, when most report on the Vortexa data on Monday morning, they will be reporting on different estimates. We do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. Normally we download the Vortexa data as of Saturday mornings around 9am MT. (vii) Note the below graph 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) May 31 estimate of 78.47 mmb is -49.55 mmb vs the last year peak June 23, 2023 high of 128.02 mmb. Recall Saudi Arabia stepped in on July 1, 2023 for additional cuts. (ix) May 31 estimate of 78.47 mmb is -26.30 mmb YoY vs June 2. 2023 of 104.77 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT June 1, 9am MT May 25, and 9am MT May 18.

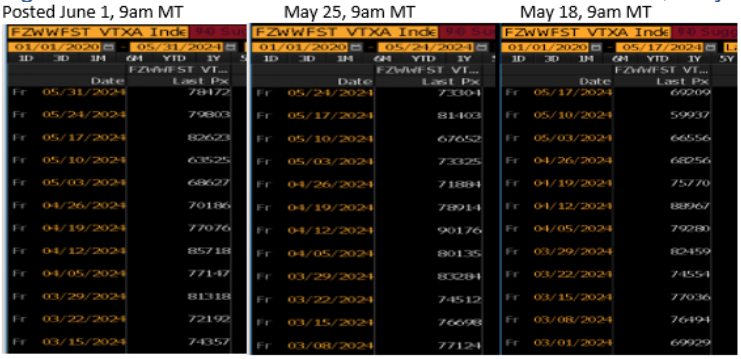
Figure 43: Vortexa Floating Storage Jan 1, 2000 – May 31, 2024, posted June 1 at 9am MT



Source: Bloomberg, Vortexa

Figure 44: Vortexa Estimates Posted 9am MT on June 1, May 25, and May 18

Posted June 1, 9am MT | May 25, 9am MT | May 18, 9am MT



Source: Bloomberg, Vortexa

Source: Bloomberg, Vortexa

Oil: US Gulf Coast floating storage -3.62 mmb WoW to 6.49 mmb

Gulf Coast floating storage

It looks like the back up of floating oil storage in the US Gulf Coast is clearing up. The last two Energy Tidbits memos highlighted how high winds and Houston area power outages led to Gulf Coast floating oil storage hitting the highest levels since the early days of Covid in 2020. Vortexa estimated Gulf Coast floating storage went from 3.84 mmb on May 10, to 8.50 mmb on May 17, and then 10.11 mmb on May 24. Vortexa's May 31 estimate, posted as of 9am MT yesterday, Gulf Coast floating storage was -3.62 mmb WoW to 6.49 mmb. So still above normal levels but moving back down and we expect to see further declines.

Figure 45: Vortexa crude oil floating for US Gulf Coast

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Vortexa floating storage by region

Bloomberg also posts the 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" or rest of world. (i) As noted above, last week's May 24, in total, was revised +6.50 mmb with the key revision being Asia revised +5.53. (ii) The major WoW changes were Other -4.96 mmb Wow, US Gulf Coast -3.62 mmb WoW, and Middle East +2.93 mmb WoW. (iii) Above we highlight how the backup of floating storage in

the Gulf Coast is clearing up off the May 24 10.11 mmb, the highest since Covid due to the recent high winds and power outage. Gulf Coast was -3.62 mmb WoW to 6.49 mmb. (iv) May 31 estimate of 78.47 mmb is -49.55 mmb vs the last year peak June 23, 2023 high of 128.02 mmb. Recall Saudi Arabia started its voluntary 1 mmb/d production cuts on July 1, 2023. The major changes by region vs the summer June 23 peak are Asia -41.40 mmb and Other -24.66 mmb.. (v) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for May 24 that was posted on Bloomberg at 9am MT on May 25.

Figure 46: Vortexa crude oil floating by region

				Original Posted	Recent Peak	
Region	May 31/24	May 24/24	WoW	May 24/24	Jun 23/23	May 31 vs Jun 23
Asia	31.44	29.82	1.62	24.29	72.84	-41.40
North Sea	4.44	3.08	1.36	3.08	5.42	-0.98
Europe	11.72	10.15	1.57	10.20	5.80	5.92
Middle East	11.51	8.58	2.93	7.39	6.76	4.75
West Africa	8.95	9.18	-0.23	9.99	7.62	1.33
US Gulf Coast	6.49	10.11	-3.62	10.13	1.00	5.49
Other	3.92	8.88	-4.96	8.22	28.58	-24.66
Global Total	78.47	79.80	-1.33	73.30	128.02	-49.55
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Jun 1						
Source: Vortexa, Bloomberg						

