

Energy Tidbits

April 28, 2024

Produced by: Dan Tsubouchi

EU Waiting to See if any Damage to Ukraine Natural Gas Infrastructure from Multiple Russia “Hits” Yesterday

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. Ukraine's Naftogaz confirmed multiple Russian hits yesterday on its natural gas infrastructure, no details on any damage but says not affecting provision of services. [\[LINK\]](#)
2. Helmerich & Payne is the leading Permian rig operator but can only hope for added Permian rigs as “we don't really have any additional information than you or anybody else does.” [\[LINK\]](#)
3. IEA says its Global EVs Outlook 2024 is not a prediction (forecast), but its scenario calls for more EVs sold and more oil displaced by EVs than in GEVO 2023. [\[LINK\]](#)
4. Oil supply risk: Baker Hughes says 70% of the world's production comes from mature assets i.e. a well that's produced 50% of its reserves or has been in production for over 25 years. [\[LINK\]](#)
5. Vortexa estimates crude oil floating storage down 32.67 in last 2 wks to 60.64 mmb Apr 26. Incl Asia -23.16 mmb. [\[LINK\]](#)
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

Dan Tsubouchi
Chief Market Strategist
dtsubouchi@safgroup.ca

Ryan Dunfield
CEO
rdunfield@safgroup.ca

Aaron Bunting
COO, CFO
abunting@safgroup.ca

Ian Charles
Managing Director
icharles@safgroup.ca

Ryan Haughn
Managing Director
rhaughn@safgroup.ca

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Natural Gas: Warning for risk US natural gas storage gets filled early

US natural gas storage season has just started but we warn it is pointing to full storage being hit early unless there are some big changes to the storage outlook. The latest EIA Form 914 is for January data and it shows Jan 2024 only +1.4 bcf/d YoY but the caveat is that Jan 2024 oil and natural gas production was hit by extreme weather events. Europe gas storage is looking to be full early so may have some push back on US LNG cargoes in the fall. And Jul/Aug/Sept was the 3rd hottest summer in the last 129 years. 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 patch but when we see natural gas storage this much higher YoY, we think it is at least time to get people focused on the risk for an early fill to US natural gas storage. And if this path continues over the next couple months, we should see analysts reflecting in their natural gas price forecasts, more producers shutting-in supply and low Q3 prices. As noted below, US natural gas storage is now +439 bcf YoY.

US natural gas storage to be filled early?

Natural Gas: +92 bcf build in US gas storage; now +439 bcf YoY

For the week of April 19, the EIA reported a +92 bcf build. Total storage is now 2.425 tcf, representing a surplus of +439 bcf YoY compared to a surplus of +424 bcf last week. For this week, and the past few, total storage is above the top end of the 5-yr range. Total storage is +655 bcf above the 5-year average, slightly lower than last week's 622 bcf surplus. Below is the EIA's storage table from its Weekly Natural Gas Storage report [\[LINK\]](#).

+92 bcf build in US gas storage

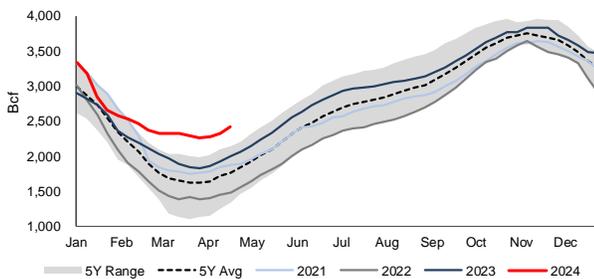
Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	04/19/24	04/12/24	net change	implied flow	Year ago (04/19/23)		5-year average (2019-23)	
					Bcf	% change	Bcf	% change
East	408	379	29	29	382	6.8	319	27.9
Midwest	551	528	23	23	463	19.0	391	40.9
Mountain	173	167	6	6	88	96.6	93	86.0
Pacific	235	230	5	5	88	167.0	164	43.3
South Central	1,057	1,029	28	28	965	9.5	803	31.6
Salt	309	300	9	9	272	13.6	249	24.1
Nonsalt	749	729	20	20	692	8.2	553	35.4
Total	2,425	2,333	92	92	1,986	22.1	1,770	37.0

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

Source: EIA

Figure 2: US Natural Gas Storage



Source: EIA

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Natural Gas: Mexico’s natural gas production still stuck <5 bcf/d, flat MoM, down YoY

On Friday, Pemex posted its natural gas production data for March. [LINK](#) Pemex does not provide any commentary on the data but reported March 2024 natural gas production of 4.768 bcf/d, which was -5.3% YoY and basically flat MoM. The big picture story for Mexico natural gas is, at least for now, still unchanged – for the past six years, Mexico natural gas production has been stuck right around 5 bcf/d, and that means any increased domestic natural gas consumption has been met by US natural gas imports. Below is our ongoing table of Pemex reported monthly natural gas production.

Mexico natural gas still below 5 bcf/d

Figure 3: Mexico Natural Gas Production

Natural Gas Production bcf/d	2017	2018	2019	2020	2021	2022	22/21	2023	2024	24/23
Jan	5.326	4.910	4.648	5.005	4.848	4.713	-2.8%	4.955	4.780	-3.5%
Feb	5.299	4.853	4.869	4.942	4.854	4.646	-4.3%	4.979	4.777	-4.1%
Mar	5.383	4.646	4.857	4.946	4.839	4.766	-1.5%	5.035	4.768	-5.3%
Apr	5.334	4.869	4.816	4.827	4.671	4.740	1.5%	5.095		
May	5.299	4.827	4.841	4.460	4.730	4.702	-0.6%	5.034		
June	5.253	4.840	4.843	4.754	4.727	4.744	0.4%	5.035		
July	5.216	4.856	4.892	4.902	4.725	4.815	1.9%	4.936		
Aug	5.035	4.898	4.939	4.920	4.656	4.796	3.0%	4.947		
Sept	4.302	4.913	5.017	4.926	4.746	4.798	1.1%	4.969		
Oct	4.759	4.895	4.971	4.928	4.718	4.795	1.6%	4.950		
Nov	4.803	4.776	5.015	4.769	4.751	4.845	2.0%	4.888		
Dec	4.811	4.881	5.024	4.846	4.697	4.845	3.2%	4.786		

Source: Pemex, SAF

Natural Gas: Baker Hughes Energy Transition complexities = “This is the age of gas”

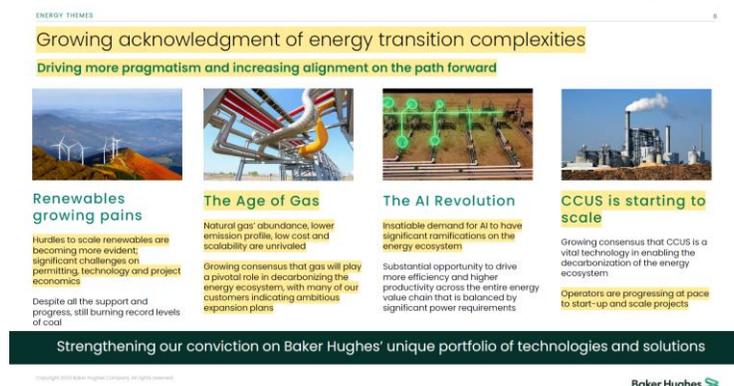
For the past several years, we have highlighted our view that the energy transition will be take way longer, cost way more and be a very bumpy/rocky road and there were two key winners: oil would be needed for way longer and natural gas demand would be huge to provide 24/7 reliable affordable and available power generation especially with a ramp up in solar and wind. Natural gas is a big winner in the energy transition. Yesterday, we tweeted [LINK](#) “Energy Transition not working as planned = Increasing need for #NatGas. This is the age of natural gas! says \$BKR CEO Simonelli. The world needs reliable, affordable, 24/7 available #NatGas power especially with emerging data center/AI growth. See 📌 Apr 24 tweet. #OOTT.” Baker Hughes CEO Simonelli hammered home this theme in the Q1 call. He highlighted how the growing acknowledgement that the energy transition was complex was leading to the age of natural gas. Baker Hughes held its Q1 call on Wednesday and one of the key macro themes highlighted by mgmt in their prepared remarks was the future of natural gas. On Wednesday, we tweeted [LINK](#) “This is the age of gas” \$BKR CEO. “mounting consensus that there is no possible route to decarbonize the energy system without driving greater efficiency and significantly increasing gases weighting within the overall energy mix” Energy providers need #NatGas! #OOTT.” Baker Hughes CEO Simonelli said “I wanted to take a moment to reflect on some of the emerging themes within the energy sector. It has been a busy quarter with several industry events including our own Annual Meeting in Florence, where we hosted over 2,000 customers, partners and industry leaders in January. Firstly, it is becoming clearer just how complex the undertaking is to transition the world’s energy ecosystem. This complexity is driving a slower than expected expansion of renewable energy capacity and leading to record levels of coal demand. Consequently, we are seeing more pragmatism towards a pathway for decarbonization. With growing urgency

The Age of Natural Gas

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to affect this trend, there is mounting consensus that there is no possible route to decarbonize the energy system without driving greater efficiency and significantly increasing gases weighting within the overall energy mix. Energy providers face the multifaceted challenge of providing secure, sustainable and affordable energy against the backdrop of increasing energy demand. Gas is abundant, lower emission, low-cost and the speed to scale is unrivaled. This is the age of gas.”