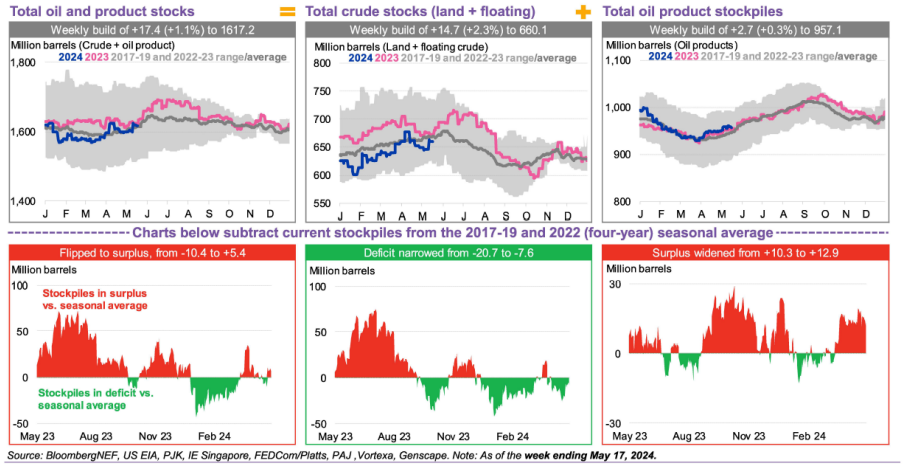
Source: Bloomberg, Vortexa

Oil: BNEF, global oil and product stocks deficit flips to a surplus of +5.4 mmb

Global oil and products stocks

On Tuesday, BloombergNEF posted its "*Oil Price Indicators*" weekly, which provides good charts depicting near-term global oil demand and supply indicators. (i) Note BloombergNEF uses different periods to determine the surplus/deficit, sometimes using a four-year average for 2017-2019 + 2022-2023, and other times using a five-year average 2017-2019 + 2022-2023. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products saw a flip from a deficit of -10.4 mmb for the week ending May 3 to a surplus of +5.4m mmb for the week ended May 17. (iii) Total crude inventories (incl. floating) increased +2.3% WoW to 660.1 mmb, while the stockpile deficit narrowed from -20.7 mmb to -7.6 mmb. (iv) Land crude oil inventories rose +0.2% WoW to 578.7 mmb, narrowing their deficit from -17.3 mmb to -15.8 mmb against the five-year average (2017-2019 + 2022-23). (v) The gas, oil, and middle distillate stocks grew +0.4% WoW to 157.7 mmb, with the deficit against the four-year average narrowing from -2.7 mmb to -1.7 mmb. Jet fuel consumption by international departures in the week to June 3 is set to increase by +21,700 b/d WoW, while consumption by domestic passenger departures is forecast to increase by +9,400 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 47: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF

Asian Pacific air traffic in April

Oil: Asia/Pacific intl Apr passenger air travel up +32.0% YoY but -12.7% vs 2019

On Tuesday, the Association of Asia Pacific Airlines released its April 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, but still well below 2019 levels. The AAPA reports preliminary April 2024 travel figures were up +32.0% YoY from April 2023. The AAPA wrote "*Preliminary April 2024 traffic figures released today by the Association of Asia Pacific Airlines (AAPA) underscored strong demand for international passenger travel, with both business and leisure markets continuing to enjoy robust growth. Overall, a combined total of 28.0 million international passengers flew with the region's carriers in April, representing a 32.0% increase compared to the same month last year. Traffic averaged 87.3% of 2019 volumes. Demand in revenue passenger kilometres (RPK) rose by 33.7% year-on-year, showing growth notably on longer haul routes. Available seat capacity grew by 30.4%, leading to a 2.1 percentage point increase in the average international passenger load factor to 81.6%.*" (ii) Air cargo was up +13.7% YoY, measured in Freight Tonne Kilometres (FTK), but the load factor declined to 59.9%. Meanwhile, headline capacity measured in Available Seak Kilometres (ASK) expanded +30.4%, which was why the freight load factor fell (more belly space relative to freight). iii) Subhas Menon, Director General of the AAPA, said "*Improving economic sentiment, coupled with high demand on major routes connecting Asia and other regions, including Europe and Southwest Pacific, drove growth in long haul travel markets, while travel demand within the region remained buoyant, underpinned by the easing of visa policies and resilient expansion in the region's economies. Overall, the number of international passengers carried rose by 51% to a total of 117 million for the first four months of the year."* Below is a snapshot of the APAA's traffic update.

Figure 48: APAA Preliminary International Air Traffic Data

International	Apr-24	Apr-23	% Change
Passengers (Thousand)	28,012	21,214	+ 32.0%
RPK (Million)	99,777	74,608	+ 33.7%
ASK (Million)	122,327	93,787	+ 30.4%
Passenger Load Factor	81.6%	79.5%	+ 2.1 pp
FTK (Million)	5,819	5,117	+ 13.7%
FATK (Million)	9,708	8,488	+ 14.4%
Freight Load Factor	59.9%	60.3%	- 0.4 pp