Figure 4: Energy Transition complexities = this is the age of Natural gas



Source: Baker Hughes

Baker Hughes “All” global oil companies are increasing natural gas focus

One of the themes that we are seeing in the major oilfield and drilling service companies is their highlighting the increasing natural gas focus, especially in Saudi Arabia. In the Q1 call, Baker Hughes CEO Simonelli highlighted this trend with an emphasis that “all” of their customers are increasing their natural gas focus. Simonelli said *‘Whether it be the super majors, the NOCs or the independent companies, all of our customers are messaging that they plan to increase their exposure to gas in the coming years. Baker Hughes is extremely well-positioned to facilitate this through our upstream capabilities.’*

Natural Gas: TotalEnergies and Oman LNG sign LT LNG agreement for 0.11bcf/d

The big rush in long-term LNG deals was from July 1, 2021 through June 30, 2022 that locked up almost all the available LNG supply that was available prior to 2026. There was a slow down but there was a pickup again over the last year and a half or so as buyers moved to lock up very long term LNG supply for the late 2020s and some continuing even out past 2050. Plus, there was a push from global LNG suppliers to lock up other long-term LNG supply to add to their supply portfolio to be able to use to supply to their customers. This week, there was one new long-term LNG deal. (i) On Monday, TotalEnergies announced they signed a 10-year LNG Sales and Purchase (SPA) agreement with Oman LNG [\[LINK\]](#), whereby TotalEnergies will purchase 0.11 bcf/d from Oman LNG beginning in 2025 to supply gas to its global network. This SPA is part of a larger LNG project, Marsa LNG, which is supposed to be the first LNG bunkering hub in the middle east, ran completely on electricity supplied by solar power. The CEO of TotalEnergies, Patrick Pouyanne, said *“This very innovative project illustrates our pioneer spirit and showcases the relevance of our integrated*

Another long-term LNG deal

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multi-energy strategy, with the ambition of being a responsible player in the energy transition. By paving the way for the next generation of very low emission LNG plants, Marsa LNG is contributing to making gas a long-term transition energy". Our supplemental documents package contains the TotalEnergies press release.

There have been 21.93 bcf/d of long-term LNG supply deals since July 1, 2021

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 21.93 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 53% 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.

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Figure 5: Long-Term LNG Buyer Deals Since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021								Long-Term LNG Buyer Deals Since July 1, 2021								
Date	Buyer	Seller	Country	Volume	Duration	Start	End	Date	Buyer	Seller	Country	Volume	Duration	Start	End	
			Buyer / Seller	(bcf/d)	Years						Buyer / Seller	(bcf/d)	Years			
Asian LNG Deals								Non-Asian LNG Deals								
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032	Jul 28, 2021	PGNIG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043	
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037	Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041	
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034	Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044	
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045	Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043	
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037	Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043	
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032	May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041	
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035	May 17, 2022	PGNIG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.	
Nov 4, 2021	Unipecc	Venture Global LNG	China / US	0.46	20.0	2023	2043	May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.	
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043	Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041	
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040	Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046	
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043	Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047	
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034	Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.	
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037	Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042	
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037	Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046	
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033	Jul 13, 2022	Vitol	Delifin Midstream	US / US	0.07	15.0	n.a.	n.a.	
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043	Aug 9, 2022	Centrica	Delifin Midstream	UK / US	0.13	15.0	2026	2041	
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032	Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046	
Jan 11, 2022	ENN	Novatek	China / Russia	0.09	11.0	2024	2035	Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042	
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039	Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.	
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053	Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.	
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046	Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035	
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046	Jan 25, 2023	PKK ORLEN	Sempra Infrastructure	EU/US	0.13	20.0	2027	2047	
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.	Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035	
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026	Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046	
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043	Apr 24, 2023	Hartree Partners LP	Delifin Midstream	US / US	0.08	20.0	n.a.	n.a.	
May 2, 2022	Guor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046	Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042	
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Energy Transfer LNG	0.18	18.0	2026	2042	Jun 22, 2023	SEFE	Venture Global LNG	EU/US	0.30	20.0	2026	2046	
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.	Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036	
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.	Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040	
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039	Jul 28, 2023	OMV	BP	Austria/UK	0.13	10.0	2026	2036	
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036	Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045	
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051	Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043	
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047	Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035	
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050	Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053	
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046	Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qata	0.46	27.0	2026	2053	
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046	Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053	
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046	Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043	
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053	Nov 29, 2023	OMV	Cheniere	Netherlands / US	0.11	15.0	2029	2044	
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.	Dec 5, 2023	Woodside Energy	Mexico Pacific Ltd	Australia / Mexico	0.17	20.0	2024	2044	
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035	Mar 18, 2024	SEFE	ADNOC	Germany / UAE	0.13	20.0	2024	2044	
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.15	n.a.	n.a.	n.a.	Apr 17, 2024	Shell	Oman LNG	US / Oman	0.21	10.0	2025	2035	
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Mexico / Mexico	0.26	20.0	n.a.	n.a.	Apr 22, 2024	TotalEnergies	Oman LNG	France / Oman	0.11	10.0	2025	2035	
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.	Total Non-Asian LNG Buyers New Long Term Contracts Since Jul21								
Mar 6, 2023	Guor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042	8.18								
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.	Total New Long Term LNG Contracts since Jul21								
May 16, 2023	KOSPO	Cheniere	Korea / US	0.05	19.0	2027	2046	21.93								
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh / Qatar	0.24	15.0	2026	2031	*Excludes Asian short term/spot deals								
Jun 21, 2023	Petro Bangle	Oman	Bangladesh / Oman	0.20	10.0	2026	2036	*On Dec. 20, 2023 CNOOC agreed to buy an additional 0.13 bcf/d from Venture Global for an undisclosed shorter period								
Jun 21, 2023	CNPC	QatarEnergy	China / Qatar	0.53	27.0	2027	2054	Source: Bloomberg, Company Reports								
Jun 26, 2023	ENN LNG	Cheniere	Singapore / US	0.24	20.0	2026	2046	Prepared by SAF Group - https://safgroup.com/news-insights/								
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	Guor Singapore Pte	Delifin 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	Despak Fertilisers	Equinor	India / Norway	0.09	10.5	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									
Total Asian LNG Buyers New Long Term Contracts Since Jul21				13.75												

Source: SAF

Natural Gas: Baker Hughes sees less LNG FIDs in 2024-2026 but same capacity in 2030

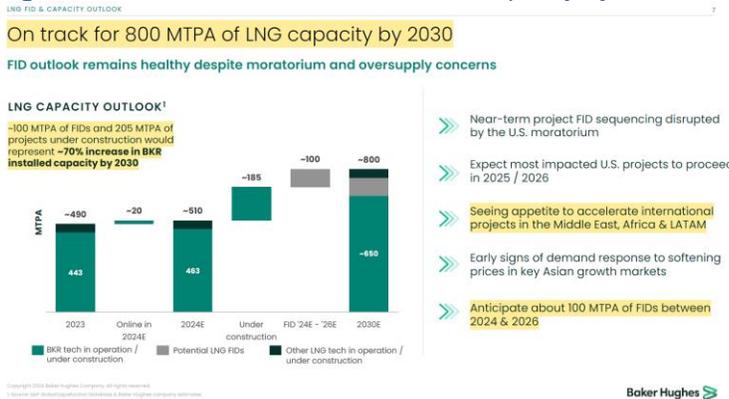
Baker Hughes is the dominant services company for LNG supply projects and we expect is either involved with or aware of every LNG export project. We compared their Q1 call comments on their LNG outlook to their comments on the Q4 call and they lowered their estimates for LNG FIDs in 2024-2026 but did not change their forecast for LNG capacity in 2030. On Wednesday, we tweeted [\[LINK\]](#) “Less #LNG FIDs 24-26 in today's Baker Hughes Q1 call. Q1: 120 MTPA FIDs 24-26. Q4: ~160 MTPA FIDs 24-26. No change to ~800 MTPA installed capacity by 2030. #NatGas #OOTT.” The Q1 expects 120 MTPA of new LNG FIDs in 2024-2026 and they don't say a potential higher level. The below Q1 slide shows 20 MTPA online in 2024E and then “anticipate about 100 MTPA of FIDS between 2024 & 2026”. So its 120 MTPA and not an indication that could be more. Q4 says “For 2024 specifically, we expect LNG FIDs of around 65 MTPA. However, it is important to note this includes a

Baker Hughes LNG outlook

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couple of major LNG orders that were booked during 2023. As we look out to 2025 and 2026, we could see between 30 to 60 MTPA of FIDs annually, bringing total potential LNG FIDs to 125 MTPA and 185 MTPA through 2026". There was no change to expectation for installed LNG capacity of 800 MTPA by 2030. The Q1 also includes a look to 2040 "Looking out to 2040, we expect LNG demand growth to continue, requiring further capacity additions beyond 800 MTPA."

Figure 6: On track for 800 MTPA of LNG capacity by 2030



Source: Baker Hughes

Natural Gas: JMA forecasts above average temperatures for May/June/July in Japan

On Thursday, the Japan Meteorological Agency posted its seasonal temperature outlook for May/June/July for Japan. We tweeted [LINK](#) "JMA forecasts hot start (May/June/July) to summer for Japan. Won't necessarily move up #NatGas #LNG price but a cool start to summer would keep JKM prices low. May/June/July 2023 was also above average temps. #OOTT." There is no JMA commentary on the forecast but it is calling for well above average temperatures to start the summer. It looks to be in line or slightly hotter than May/June/July 2023 that was above average temps. A warm start to summer may not move natural gas/LNG prices up too much but it's better than seeing a cool start to summer to hit prices. Below is the JMA temperature forecast for May/June/July.

JMA temperature forecast for May/June/July

Figure 7: JMA Average Temperature Outlook for May/June/July



Source: Japan Meteorological Agency

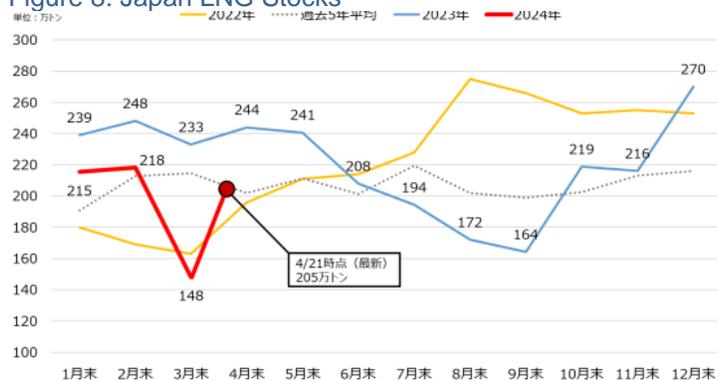
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Natural Gas: Japan LNG stocks up big WoW, still down YoY

Japan's LNG stocks are below 2023 levels and well below the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [\[LINK\]](#). LNG stocks on April 21 were 98.5 bcf, up +27% WoW from Apr 14 of 76.8 bcf, but are down -16% YoY from 117.2 bcf a year earlier. Stocks are now slightly above the 5-year average for the end of April of 97.0 bcf. The build was helped by Japan shutting in some natural gas generation two weeks ago to conserve natural gas use and drain on LNG stocks, combined with pleasant temperatures. Prior to that, part of the reason for the drain on LNG stocks was that there were some unplanned coal plant outages in Feb/Mar. METI did not comment on the WoW decrease. Below is the Japanese LNG stocks graph from the METI weekly report.

Japan LNG stocks up WoW

Figure 8: Japan LNG Stocks



Source: METI

Japan's JERA suspended production at 4 natural gas plants to save LNG

The low LNG stocks in March led to shutting in some natural gas power generation to conserve LNG stocks. Here is what we wrote in our Mar 31, 2024 Energy Tidbits memo. *“The low LNG stocks noted above have led to an immediate reaction in Japan – JERA is temporarily halting natural gas power generation at four natural gas plants to save drawing on its dwindling LNG stocks. On Friday, Reuters reported “Japan’s biggest power generator JERA said it has suspended production at four of its gas-fired power stations and curtailed output at another plant from to secure sufficient LNG inventory. The move comes as a recent drop in temperatures in the Tokyo area boosted power demand while stormy weather caused delays in the arrival of LNG cargoes, causing a drop in LNG stock levels, a JERA spokesperson said. Operations were temporarily suspended at power plants in Futtsu, Yokohama, Kawasaki and Chiba, all near Tokyo, and curtailed at Higashi-Ohghishima.”*

Natural Gas: Russia had multiple hits on Ukraine gas infrastructure yesterday

The biggest challenge in following events in Ukraine is to wait to not just use tweets/posts from unknown accounts who comment on events like yesterday's Russia attack on Ukraine natural gas infrastructure. As of our 7am MT news cut off, we could not find recognized reports of exactly where and how many gas infrastructure areas were hit in west or central Ukraine. However, there were confirmed multiple hits and no disclosure of damages. Earlier

Russia hits Ukraine gas infrastructure

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this morning, we tweeted [LINK](#) "ICYMI. Naftogaz confirms multiple Russia "hits" on Ukraine #NatGas infrastructure at undisclosed locations with undisclosed damage. However, Naftogaz says no one injured and "attack will not affect the provision of services to Ukrainian consumers and the Group's customers". "Our employees and involved services are dealing with the aftermath of the hits." #OOTT." Our tweet included Naftogaz's Saturday Telegram post that said "This morning, the enemy once again attacked the gas infrastructure facilities of the Naftogaz Group. Fortunately, no one was injured. The attack will not affect the provision of services to Ukrainian consumers and the Group's customers. Our employees and involved services are dealing with the aftermath of the hits." As of our 7am MT news cut off, we have not been able to find out any specifics. There should be able to have some information today before Europe TTF gas prices open up tomorrow.

Ukraine storage is currently 12.28% of total Europe gas storage volume

The reason why natural gas markets reacted to the Russian bombing of the Ukraine natural gas storage was that Ukraine's natural gas storage is an important part of Europe natural gas storage. We broke out the Ukraine storage data from the below Europe data we monitor weekly from the GIE AGSI website [LINK](#), and we found that on April 26th natural gas in Ukraine storage was at 12.28% of total capacity, up from 12.13% on April 18th and started the winter on Nov 1, 2023 at 39.38%. Right now, Ukraine makes up ~5% of Europe's natural gas in storage and, at the beginning of the winter, it was ~10% of Europe's natural gas in storage. So not an unnoticeable portion at risk of being destroyed if the Russians target their facilities well. We don't know how deep down are the Ukraine storage caverns so are unable to assess the potential for underground natural gas in storage to be blown up. But, as seen this week, Russia bombs can damage or destroy above ground infrastructure for the natural gas storage operations. Below is a map of Ukraine's major gas storage facilities.

Fig 9: Ukraine Gas Storage Facilities as of July 2023



Source: Bruegel

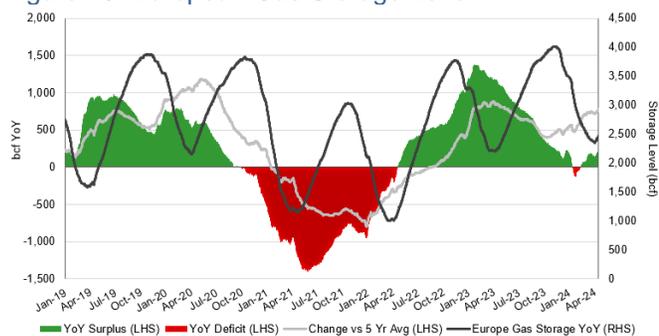
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Natural Gas: Europe storage draws WoW to 61.60%, YoY surplus narrows

This week, Europe storage decreased by 43bps WoW to 61.60% on Apr 25 vs 62.03% on April 18. Storage is now +310 bps higher than last year's levels of 58.50% on Apr 18, 2023, and up hugely vs the 5-year average of 43.64%. Even though the YoY surplus is modest, up until the recent Russia bombing of Ukraine natural gas storage facility, there weren't fears for natural gas and LNG supply over the summer months. 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 Europe Gas Storage Level.

Europe gas storage

Figure 10: European Gas Storage Level



Source: Bloomberg, SAF

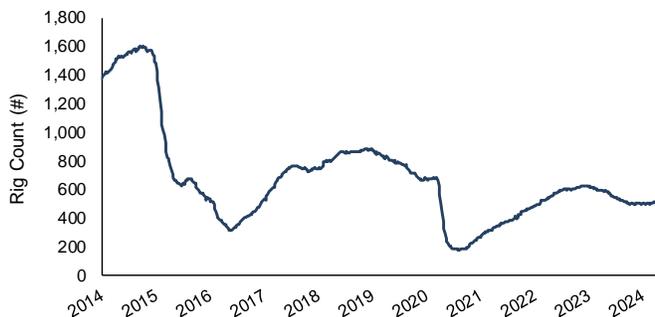
Oil: US oil rigs down -5 WoW to 506 rigs, US gas rigs down -1 WoW to 105 rigs

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note, after we 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 rig type. (ii) Total US oil rigs were down -6 rigs WoW to 506 oil rigs as of April 26. 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 DJ Niobrara -1 rig WoW to 10 total rigs, Granite Wash -1 rig WoW to 5 total rigs, Marcellus -1 rig WoW to 29 total rigs, and Permian -1 rig WoW to 317 total rigs. We noted that Louisiana lost 4 rigs this week, which we think 3 were from the Gulf of Mexico since Offshore rigs were -3 rigs WoW to 17 total. (iv) US gas rigs were down -1 rig this week to 105 gas rigs.

US oil rigs up WoW

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Figure 11: Baker Hughes Total US Oil Rigs



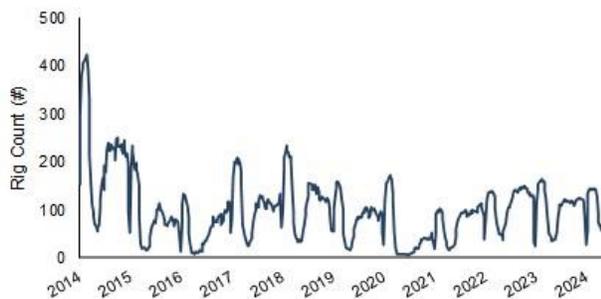
Source: Baker Hughes, SAF

Oil: Total Cdn rigs down -9 WoW after a modest up week

As happens every year in Canada, the rig count drops dramatically from early March thru normally the end of April/beginning of May as winter drilling season ends and the industry moves into spring break up. This is the period when it warms up and road access becomes limited/restricted in many parts of Western Canada. The last several weeks have seen total Cdn rigs decline drop from 231 at the beginning of March to 118 this week. The trough in rig counts should be the upcoming week or two, but note the earliest trough in the past 7 years was April 30th, and usually it bottoms out in the 1st or 2nd week of May. Cdn oil rigs were down -4 rigs WoW to 56 oil rigs and are up +20 rigs YoY. Gas rigs are down -5 rigs WoW and +5 YoY. Baker Hughes did not update their old format report, so we weren't able to see the provincial breakouts.