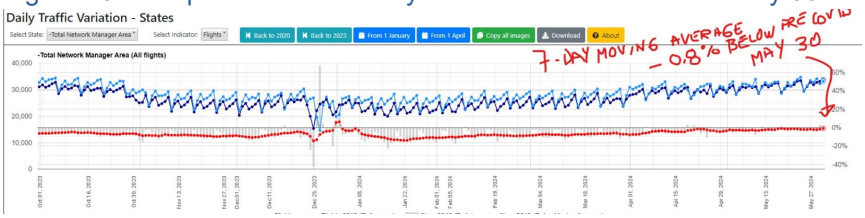
Source: AAPA

Europe airports daily traffic

Oil: Europe airports daily traffic 7-day average is only -0.8% below pre-Covid levels

Yesterday, we tweeted [LINK] "*Daily Europe air traffic only 0.8% below pre-Covid. 7-day average as of: May 30: -0.8% below pre-Covid. May 23: -1.9%. May 16: -1.2%. May 9: -3.2%. May 2: -2.9%. Apr 25: -3.2%. Apr 22: -1.5%. Apr 18: -3.2%. Apr 11: -3.7%. Apr 4: -6.2%. Thx @eurocontrol #OOTT.*" Other than over Christmas, European daily traffic at airports has been below pre-Covid. However, the last few weeks have been getting closer to pre-Covid. Traffic got to only 1.2% below pre-Covid as of May 16 before falling back a bit to 1.9% below pre-Covid as of the 7-day average on May 23. But that was narrowed this week with traffic reaching only -0.8% below as of the 7-day average on May 30. Eurocontrol updates this data daily and it is found at [LINK].

Figure 49: Europe Air Traffic: Daily Traffic Variation to end of May 30



Source: Eurocontrol

TIPRO April jobs update

Oil & Natural Gas: TIPRO Texas oil and natural gas jobs down MoM in April

This week, the Texas Independent Producers and Royalty Owners Association (TIPRO) posted its May 17 recap for the month of April, which included their updated their employment figures for the Texas upstream sector [LINK]. Direct Texas upstream employment totaled 193,300 in April, down by -3,400 jobs from March. TIPRO wrote *"The decline in employment follows March data showing the highest increase in monthly Texas upstream jobs since June of 2011. TIPRO notes that fluctuations in CES employment data throughout the year are normal and that demand for talent within the industry remains robust… According to the association, there were 11,012 active unique jobs postings for the Texas oil and natural gas industry last month, including 4,821 new job postings added during the month by companies, which represented a 26 percent increase from March. In comparison, the state of California had 4,209 unique job postings last month, followed by Florida (2,194), New York (1,788), Louisiana (1,681) and Pennsylvania (1,547)*." TIPRO reported a total of 56,348 unique job postings across the US in April within the oil and natural

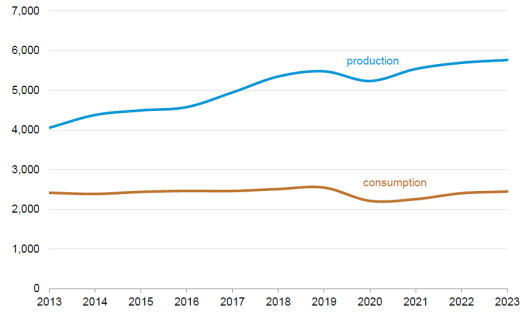
gas sector. TIPRO also provided an update on economic data from 2023, noting *"Last year, direct GRP (Gross Regional Product) for the Texas oil and natural gas industry totaled $381 billion, directly supporting 17 percent of the state economy. Once a conservative multiplier of 2.5 percent is applied, last year the Texas oil and natural gas industry directly and indirectly supported 42 percent of the Texas economy. At the national level, total GRP for the oil and natural gas industry exceeded $1 trillion dollars in 2023, as previously reported, and directly supported 5 percent of the U.S. economy."* Our Supplemental Documents package includes excerpts from the TIPRO recap.

Oil & Natural Gas: EIA's updated Canada Country Brief

EIA's country brief on Canada

We continue to recommend adding the EIA's country analysis briefs to reference libraries as good quick references, in this case its updated EIA country executive summary [LINK] on Canada. Although in the case of Canada, the better overview comes from CAPP. However, EIA reminds Canada is a major energy producer and an exporter of both oil and natural gas export capacity as wells as a major hydroelectric and renewable energy producer in BC, Quebec and Manitoba. As of 2022, Crude oil production accounted for 51.7% of Canada's total energy production, followed by natural gas at 32.4%, hydro at 5.1%, and coal, nuclear and renewables each make up less than 5% of total production. Canada was the sixth largest energy producer in the world as of 2022, producing 3.6% of total global energy. Canada had proved oil reserves of 163 billion barrels as of January 2024, the 4th most in the world. It is worth noting that most of Canada's reserves reside in their oil sands, which have much lower decline rates than the conventional deposits found in their peers' reserves. Almost all of Canada's exports are primarily destined for the United States, with the US refineries processing the heavy oils produced in Canada's oil sands. The recent Trans Mountain Expansion Project on the Trans Mountain Pipeline was designed to increase Canada's crude oil exports globally through Pacific coast ports. The expanded pipeline began operating in May 2024, and is set to roughly triple the pipeline's current capacity of 300,000 b/d. In 2023, 5.8 million b/d of petroleum and other liquid fuels were produced in Canada, growing at an average rate of 3.8% per year between 2013 and 2023. Crude oil contributed 2.9% to the growth, and the remaining 0.9% growth was from natural gas liquids. Our Supplemental Documents Package includes the EIA brief.

Figure 50: Canada's petroleum & liquids production & consumption 2013-2023 (kb/d)



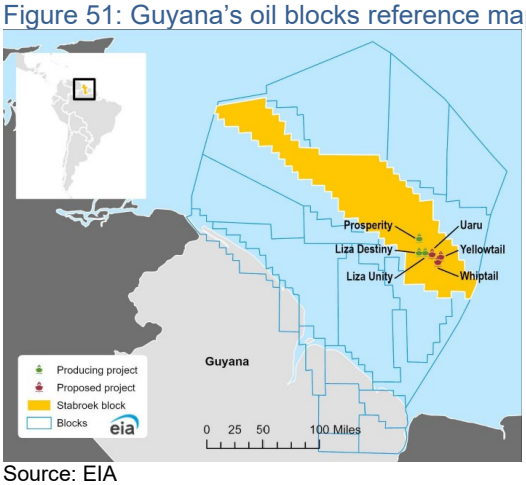
Source: EIA

Oil & Natural Gas: EIA's Guyana Country Brief

EIA's country brief on Guyana

As noted above, we continue to recommend adding the EIA's country analysis briefs to reference libraries as good quick references, in this case its updated EIA country executive summary [LINK] on Guyana. Guyana has been the major global oil production growth areas and is quickly on its way from essentially zero to 1 mmb/d. Guyana began producing crude oil in December of 2019 at 15,000 b/d and has since increased rapidly to 630,000 b/d in January 2024. The country has three additional projects underway to continue to increase production to up to 1.3 mmb/d by 2027. Guyana has onshore and offshore operations, but their exploration focus has shifted to offshore. Guyana had an estimated 11 billion barrels of proved oil reserves as of January 2024. Petroleum and other liquids account for 99.2% of Guyana's energy production, the remainder being natural gas and renewables. Over the past 6 months, Guyana has been in political turmoil as Venezuela attempted to claim Essequibo, an oil and natural gas-rich territory belonging to Guyana, as their own. As of May 2024, the turmoil has not affected Guyana's oil production or projects in development. Our Supplemental Documents Package includes the EIA brief.

Figure 51: Guyana's oil blocks reference map



Source: EIA

Energy Transition: Platts, data center NatGas demand less than utilities forecast

Platts on data center natural gas demand

Here is an item from last week's (May 26, 2024) Energy Tidbits memo on a contrary view for how AI/data centers will drive natural gas demand. It is a view that we haven't seen elsewhere. Last week, we wrote "*We are big believers in looking at both sides of a call or view because we think it is a positive to see why people have different views. The starting point is always that no one is 100% correct and data/circumstance/developments are always changing so views have to be adjusted or changed. Earlier this morning, we tweeted [LINK] "Big contrary call from @SPGCIGas. US power sector #NatGas demand to peak in 2024. Data center NatGas demand "below utility forecasts owing to significant data center electric energy efficiency gains" "strong incentives to improve efficiency & minimize environmental impacts" #OOTT." The growing strong consensus is that AI/data centers is going to drive way more growth in natural gas power generation than previously forecast. On Friday, Platts posted a contrary view that data center demand for natural gas will be less than forecast and therefore that means power demand for natural gas is peaking in 2024. And that call is based*

on a "massive buildout of renewables" and new energy efficiency of data centers. That is a huge contrary call. Platts wrote "Power sector gas demand in the US is expected to peak in 2024 thanks to a massive buildout of renewables that will offset rising power demand, including from data centers, S&P Global Commodity Insights analysts wrote in their latest short-term natural gas outlook. The outlook, which now includes 2029, forecasts a total decline of 12% in power sector gas demand by 2029 compared with 2023. "Even though net on-grid electricity demand is anticipated to grow robustly over 2023-2029, gas-fired generation is expected to decline as the US Inflation Reduction Act (IRA) promotes a surge in renewable capacity build," analysts wrote late May 23." And "Midstream gas companies including Kinder Morgan and TC Energy were confident of continued growth in demand from power plants during Q1 earnings calls, often citing demand from data centers. US utilities also struck a bullish tone, partially from data centers. Commodity Insights power analysts are less bullish. Growth from data centers is expected to be "substantial, but below utility forecasts owing to significant data center electric energy efficiency gains," analysts wrote April 24. Companies driving the data center buildout, like Microsoft, Alphabet and Amazon, "have strong incentives to improve efficiency and minimize environmental impacts." Major chip suppliers, including Nvidia, have announced "huge efficiency gains" in their next-generation chip designs, the analysts wrote. Outside of chips, "AI models can be configured to be more energy efficient, such as by using fewer bits. More water-based cooling mechanisms are emerging as an alternative or supplement to air cooling, further reducing energy use." Our Supplemental Documents package includes the Platts report. [LINK]"