Cdn total rigs down WoW

Figure 12: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

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Oil: Precision sees increasing Cdn rigs in 2024 with TMX and LNG Canada

All of the US drilling companies are warning that US rigs are likely flat or possibly down in 2024. That is not the case in Canada thanks the starting up of Trans Mountain’s 590,000 b/d TMX expansion and LNG Canada 1.8 bcf/d Phase 1. Precision Drilling reported Q1 on Thursday and we tweeted [\[LINK\]](#) “Precision Drilling Q1. Startup of #TMX #LNGCanada drive additional Cdn drilling. More yr-round Montney pads = more Cdn rigs drilling thru spring break up. US rigs being hurt by weak #NatGas prices, also pending M&A transactions causes pull back in rigs. #OOTT.” Precision wrote “In Canada, the imminent start-up of the Trans Mountain pipeline expansion, followed by LNG Canada, will provide significant tidewater access for both Canadian crude and natural gas, supporting additional Canadian drilling activity.”

TMX & LNG Canada to drive cdn rigs higher

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

It’s worth noting that the EIA has benchmarking has led to a revision downward in weekly oil estimates instead of what have been upward revisions. Here’s what the EIA wrote on their website earlier this month: “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”. Earlier this month, the EIA released its Apr STEO and they’d revised down Q1/24 production estimates to 12.84 mmb/d from 12.91 mmb/d in March’s STEO, so this message is consistent. The latest Form 914 (with January actuals) was -0.416 mmb/d lower than the weekly estimates of 12.533 mmb/d. This week, the EIA’s production estimates were flat WoW at 13.100 mmb/d for the week ended Apr 19. Alaska was up +0.006 mmb/d WoW to 0.437 mmb/d. Below is a table of the EIA’s weekly oil production estimates.

US oil production flat WoW

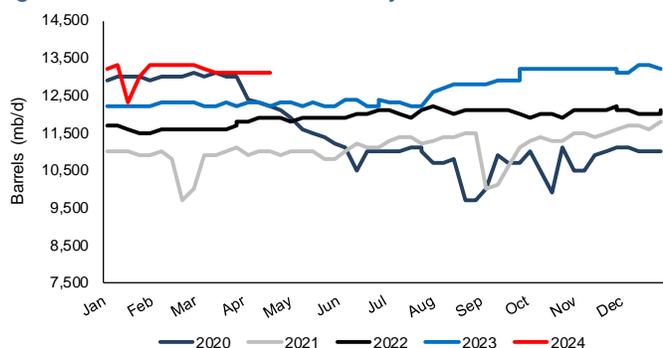
Figure 13: EIA’s Estimated Weekly US Field Oil Production (mb/d)

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value								
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				

Source: EIA

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Figure 14: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

Oil: Helmerich & Payne doesn't have any info if Permian rigs will be added in H2/24

The number one question for US oil growth is how much activity will be taking place in the Permian. And it seems like, at least from the drilling point of view, that there isn't any visibility yet that the major Permian players will be ramping up their drilling activity. That is the clear view of the major rig operator in the Permian. Helmerich & Payne reported and held its Q2 F2024 call on Thursday. We are highlighting the HP comments on the Permian as they are the largest rig operator in the Permian so should have the best rig operator feedback from the major Permian oil players. On Thursday, we tweeted [\[LINK\]](#) "Why expect lower Permian #Oil growth in 2024! "at this stage it's just a hope because we don't really have any additional information than you or anybody else does" \$HP, the largest Permian rig operator on if they expect more Permian rigs added back in H2/24. #OOTT." In the Q&A, mgmt was asked "do you see any hope of any pickup in activity in the Permian for H2 and perhaps for next year?" Mgmt gave no confidence to expect any increase in Permian rigs in H2/24 even given oil prices are high. Mgmt replied "Good morning Waqar. Well, we're always hopeful. And I did mention that the longer term outlook, the fundamentals are strong. Obviously oil prices are strong. You know the activity set that we're experiencing, this correction and activity as you know, is a function of natural gas, not oil. And so I do think the Permian has a lot of potential. Obviously we're the, you know, we're the largest driller, have the most rigs running in the Permian. And quite frankly I think the rig count we have today is essentially the same as it was when we had close to 170 -180 rigs running. So we've done very, very well in terms of maintaining, you know our market share actually growing it a little bit in that basin. So I think the outlook is good. The big question, as we all say, is well when is that? When is that that opportunity to add back units. And you know, again, our hope is we'll start to see some improvement in the back half of this year. But again, at this stage it's just a hope because we don't really have any additional information than you or anybody else does."

Will Permian rigs increase in H2?

Oil: Halliburton sees lower frac activity in Lower 48 in 2024

The reason we highlighted Helmerich & Payne's view on Permian rigs is that they are the leading drilling operator in the Permian. Halliburton is the leading frac operator in the Lower 48 so we think their perspective is significant. Halliburton reported on Tuesday and we tweeted [\[LINK\]](#) "Frac leader Halliburton CEO on Q1 call today. "We expect our North-America business to deliver flattish revenues and margins year-on year despite lower activity levels."

Lower US frac activity in 2024

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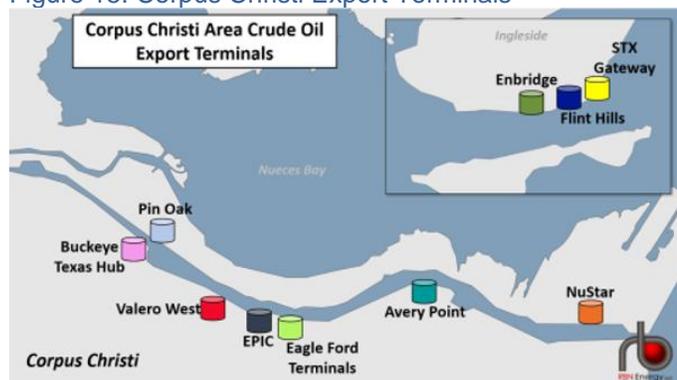
#OOTT.” Halliburton’s customers are the big oil companies so, at least for now, they are seeing lower YoY frac activity levels in 2024.

Oil: RBN – Enbridge Expands Corpus Christi Assets To Bolster Crude Exports

On Monday, RBN’s Daily Blog [\[LINK\]](#) was titled “*This Must Be The Place – Enbridge Expands Corpus Christi Assets To Bolster Crude Exports*”. We thought it tied in nicely with our commentary last week as it shows how investment from midstream companies in their export capacity will create a strong interest to secure takeaway rights or expand pipeline infrastructure coming out of the Permian. RBN wrote “*Enbridge’s deal with FHR enables it to protect EIEC’s position as the #1 crude export terminal. For \$200 million, Enbridge gets FHR’s two Ingleside docks and more than 500 acres of land adjacent to EIEC, while FHR will retain its storage tanks. The docks will augment Enbridge’s crude export capacity immediately, although the gains may be relatively modest, at least for now. FHR’s outbound capacity is less than a quarter of what Enbridge has reported as EIEC’s monthly average capacity of 1.6 MMb/d (though the terminal has loaded in excess of 2 MMb/d in a single day), but we understand there are plans to upgrade both FHR docks to be able to fully load Suezmaxes once the deal concludes*”. RBN mentioned the 120 mb/d planned expansion to Enbridge’s existing 900 mb/d Gray Oak pipeline that pumps crude from the Permian. We wouldn’t be surprised if neighbouring midstream companies with terminals on the USGC follows that lead and expands their asset capacity. Enbridge will still have lots of other sources to fill shipments at their newly expanded Corpus Christi terminal as their infrastructure spans from the WCSB to the Eastern US, and they are reportedly looking at using their land to produce blue ammonia and store NGLs. Our Supplemental Documents package includes the RBN article. Below is a map of Corpus Christi’s major export terminals and players.

**Enbridge
expanding
USGC terminal**

Figure 15: Corpus Christi Export Terminals



Source: RBN, Bloomberg

Oil: US SPR less commercial reserve deficit narrows, now -87.948 mmb

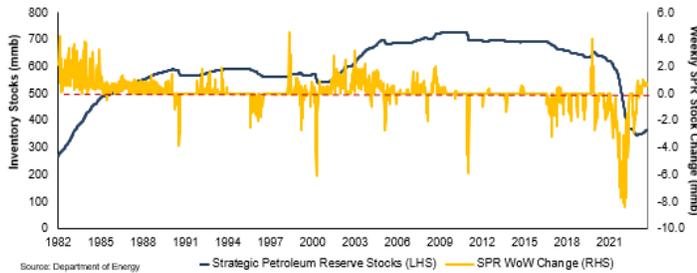
The US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sep 16, 2022 week. Again this week, we saw a build on the SPR side, but the commercial side saw a big draw. The EIA’s weekly oil data for Apr 19 [\[LINK\]](#) saw the SPR

US SPR reserves

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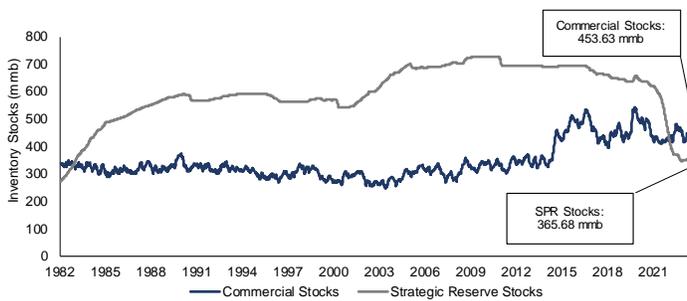
reserves increase +0.793 mmb WoW to 365.677 mmb, while commercial crude oil reserves decreased -6.368 mmb to 453.625 mmb. There is now a -87.948 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles, along with the weekly changes to SPR stockpiles.

Figure 16: Strategic Petroleum Reserve Stocks and SPR WoW Change



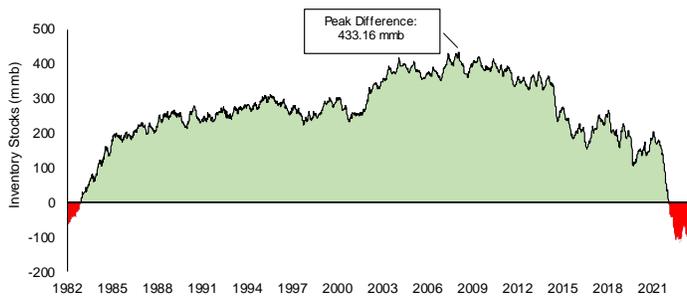
Source: EIA

Figure 17: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 18: US Oil Inventories: SPR Less Commercial



Source: EIA

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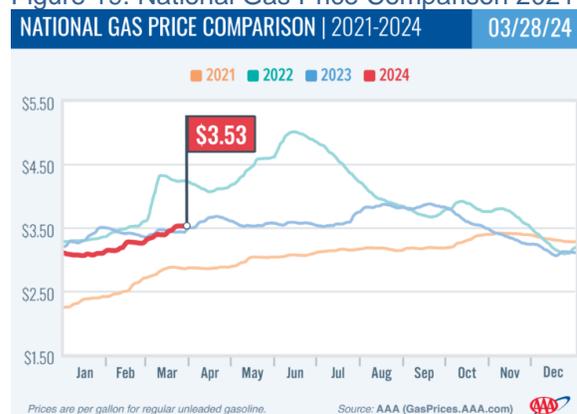
Oil: US national average gasolines prices -\$0.02 WoW to \$3.66

Yesterday, we tweeted [LINK](#) "US gasoline prices down \$0.02 WoW to \$3.66. Now +\$0.12 MoM and \$0.02 YoY. California -\$0.04 WoW, +\$0.39 MoM to \$5.40. Reminder US gas prices normally seasonally increase into June. Biden doesn't want \$4 gas in election year. Thx @AAAnews #OOTT." Yesterday, AAA reported that US national average prices were \$3.66, which was -\$0.02 WoW, up \$0.12 MoM and up \$0.02 YoY. As of yesterday, the California average gasoline prices were down \$0.04 WoW to \$5.40, which is a \$1.74 premium to the national average gasoline price of \$3.66. California gas prices are +\$0.39 MoM and +\$0.52 YoY.

US gasoline prices**AAA "Don't get April fooled by wobbling gas prices"**

US gasoline prices have been creeping higher and we remind we are still early in the normal season for increasing US gasoline prices. AAA reminded this last week. Here is what we wrote in our March 31, 2024 Energy Tidbits memo. "On Thursday, AAA reminded that US gasoline prices are currently moving up and down but that they are expected to go higher. They posted a blog "Don't get April fooled by wobbling gas prices." [LINK](#). AAA wrote "After an early spring surge, the national average for a gallon of gas spent the past week drifting up and down by a fraction of a cent before settling a penny higher at \$3.53. But the break may be temporary, as gas pump prices will likely resume a spring increase." Our Supplemental Documents package includes the AAA blog.

Figure 19: National Gas Price Comparison 2021-2024 (as of 03/28/24)



Source: AAA

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

Normally US gasoline prices increase in the run up to the start of the big driving season – Memorial Day weekend. On Mar 28, we tweeted [LINK](#) "Gasoline 101. See 📌 Mar 9 tweets. ~Mar 1 is when US gas prices start normal seasonal ramp up in driving post winter into the summer. Plus @NACSONline reminds switch to more summer blend fuels costs as much as \$0.15 more to produce. Gas +\$0.15 since Mar 9. #OOTT."

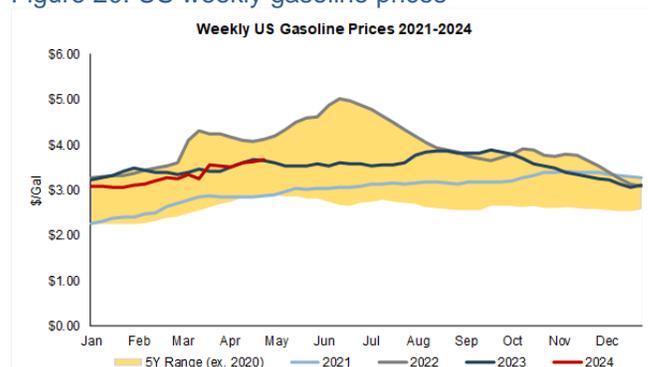
Seasonal increase in US gasoline prices

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Around Mar 1 is when gasoline prices normally start to ramp up

Here is what we wrote in our Mar 17, 2024 Energy Tidbits memo on the normal seasonal increase in US gasoline prices. “Yesterday, we tweeted [\[LINK\]](#) “Reminder March is normally when US #Gasoline prices start to seasonally ramp up. Like air travel, Presidents' Day marks start of increasing driving thru Labor Day. Plus May 1 is when the switch to more expensive summer blend gasolines to minimize evaporation. #OOTT.” Gasoline prices are impacted by more than seasonal trends, in particular, refinery outages as seen in the recent gasoline price increases from the unplanned outage of BP Whiting. However, there are seasonal reasons why US gasoline prices normally increase from March thru at least Memorial Day. Key reason is that this is the normal seasonal pickup in driving. It's like the Delta Airlines CEO said last month, the recent Presidents Day weekend marks the start of their increase travel that goes right thru Labor Day. The second reason is that the switch to summer blend gasoline blend starts on May 1. Summer blend gasoline is more expensive to make and is higher quality to minimize emissions that evaporate into the air. Hot temperatures lead to more evaporation. And so California Gov Newsom allowed an early switch to winter blend to lower the price of gasoline and it worked. NACS (see following item) estimates summer blend gasoline can cost up to 15 cents per gallon to cost to produce.” Below is our updated US weekly gasoline price graph as of the Friday close.

Figure 20: US weekly gasoline prices



Source: EIA

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

Here is what we wrote in our Mar 10, 2024 Energy Tidbits memo on the reminder on why summer blend gasoline costs more than winter blend gasoline – it costs more to make. Here is what we wrote last week. “Yesterday, we tweeted [\[LINK\]](#) “Summer blend #Gasoline is more expensive as production process takes longer & overall yield of gasoline per barrel of oil is lower. 02/28/24, 📌 @NACSONline “these complexities add as much as 15 cents per gallon to the cost to produce these higher-grade fuels.” #OOTT.” Our tweet included the NACS (Association for Convenience & Fuel Retailing, originally founded as National Association of Convenience Stores) Feb 28, 2024 “Seasonal Gas Prices Explained. From refinery maintenance to consumer demand, seasonal fuel production affects gasolines prices at the

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dispenser.” [LINK](#). NACS led off “Traditionally, gasoline prices are at their lowest during the first week of February and then begin to climb, often peaking right before Memorial Day. Seasonal increases in demand plus a transition to unique fuel blends put pressure on gas prices each spring.” And they highlighted how the switch to summer blend can add 15 cents a gallon to cost. NACS wrote “Summer-blend fuel is also more expensive to make than winter-blend fuel. First, the production process takes longer and, second, the overall yield of gasoline per barrel of oil is lower. These complexities add as much as 15 cents per gallon to the cost to produce these higher-grade fuels.” Our Supplemental Documents package includes the NACS report.”

Oil: Crack spreads widened \$0.66 WoW to \$28.96

On Friday, we tweeted [LINK](#) “May not drive up #Oil prices but 321 crack spreads still positive support for WTI. 321 crack spreads widened \$0.66 WoW to \$28.96. Crack spread \$28.96 still provides big margin for refiners and incentive to buying crude to maximize runs. #OOTT #Oil Thx @business.” The message for the past few months is unchanged - crack spreads continue to be at high levels and certainly high enough to incentivize refineries to run as much crude as possible. Crack spreads closed at \$28.96 on Apr 26, which was a widening of \$0.66 WoW from \$28.30 on Apr 19. We always say crack spreads around \$30 are still a big incentive for refiners to maximize runs. Apr 26 crack spreads of \$28.96 are still a big incentive for refineries to maximize run and make big margins. So crack spreads are a good indicator if refiners will be looking to buy more or less oil. And \$28.96 crack spreads are still strong and close to \$30 so a big incentive to refiners to want more crude and produce more product. This week, crack spreads widened \$0.66 WoW to \$28.96 on Apr 26, which followed \$28.30 on Apr 19, \$30.39 on Apr 12, \$29.45 on Apr 5, \$29.73 on Mar 29, \$32.20 on Mar 22, \$33.00 on Mar 15, \$29.61 on Mar 8, \$31.11 on Mar 1, \$30.61 on Feb 23, and \$25.23 on Feb 16. Crack spreads at \$28.96 are well above the high end of the more normal pre-Covid that was more like \$15-\$20, which is why we believe refineries continue to be incentivized to take more oil. And if refiners are incentivized to take more oil, it should provide positive near-term support for WTI.

**Crack spreads
closed at \$28.96**

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 \$28.96 as of the Friday April 26, 2024 close.