Energy Transition: Buttigieg reminds only a handful of public charging stations

Buttigieg on EV charging stations

One of the reasons people give for not jumping into EVs is the lack of public EV charging stations. This was a priority for the Biden Administration from Day 1 and so in 2021, they approved $7.5 billion for their public charging station priority to get 500,000 public charging stations by 2030. There was a good reminder from US Transportation Secretary Pete Buttigieg on a key holdback to EV adoption on the US news shows last Sunday. Buttigieg confirmed there have been only 7 or 8 EV charging stations put into operation despite the Biden Administration approving $7.5 billion to do so back in 2021. He didn't actually confirm only 7 or 8 but did not refute the number. Buttigieg did remind Biden's target is still to get to 500,000 public charging stations by 2030. We watched the exchange and Bloomberg posted a transcript. Bloomberg transcripts wrote "MARGARET BRENNAN: *But it - it, obviously, is resonating for him because he wouldn't bring it up so frequently if there wasn't some anxiety that he's tapping into. And let me ask you about a portion of this that I think does fall under your portfolio, and that's the charging stations you mentioned. The Federal Highway Administration says only seven or eight charging stations have been produced with a $7.5 billion investment that taxpayers made back in 2021. Why isn't that happening more quickly?* SECRETARY PETE BUTTIGIEG: *So, the president's goal is to have half a million chargers up by the end of this decade. Now, in order to do a charger, it's more than just plunking a small device into the ground. There's utility work and this is also really a new category of federal investment. But we've been working with each of the 50 states. Every one of them is getting formula dollars to do this work, engaging them in the first handful.* MARGARET BRENNAN: *Seven or eight, though?* SECRETARY PETE BUTTIGIEG: *Again, by 2030, 500,000 chargers. And the very first handful of chargers are now already being physically built. But again, that's the absolute very, very beginning stages of the construction to come.* MARGARET BRENNAN: *Right.* SECRETARY PETE BUTTIGIEG: *The reason that we're*

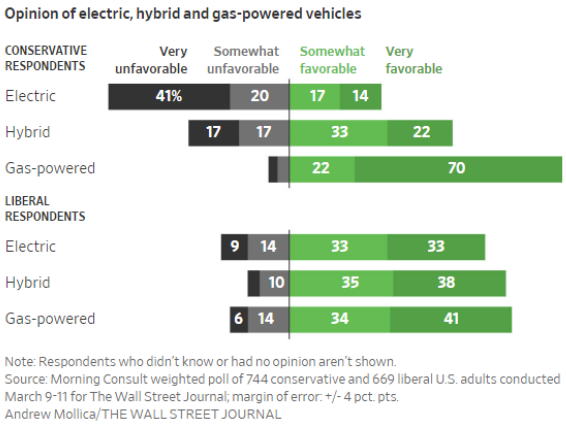
investing federal dollars is to fill in some of the gaps in areas where it is not yet profitable for the private sector to do it. Now, again, the majority of charging will happen at home. And in some senses an electric vehicle has more in common - fueling it has more in common with charging your phone than it does with filling up a gas car, in ways that are both helpful and challenging. But that is exactly the transition that America is going through right now. And the other thing, again, is the price, right?"

Energy Transition: Liberals in US have higher favourable opinion of ICE vs EVs

Do US Liberals like ICE more than EVs?

The problem with polls is that they are small samples meant to be representative of a broad group so there is always a risk in polls being wrong. So we always have to at least not assume any poll is correct when spread across a large group. A good example is the recent Morning Consult poll of about 2,200 American adults conducted for The Wall Street Journal on Liberals and Conservatives views on EVs, Hybrids and ICE. On Monday, we tweeted [LINK] "*Biden won't like this #EVs poll by @WSJ @MorningConsult. Liberals have highest favorable opinion of 75% for ICE, then 73% for Hybrid & last 66% for EVs. No surprise conservatives 92% favorable for ICE, then 55% for Hybrid & 31% for EVs. Thx @MikeColias #OOTT [LINK].*" No one should be surprised or not believe the poll results for Conservatives being 92% favorable to ICE vs 55% to Hybrid and 31% to EVs. But the surprising results were for Liberals who had a 75% favorable to ICE, then down to 73% to Hybrid, and down to 66% for EVs. The poll doesn't say what income levels for the Liberals so we suspect the lower Liberal favorable view to EVs vs ICE is likely due the fact that EVs have been more of a high-income early-adopter car of choice vs ICE which is more of a lower and middle income car of choice. Below is the key graph. Our Supplemental Documents package includes the WSJ report.