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Figure 21: Cushing Oil 321 Crack Spread & WTI Apr 26, 2014 to Apr 26, 2024



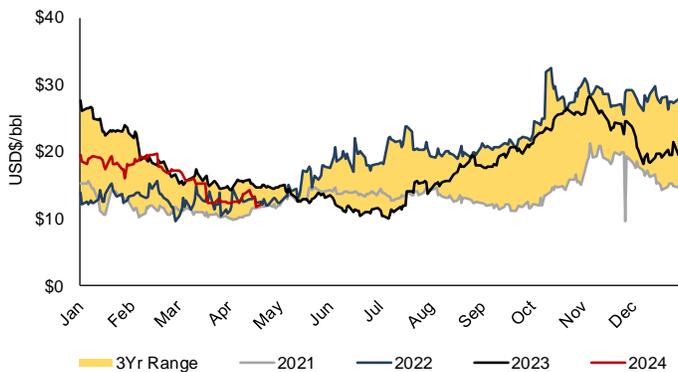
Source: Bloomberg

Oil: Cdn heavy oil differentials widens \$0.40 WoW to close at \$12.50 on Apr 26

Early in the year, every year, we start to remind that that Cdn WCS less WTI differentials normally narrow in late Feb thru May as US refiners maximize production of asphalt for annual paving season. Refineries have, for the most part, finished planned winter turnarounds and are moving to maximize production of summer grade fuels as well as asphalt ahead of the annual summer driving and paving season. As is said in Canada, there are two seasons in Canada – winter and paving season. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials from Feb thru May. The seasonal narrowing is in motion. The WCS less WTI differential closed on Apr 26 at \$12.50, which was a widening of \$0.40 WoW vs \$12.10/b on Apr 19. These are both well below the Feb peak of \$19.75. And remember we should be seeing more of the impact on WCS less WTI differentials with the estimated May 1 start of commercial operations at TMX.

WCS differentials widens

Figure 22: WCS less WTI oil differentials to April 26 close



Source: Bloomberg

Source: Bloomberg

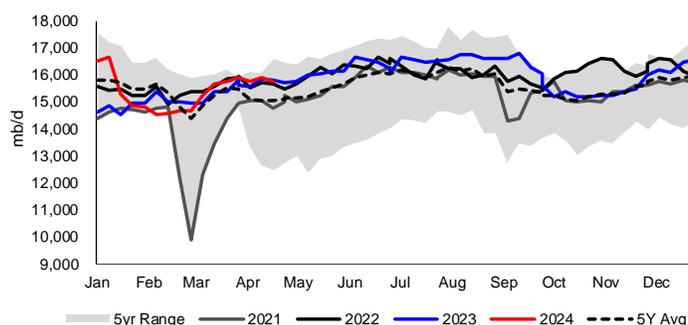
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Oil: Refinery Inputs down -0.042 mmb/d WoW to 15.871 mmb/d

There are always unplanned refinery items that impact crude oil inputs into refineries. And there are always different timing for refinery turnarounds. And our Apr 7, 2024 Energy Tidbits memo highlighted Exxon's 250,000 b/d Joliet refinery going down for ~50 days turnaround. But, as a general rule, this is the normal seasonal ramp up in refinery runs following winter maintenance. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended April 19 [\[LINK\]](#). The EIA reported crude inputs to refineries were down -0.042 mmb/d this week to 15.871 mmb/d and are up +0.038 mmb/d YoY. Refinery utilization was up +40 bps WoW to 88.5%, which is -280 bps YoY.

**Refinery inputs
-0.042 mmb/d WoW**

Figure 23: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports -0.417 mmb/d WoW as oil exports up +0.453 mmb/d WoW

The EIA reported US "NET" imports were down -1.991 mmb/d to 1.735 mmb/d for the April 19 week. US imports were up +0.036 mmb/d to 6.497 mmb/d against exports which were up 0.453 mmb/d WoW to 5.179 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 >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. (ii) Top 10 was up +0.716 mmb/d. Some items to note on the country data: (i) Canada was down -0.035 mmb/d to 3.423 mmb/d. (ii) Saudi Arabia was up +0.169 mmb/d to 0.398 mmb/d. (iii) Mexico was up +0.143 mmb/d to 0.351 mmb/d, but still well below 2023 and early 2024 levels. (iv) Colombia was down -0.031 mmb/d to 0.215 mmb/d. (v) Iraq was up +0.001 mmb/d to 0.309 mmb/d. (vi) Ecuador was up +0.124 mmb/d to 0.124 mmb/d. (vii) Nigeria was down -0.037 mmb/d to 0.136 mmb/d.

**US net oil
imports**

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Figure 24: US Weekly Preliminary Imports by Major Country

	Feb 23/24	Mar 1/24	Mar 8/24	Mar 15/24	Mar 22/24	Mar 29/24	Apr 5/24	Apr 12/24	Apr 19/24	WoW
Canada	3,766	3,632	3,458	3,735	3,652	3,874	3,546	3,458	3,423	-35
Saudi Arabia	139	366	265	254	338	321	531	229	398	169
Venezuela	0	0	0	0	0	0	0	0	0	0
Mexico	569	640	303	353	525	263	209	208	351	143
Colombia	71	351	0	289	143	316	114	246	215	-31
Iraq	240	176	93	252	244	91	142	308	309	1
Ecuador	0	218	102	147	9	146	231	0	124	124
Nigeria	165	222	132	57	215	136	43	173	136	-37
Brazil	234	178	272	114	230	147	257	189	492	303
Libya	65	0	66	0	88	117	24	21	100	79
Top 10	5,249	5,783	4,691	5,201	5,444	5,411	5,097	4,832	5,548	716
Others	1,136	1,439	800	1,077	1,258	1,207	1,337	1,629	949	-680
Total US	6,385	7,222	5,491	6,278	6,702	6,618	6,434	6,461	6,497	36

Source: EIA, SAF

Oil: Mexico oil production including partner volumes hits new low 1.537 mmb/d

On Friday, Pemex posted its March 2024 oil production data [\[LINK\]](#). Pemex does not provide any commentary on the data, but reported March oil production, including partners, was 1.537 mmb/d, which was -6.1% YoY and basically flat MoM from 1.538 mmb/d in February.

Note that Pemex changed its reporting format for March by separating out condensate volumes so, for March, we used condensate volumes for Jan/Feb as a guide. We expect that any variances to actual oil would be immaterial. The big picture story remains the same - Mexico (Pemex) oil production is stuck around 1.6 mmb/d for the last three years. Pemex has been unable to grow Mexico oil production, which means that any increase in Pemex Mexico refineries crude oil input will result in less Mexico oil for export including to the US Gulf Coast. And it also means that if Mexico has refinery issues in a month, there will be more Mexico oil for export in a month. Below is our table tracking Pemex oil production.

Pemex March oil production

Figure 25: Pemex (Incl Partners) Mexico Oil Production

Oil Production (thousand b/d)	2016	2017	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	2,259	2,020	1,909	1,623	1,724	1,651	1,649	1,628	1,545	-5.1%
Feb	2,214	2,016	1,876	1,701	1,729	1,669	1,619	1,619	1,538	-5.0%
Mar	2,217	2,018	1,846	1,691	1,745	1,697	1,620	1,636	1,537	-6.1%
Apr	2,177	2,012	1,868	1,675	1,703	1,693	1,586	1,656		
May	2,174	2,020	1,850	1,663	1,633	1,688	1,588	1,661		
June	2,178	2,008	1,828	1,671	1,605	1,698	1,570	1,610		
July	2,157	1,986	1,823	1,671	1,595	1,701	1,583	1,550		
Aug	2,144	1,930	1,798	1,683	1,632	1,657	1,604	1,552		
Sept	2,113	1,730	1,808	1,705	1,643	1,709	1,594	1,581		
Oct	2,103	1,902	1,747	1,655	1,627	1,692	1,592	1,560		
Nov	2,072	1,867	1,697	1,696	1,633	1,691	1,582	1,558		
Dec	2,035	1,873	1,710	1,706	1,650	1,694	1,561	1,545		

Source: Pemex, SAF

Oil: Mexico exports down to 0.687 mmb/d of oil in March, -26.9% MoM

We are seeing what we have said for months – the startup, albeit slow of the new 340,000 b/d Olmeca (also known as Dos Bocas) and some modest improvements in existing refinery processing was going to hit Mexican oil exports, especially those barrels normally bound for USGC refiners. On Monday, Pemex posted its oil exports for March [\[LINK\]](#). Pemex does not provide any commentary on the data but reported March oil exports were 0.940 mmb/d, which is -26.9% MoM and -29.2% YoY vs 0.971 mmb/d in March 2023. We don't know exactly when Mexico oil exports were this low, but we suspect it has to be at least over 40

Pemex March oil exports

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years. Don't forget prior to the start of decline at the super giant Cantarell oil field, Mexico oil production was 3.8 mmb/d in 2004. Exports to the US were down -34.2% MoM and -36.8% YoY. The simple reminder is more oil processed at refineries = less oil available for export. In theory, this should help narrow the WTI-WCS differential as now the US refiners will need to replace this Mexican oil with other medium sour such as Cdn crude. Below is our table of the Pemex oil export data.

Figure 26: Pemex Mexico Oil Exports

Oil Exports (thousand b/d)	2016	2017	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	1,119	1,085	1,107	1,071	1,260	979	832	980	951	-3.0%
Feb	1,241	1,217	1,451	1,475	1,093	1,006	925	949	940	-0.9%
Mar	1,062	1,001	1,176	1,150	1,144	925	905	971	687	-29.2%
Apr	1,081	1,017	1,266	1,023	1,179	923	1,024	989		
May	1,204	958	1,222	1,205	1,062	1,031	965	1,087		
June	1,098	1,157	1,110	995	1,114	1,106	1,029	1,203		
July	1,146	1,255	1,156	1,079	1,051	1,173	1,062	1,052		
Aug	1,261	1,114	1,181	1,082	1,190	1,099	915	1,076		
Sept	1,425	1,159	1,206	995	1,023	983	1,022	1,119		
Oct	1,312	1,342	1,027	963	908	935	971	1,053		
Nov	1,273	1,388	1,135	1,114	1,171	1,025	893	883		
Dec	1,115	1,401	1,198	1,115	1,243	1,037	900	1,027		

Source: Pemex, SAF

Reality setting in, Pemex (Mexico) to cut exports by >330,000 b/d in May

Here is what we wrote in our Apr 21, 2024 Energy Tidbits memo on Mexico's declining oil exports. *"The reality of Pemex (Mexico) cutting oil exports in Q2 seems to be finally setting in with markets. It's been a long time coming and we have been warning of this day for years as it impacts US and Cdn crude oil because less Pemex oil exports means less Mexico oil into the Gulf Coast refineries, which should only help Cdn oil differentials. (i) 04/01/24, Pemex cancelled some export contracts. Last week's (Apr 7, 2024) Energy Tidbits memo highlighted our Apr 1, 2024 tweet) [LINK](#) "Less MEX #Oil to PADD 3 = Positive to Cdn oil. Pemex canceled some export contracts, incl to PADD 3, as 340 kbp Olmeca refinery ramps up. @lkassai. Plus Q2 start of 590 kbd Trans Mountain TMX expansion will move Cdn oil to Asia. Biden needs 🇺🇸 155 kbd VEN oil to Padd 3. #OOTT." (ii) Pemex to cut >330,000 b/d of oil exports in May. This week, we saw the followup on how many barrels are being cut from exports. On Monday, Reuters reported [LINK](#) "Mexico's state energy company, Pemex, is planning to cut at least 330,000 barrels per day (bpd) of crude exports in May, leaving customers in the United States, Europe and Asia with a third less supply, two sources said. The plan follows the withdrawal of 436,000 bpd of Maya, Isthmus and Olmeca crudes this month, ordered by Pemex to its trading arm PMI Comercio Internacional because it needs to supply more to its domestic refineries as it targets energy self-sufficiency." There was no indication of the Reuters report on the specific cuts by region ie. how much was being cut from the Gulf Coast refineries. But Apr 1, 2024 tweet included a Bloomberg report that also said "Petroleos Mexicanos, also called Pemex, canceled contracts to supply its flagship Maya crude oil to refiners in the US, Europe and Asia, according to people with knowledge of the situation, who asked not to be named because the information is private. " And "US refiners are likely to bear the brunt of the cut in Maya exports. Fuelmakers including Valero Energy Corp, Chevron Corp and Marathon Petroleum Corp import 420,000 barrels of the heavy sour variety per day. In 2023, Maya exports reached 612,000*

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barrels a day.” (iii) Our Supplemental Documents package includes the Bloomberg Apr 1 report and Reuters Apr 8 report.”

Oil: Aker BP says giant Norway Johan Sverdrup oil field declines end 2024/early 2025

This isn't new because Aker BP said it on Feb 8 but, on its Q1 call on Thursday, Aker BP once again said Norway's giant oil field, Johan Sverdrup, is expected to go into decline in late 2024 or early 2025. We tweeted [\[LINK\]](#) “Norway #Oil production on track to peak in 2025! Aker BP Q1 call, confirmed view giant Johan Sverdrup oil field production should peak end of 24/beginning of 25. See 📌 03/11/24 tweet Norway govt forecast for production to peak in 2025. #OOTT.” Johan Sverdrup has been the reason why Norway went from oil decline to oil growth and now Johan Sverdrup is about to go into decline. Aker BP is a partner in Johan Sverdrup. Our tweet included excerpts of the Q&A from the Q1 call. Mgmt replied “Well, as I think I've stated previously, I think particularly in this quarter, the results that we're seeing from Johan Sverdrup is in line with both our estimates and our guidance. And the water increase is basically in line with what we're expecting. And as you correctly pointed out, there will be several new wells coming in in addition to the existing 31 producers that are already draining the field. That will slow down the water cut increase. My expectation is that we will go off plateau; and by plateau, I -- in this case, it's not really a plateau departure, it's more the fact that we are leaving the 130,000 cubic meters of oil production and then going down to a little bit lower level that would probably happen towards the back end of this year, beginning of next.” Mgmt is saying Johan Sverdrup will start to decline in the next 6-9 months, which is huge given Aker BP previously estimated it was producing 755,000 bbl/d in Dec 2023. Mgmt would not say how much it will decline.

**Joan Sverdrup
about to go into
decline**

03/12/24: Norway forecasts hitting peak oil production in 2025, then to decline

Norway oil production is primarily about Johan Sverdrup so no one should be surprised that Norway recently came out to say it expects its oil production to peak in 2025 given that the Johan Sverdrup partners see the field starting to decline in late 2024/early 2025. We are just surprised it took six weeks for Norway to come out and say Norway's oil production was going to start to decline. Here is what we wrote in our March 17, 2024 Energy Tidbits memo. “No one should be surprised to see Norway forecast that Norway will hit peak oil production in 2025 and then begin to decline. That conclusion was obvious on Feb 8 when Aker BP, a partner in the giant Johan Sverdrup oilfield, told investors that Johan Sverdrup was going to reach peak production level around year-end 2024 and then begin to decline. Our thesis on Norway oil production has been that we expect Norway oil production to peak around end of 2024 or early 2025 based on the recent Aker BP comments that Norway's giant Johan Sverdrup oil field will start to decline in late 2024, which we believe would likely lead to Norway hitting peak oil production and then begin to decline. It looks like that these is supported by Norway's energy agency (the Norwegian Offshore Directorate) blog on Monday. On Tuesday we tweeted [\[LINK\]](#) “ICYMI. Norway forecasts it will hit peak #Oil production in 2025 & then decline therefrom. Jan 2024 was 1.8 mmb/d. See 📌 Feb 8 tweet. Giant oil field Johan Sverdrup to hit peak & begin decline ~yr-end 2024. Start of decline in giant oilfield = decline in oil for Norway. #OOTT.” On Monday, we tweeted [\[LINK\]](#) “Norway #Oil production peak in 2025 and in decline says @sokkeldir. Makes sense, see 📌 Feb 8 tweet. massive Johan Sverdrup oil field led to a return to Norway oil growth. But it starts to decline in

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late 2024/early 2025. Positive for #Oil post 2024. #OOTT.” Norway’s Mar 11 blog was “High price to pay for halting exploration for oil and gas” [LINK](#) Their blog was a big picture warning that Norway shouldn’t stop further exploration, production development activity as it will be a big hit to Norway. It’s worth a read as it sounds like the Norway Climate committee is saying they want to stop all new exploration but also production, installation and operation. So that means an ever earlier end of life for oil and gas production and facilities. I.e. no more tie-in of smaller satellite fields to an existing platform. But included in the blog is a sentence that fits our Feb thesis – Norway oil production will peak in 2025 and then start to decline. They write “Production is declining on its own. The Committee presumes that activity in the oil and gas industry on the Norwegian shelf is too high leading up to 2050, which means that measures must be implemented to cut production. On the other hand, the Norwegian Offshore Directorate expects activity in the industry to naturally decline following a production peak in 2025. The production decline towards 2050 is within what the Intergovernmental Panel on Climate Change and the IEA have projected is in line with successfully following up the Paris Agreement.” Norway is forecasting reaching peak oil production in 2025 and then beginning a decline therefrom. Our Supplemental Documents package includes the Norwegian Offshore Directorate blog.”

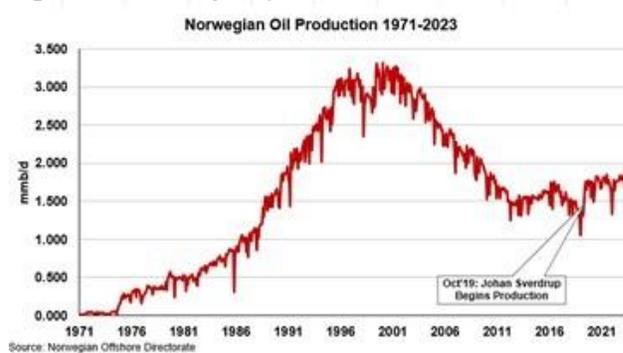
02/08/24: Aker BP first warned Johan Sverdrup field was moving to decline

As noted above, Aker BP provided the key disclosure on Feb 8 as to why oil watchers should be expecting Norway to reach peak oil production in 2025 and then begin to decline. Here is what we wrote in our Feb 11, 2024 Energy Tidbits memo on why Norway would be hitting peak oil production. “We have to believe Norway will be in a “show me” phase over the next 12 months. There was big news on Thursday, when Aker BP said Norway’s biggest oil field, the 755,000 b/d Johan Sverdrup, is moving from plateau to decline in late 2024 or early 2025. There was no disclosure of how much it will decline in 2025 or if the decline can be offset, but it will raise the question what does it mean to Norway’s oil production base. (i) On Thursday, we tweeted [LINK](#) “#Oil bulls will like this. Johan Sverdrup 0 to 0.75 mmbd led to Norway 1.31 mmbd in 09/19 to 1.85 mmbd today. BUT Aker BP says JS moving from plateau to decline in late 24/early 25. Water now hitting some wells. Can they arrest decline with H2O handling, more wells, etc? Are there other fields to offset? Or is Norway #Oil about to start to decline? #OOTT.” (ii) Our tweet included the below graphs that reminded Johan Sverdrup started production in Oct 2019 and is now 755,000 b/d. And Norway oil production was 1.31 mmb/d in Sept 2019 and is now 1.85 mmb/d in Dec 2023. Johan Sverdrup is currently 40% of total Norway oil production. (iii) There was a great Q&A exchange on the Aker BP Q4 call on Thursday that led to the CEO noting a few key points. Aker BP has 31.6% in Johan Sverdrup but is not the operator. Equinor is the operator. CEO noted that water is hitting some undisclosed number of wells. And everyone knows water in conventional oil wells is a negative. And the more water, the more water handling capacity is required. The CEO said there is sufficient water handling capacity, didn’t specify how much more longer that would be the case and that water handling capacity will impact some operations. The CEO noted that plateau is ending and declines should start in late 2024 or early 2025. This is earlier than expected. But he

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would not say what decline rate going forward and if their development options (adding more water handling, drilling more wells, etc) can offset or more than offset the start of declines. There is more in the Q&A and we recommend reading the excerpt. (iv) The key items to come out in 2024 is what will the declines look like at Johan Sverdrup in 2025, can they offset the declines at Johan Sverdrup and for how long, are there other Norway projects that can more than offset any declines at Johan Sverdrup. (v) Until these questions are answered, we have to take the Aker CEO comments at face value and that Johan Sverdrup plateau oil production is ending in late 2024/early 2025 and declines are about to start.”