Figure 52: Opinion of electric, hybrid and gas-powered vehicles



Source: WSJ, Morning Consult

Energy Transition: Is BYD's ultra long-range Hybrid a game changer for oil demand?

BYD's ultra long range hybrid

Imagine if GM or Volkswagen or Toyota had been the one, instead of BYD, to announced an hybrid that could go 2,000 km without having to recharge or refuel? We think it would have been the energy story of the week and western governments and the climate change side would be trumpeting this technology advancement that could be the catalyst to finally putting

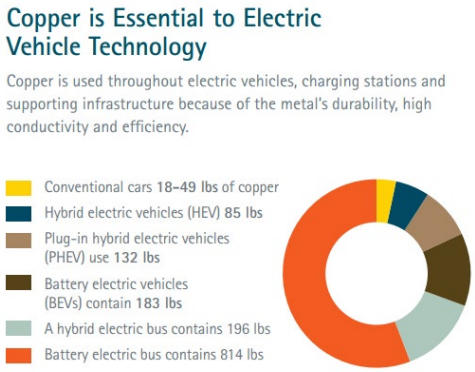
a pin into a firm timing for reaching peak oil demand. But it wasn't GM or Volkswagen or Toyota, it was BYD and it's been silence from the west. We have been consistent for several years on our view for peak oil demand and that the forecasts for when peak oil demand would hit have been overly optimistic as they are based on a key assumption that EVs displace a lot of oil quickly ie. like the IEA's almost 6 mmb/d of oil by 2030. So, as expected, we keep seeing the peak oil demand being pushed a couple years at a time. And the reality is the assumption that keep pushing a year or two at a time will keep happening until there are developments that at least start to put a pin in when peak oil demand will hit. And this week, we wonder if we are seeing the type of development that would give more, including ourselves, confidence that the peak oil demand timing won't keep be pushed out a year or two and that it could actually hit around 2034 (as Goldman's latest forecast). On Wednesday, we tweeted [LINK] "*Game changer? If western govt go all-in on Hybrids & dump EVs, will that stop forecasts for peak oil demand from keep getting pushed out as has been happening every year? BYD new long-distance hybrid (~$13,800) claims capable of >2,000 km without recharging or refueling. Thx @AirEVthingTRNSP @business #OOTT."* BYD announced its new ultra long-distance hybrid that will cost $14,000 has a claimed range of >2,000 km without recharging or refueling. The 2,000 km got our attention. Even if there is a 50% battery loss in the winter, that is still 1,000 km in winter. And that would seem to deal with one of the key holdbacks to EVs – the massive loss of range in the winter. So if it's as it initially seems, it's a movement of hybrids towards this ultra long-distance, this may not change peak oil demand by much in terms of timing BUT it would give more confidence that peak oil demand is coming and not a question of analysts just bumping it out another year or two all the time. Because even at 50% range loss in winter, 1,000 km is big range. We don't know how easy or fast the ultra-long range distance gets transferred to other hybrid manufacturers. Plus this BYD doing this for $14,000 and no one would suggest that Ford or GM or others could get within a multiple of that cost. But what if in the next five years, Ford comes out and says they can make a Ford150 Hybrid with huge range in winter or when pulling loads at a competitive price to an ICE Ford 150, then that would be a game changer. We are surprised the BYD announcement didn't get big attention but we look at it as potentially a game changer to give some certainty that peak oil demand will happen even if it is still a decade away as Goldman forecasts. Our Supplemental Documents package includes the Bloomberg BYD report.

Energy Transition: Copper usage in hybrids is still multiples more than in ICE

Copper has had a great recent run as the reality of copper supply vs rapidly growing needs over the coming years and decades. Hybrids are increasingly taking share from EVs, which can provide some relief to copper demand but Hybrids still need multiples more copper per vehicle than ICE. The Copper Development Association has a good 2-pg summary Copper Drives Electric Vehicles [LINK], which include the below graphic showing copper needs in EVs vs Hybrids vs ICE. Our Supplemental Documents package includes the Copper Development Association report.

Copper usage in EV vs Hybrid vs ICE

Figure 53: Copper is Essential to Electric Vehicle Technology



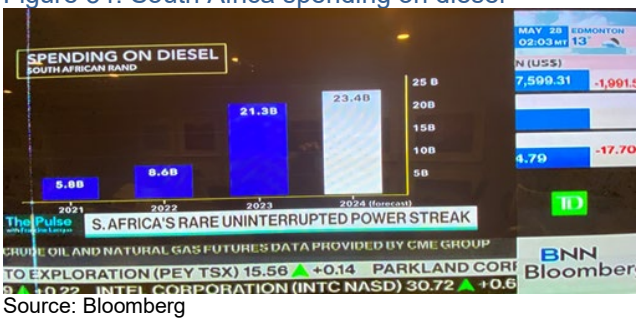
Source: Copper Development Association

Energy Transition: South Africa should have turned to diesel earlier to keep lights on

South Africa turned to diesel

It was a historic election in South Africa when the African National Congress party failed to win a majority for the first time since they won a majority in 1994 and, right in line with the polls, received just over 40%. Perhaps the biggest reason for why South Africans voted against ANC was the inability to provide electricity on any reliable basis. It is a basic reminder that people want basics – electricity, water, food, gasoline etc. In the case of the west, it's having these basics at fair cost. In places like South Africa, it's just having electricity. We hadn't been aware of how significant electricity was in the election until seeing Bloomberg coverage early Tuesday morning on the Wednesday election. We tweeted [LINK] *"#Diesel to rescue! Big increase in diesel power generation provides rare uninterrupted power >50 days ahead of ZA election. @jennzaba "last year the power utility company, Eskom, could only keep the lights on for the equivalent of 82 days. but with an election on the horizon, South Africans have been enjoying a rare streak of uninterrupted electricity supply. " #OOTT @flacqua ."* Our tweet included the Bloomberg graphic that said 62% would not vote for the ANC due to load shedding (rotating power blackouts). It has been brutal for South Africans. Bloombefg highlighted how South Africa has turned to diesel in 2024 ahead of the election so it could try to present a story they can provide reliable electricity. But it was too late as South Africans knew how bad it was until the recent run up to the election. Bloomberg said "*the ruling ANC has been successful in keeping the lights on for more than 50 days* " But then Bloomberg reminded of how bad it has been saying "*just last year the power utility company, Eskom, could only keep the lights on for the equivalent of 82 days. but with an election on the horizon, South Africans have been enjoying a rare streak of uninterrupted electricity supply*." It looks like South Africa has been a major supporter for moving to renewable energy but the brutal electricity supply in 2023 led to divisions within the ANC on needed fossil fuels to keep the lights on. Unfortunately, for the ANC, it was too late. One of the big question marks for the new South African government will be how the fix the electricity reliability problem.

Figure 54: South Africa spending on diesel



Source: Bloomberg

Electricity ended ANC's 30 years of majority government

It seems hard to believe it was only in the early 1990s that South Africa moved to end apartheid and that was the election of the Nelson Mandela African National Congress party in 1994 that was the closing of the apartheid era. Mandela was president of the ANC from 1991 to 1997 and led the ANC to that historic first 1994 election. And the ANC party has won a majority in every subsequent election until this week's election, when the fell to just over 40% and right in line with the pre-election polls. As a result, the ANC is either going to form a formal coalition government (ie. with ministers from other parties) or govern with a minority in parliament. As of our 7am MT news cut off, there is no formal indication which way the ANC will proceed.

Capital Markets: Fed's Kashkari says can't rule out a rate hiks

Kashkari can't rule out a rate hike

Minnesota Federal Reserve President Neel Kashkari deserves the credit for the move up in rates this week. When we get up we normally start with a quick flash thru the tapes of the CNBC and Bloomberg Europe shows and we couldn't miss Kashkari's comments to CNBC that looked like it would move rates higher when Kashkari said ie would not rule out a rate hike. Early Tuesday morning, we tweeted [LINK] "*FED's Kashkari on CNBC 👇 CNBC "can you rule out a rate hike?" Kashkari "No. I don't think anybody should, I don't think we should rule anything out at this point…." Kashkari "I'm not seeing the need to hurry and do rate cuts. I think we should take our time and get it right" #OOTT."* Our tweet included a [LINK] to the CNBC report including the video of Kashkari's comments.

Capital Markets: Nestle, world's been waiting for decades for GLP-1 innovation

GLP-1 drugs are here to stay

Nestle CEO bullish view on GLP-1 drugs is because "*"It's a major innovation in weight loss & something that I think the world has been waiting for a number of decades now".* On Thursday morning, we were watching CNBC Europe and saw their interview with Nestle CEO Mark Schneider. He pretty clear on how Nestle, one of the world's major food companies, sees GLP-1 drugs – Schneider sees them as here to stay and only going to keep growing. And this means that Nestle is focusing on developing companion food products to go along with those taking GLP-1 drugs. We tweeted [LINK] "*GLP-1 drugs here to stay! "It's a major innovation in weight loss & something that I think the world has been waiting for a number of decades now" Nestle CEO to @Silvia_Amaro. So adding "Companion Products" ie. "higher protein intake to avoid the loss of lean muscle mass".* Our tweet includes a clip of Schneider's comments on GLP-1 drugs.

Capital Markets: Will companies follow Harvard's say less on social/political issues?

Harvard's say less policy

We spoke to a number of our friends on the new Harvard approach. Most had not seen it but, after discussing, expect that their companies will at least discuss how they should adjust their approach on social and political issues. Interestingly there also comments on how or if they concept should apply to corporate donations to organizations. On Tuesday, Harvard posted its new "*When should Harvard speak out? Institutional Voice Working Group provides a roadmap in new report."* [LINK] It's basically a guideline on a say less approach on social and political issues and who can speak on behalf of Harvard. The fundamental question for the working group was "*Our charge was to answer the question: When, if at all, should the University make official statements about global events, and why/why not? We leaned into the why/why not. When the University speaks on an event or issue, why? What makes speaking about that event appropriate? Recognizing that not speaking about an event or issue is itself a speech act that will be "heard," a compelling reason needs to be given for that too. We aimed to produce a guiding document that sets out the principles underlying the decision whether or not to issue a formal statement*." There was a key statement "*Our expertise lies in our scholarship. As an institution, Harvard doesn't add to the truth by announcing a single official position on what is true in science or politics or whatever. In fact, it undermines our mission if the University makes official declarations about matters outside its core function*." Our Supplemental Documents package includes the Harvard release.

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

@Energy_Tidbits on Twitter

Last week, I went over 11,000 followers on Twitter/X. I really appreciate the support and, more importantly, some excellent insights and items to look at from Twitter followers. It helps me do a better job. For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [LINK]. We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

LinkedIn: Look for quick energy items from me on LinkedIn

Look for energy items on LinkedIn

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

Misc Facts and Figures.

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

Cdn golf fans will be watching Mackenzie Hughes in the Cdn Open today

It was great to watch the RBC Canadian Open 3rd round yesterday as we got to see most of Mackenzie Hughes shots as he was in the top 5 all day, and is T2 at -10 along with Ben Griffiths and Ryan Fox and they are four shots off the leader Robert MacIntyre at -14. Four shots is a lot but just after the turn in the 3rd round, Fox was at -14 and MacIntyre was at -10. So things can change. The crowd was hugely

behind him especially as Hughes is from Dundas, Ontario, which is the adjoining town to Hamilton, Ontario where the Canadian Open is being held. So this is basically his home town. The other big significance of a win is that it would be the second year in a row that a Canadian wins the Canadian Open after Nick Taylor broke the drought since the last time a Canadian won in 1954.

US Women's Open Golf was tough on world's top 10 golfers

We also saw a bit of the 3rd round of the US Women's Open yesterday. The final round of the US Women's Open golf tournament is today and a couple of things jump out from the leaderboard. What got the most attention was #1 Nelly Korda getting a 10 on the signature hole 61-yard Par 3 12th hole at the Lancaster Golf Club. But the amazing part was how 6 of the world's top 10 golfers missed the cut and were +9 or more, and a 7th withdrew after the first round. The 6 who missed the cut and their rankings coming into the open were #1 Nelly Korda, #3 Lydia Ko, #4 Maja Stark, #5 Canada's Brooke Henderson, #8 Patty Tavatanakit, and #9 Rose Zhang. #7 Sei Young Kim withdrew after an even par 70 in the 1st round. The only top 10 golfers to make the cut were #2 Hanna Green and #6 Ayaka Furue. The other part that stands out on the leaderboard is there is only one American in the group including T11 going into the final round 12, with Andrea Lee at T1. The others include four from Japan, three from South Korea, two from Thailand, one from Australia, and one from China.

Big TV tonight as an Edmonton Oilers win gets them to the Stanley Cup Final

The other big sports TV will be tonight when an Oilers win will get them to the Stanle Cup final. Oilers are up 3-2 over the Stars and would love to wrap up the series tonight in Edmonton and not have to back to Dalls for a Game 7. The last time the Oilers were in the finals was in 2005-06 when they lost in a Game 7 to the Carolina Hurricanes. Prior to that, the last time the Oilers were in the finals was when they won the Stanley Cup in 1989-90, the year after the Gretzky trade. The 1989-90 Oilers team had all the same stars of the Gretzky-led cup teams such as Mark Messier, Grant Fuhr, Jari Kurri, Glenn Anderson, Grant Lowe, etc.

Paralytic shellfish poisoning shuts harvesting along Oregon/Washington coast

Big news for shellfish lovers along the west coast as Oregon shut shellfish harvesting along its coast and Washington along much of its coast on Wednesday due to an outbreak of paralytic shellfish poisoning that has hit about 20 people this week. KAU2 ABC reported [LINK] "*This comes after the Oregon Health Authority announced that at least 21 people were sickened by Paralytic Shellfish Poisoning (PSP), a natural marine biotoxin, after eating mussels recreationally harvested on the coast since May 25. The ODFW says more recent mussel samples taken from the coast continue to exceed the limit for PSP. Signs of illness usually appear 30 to 60 minutes after a person eats toxic shellfish. Symptoms include numbness and tingling of the face, lips, tongue, arms, and legs. Patients also might have diarrhea and vomiting, headache, and nausea. Severe cases are associated with poor muscle control, clumsiness or slurred speech, difficulty swallowing, loose or floppy limbs, mental status changes, and respiratory failure.*" We checked last night and did not see any such closures offshore British Columbia.