Figure 27: Norway oil production



Source: Norwegian Offshore Directorate

Figure 28: Johan Sverdrup production plateau 755,000 b/d

Johan Sverdrup
A giant field with excellent reservoir properties

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

Daily oil production since start-up

Source: Aker BP Q4 Presentation Feb 8, 2024

Oil: Escalation? Post US aid deal, Ukraine attacks Russia refineries, Russia retaliates

No question the US aid deal signed into law by Biden on Wednesday was critically needed by Ukraine, the question is what will Ukraine do post the aid deal. It's still early, but one of the first indications was Ukraine resuming attacks on Russian oil refineries. Yesterday we tweeted [LINK](#) "Post US aid deal, Ukraine resumes attacks on Russia's oil refineries, hitting Slavyansk refinery. Russia retaliates, hits Burshtyn thermal power plant in western Ukraine. Can't help think about 🇺🇦 03/31 Must Read from @CroftHelima on risks from rising RUS/UKR attacks. #OOTT." (i) On Wednesday, Biden signed into law H.R. 815, the National Security Supplemental, which was the bill to provide aid to Ukraine. (ii) Yesterday morning,

Ukraine/Russia escalation?

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we tweeted [LINK](#) “Ukraine resumes attacks on Russia #Oil refineries. TASS confirms Slavyansk refinery was hit by multiple drones. TASS previously noted Slavyansk was 60,000 b/d. #OOTT.” TASS reported [LINK](#) “A refinery in Slavyansk-on-Kuban in Russia’s Krasnodar Region has partially suspended operations following a Ukrainian drone attack, integrated safety and security director at the Slavyansk ECO group of companies Eduard Trudnev told TASS. “Plant operations have been partially halted. Ten unmanned aerial vehicles flew directly into the plant, causing a big fire. There may be some hidden damage,” he said.” Slavyansk is located on the Black Sea. (iii) Then yesterday, TASS reported [LINK](#) Russia retaliated “Burshtyn thermal power plant in the Ivano-Frankovsk Region in western Ukraine, one of the country’s largest power facilities, was hit in Russia’s overnight strike, a spokesman for the pro-Russian underground resistance told TASS on Saturday. “Explosions in the Ivano-Frankovsk Region were registered in the town of Burshtyn. The town accommodates the Burshtyn thermal power plant. According to preliminary information, precisely the power plant was hit,” the spokesman said. Five missiles hit Dnepropetrovsk while a strong blow with the subsequent detonation was registered in Krivoi Rog. In the Lvov Region, most of the missiles hit the town of Stryi, he specified.” Below is the Platts March 18 map showing Slavyansk refinery.

Figure 29: Ukraine drones and Russian oil refineries map as of Mar 18, 2024



Source: Platts

04/09/24: US reminded Ukraine to not hit Russia refineries.

Here is what we wrote in our April 14, 2024 Energy Tidbits memo. “It’s been a few days of no apparent missile attacks on Russian refineries and we have to wonder if its due to the Biden Administration publicly making it clear they don’t want Ukraine to hit Russian refineries. Even in light of Russia hitting Ukraine’s natural gas storage this week. It may not have been said directly to Ukraine, but it might as well have been with Defense Secretary Austin’s public testimony on Tuesday before the

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Senate Armed Services Committee. Senator Cotto asks Austin "Let me move on to Ukraine. The Biden administration has discouraged Ukraine from launching refinery strikes against Russia. Well, why is the Biden administration discouraging Ukraine from undertaking some of the most effective tax -- attacks on Russia's war-making capabilities?" Austin replied "Certainly, the - those attacks could have a -- a knock-on effect for -- in terms of the -- the global energy situation and -- but quite frankly, I think Ukraine is better served in -- in going after tactical and operational targets that - that can directly influence the current fight, so." Cotton then says "So it sounds to me like the Biden administration doesn't want gas prices to go up in an election year, based on all the other actions they've taken to drive up gas prices further."

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

Our tweet yesterday linked to March 31 tweet on RBC Helima Croft comments on the increased geopolitical risks including the risk that Ukraine moves at some stage to target Russian oil/LNG export facilities. 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.

Will Ukraine go after Russian oil export

Oil: Russian refinery runs still not recovered from drone strikes, near May 2023 low

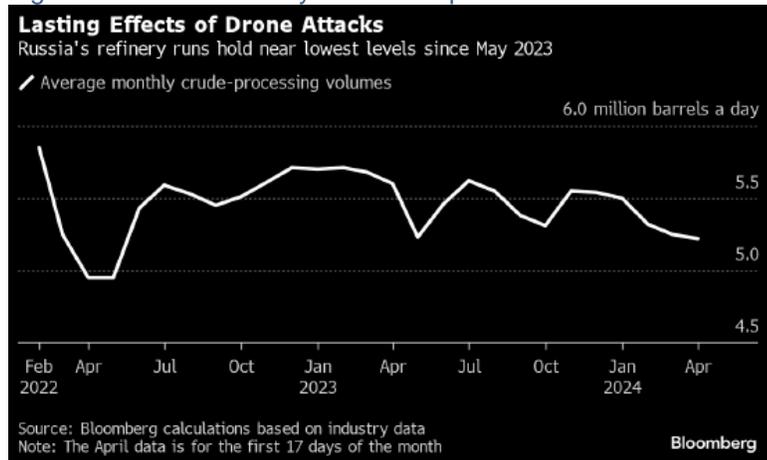
Ukraine drone attacks have had an impact on Russian refineries over the past two months but now the question is how much Russian refinery capacity is offline and for how long. Then there is another question on much of the crude oil that normally flows to these disrupted refineries can be moved to other refineries or to export terminals. Russia is doing all they can to move these oil volumes to export terminals as evidenced by the reports of increasing oil and products being moved by rail and the increasing Russia oil shipments noted in the following item. On Monday, Bloomberg reported "Russian weekly oil refining is near an 11-month low as flooding hampers operations and repairs to plants affected by drone attacks slow down. Russia processed 5.22 million barrels of crude a day April 11-17, according to a person with knowledge of industry data. That's about 10,000 barrels a day, or 0.2%, below the average of the prior seven days, Bloomberg calculations show". For the month of April so

Russia oil refinery runs

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far, refineries in Russia processed an average of 5.23 mmb/d, which are the lowest since May 2023. Runs at the refineries hit by drones averaged 1.23 mmb/d in the week to April 17 which works out to -280,000 b/d below their averages for Jan 1-24 (before the strikes). Recall the floods in in Russia’s Orenburg region that caused the Orsk refinery to halve runs to just 26,500 b/d last week; Orsk said that refinery is getting ready to restart opeartions. We have included a map of the flooding in the Orenburg Oblast. Our Supplemental documents package includes the Bloomberg report.

Figure 30: Russia refinery runs thru Apr 10 week



Source: Bloomberg

Figure 31: Orenburg Oblast Flood Region



Source: Kazakhstan emergencies ministry
Source: BBC, Kazakhstan emergencies ministry



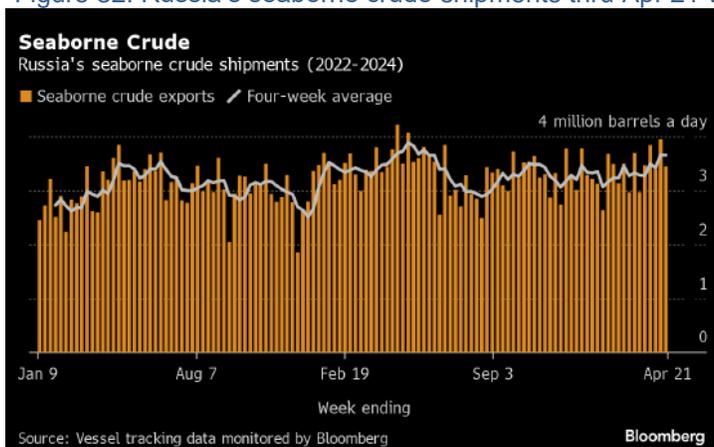
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Russia crude oil shipments

Oil: Russian crude exports drop from record high, while refiners remain crippled

We have been writing about 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, there are reports of Russia moving more crude and products via rail. As processing hit an 11-month low last week, the inverse happened to crude shipments. Bloomberg reported *“Russia’s seaborne crude exports maintained a multimonth high in the four weeks to April 21 as the country’s refineries struggled to recover from flooding and Ukrainian drone attacks. Oil processing is near the lowest since May last year after floods forced the Orsk refinery offline, while runs at plants damaged by military strikes continue to lag normal levels, encouraging diversion of crude supplies into exports. The April loading program at the key Baltic ports has been revised to the highest since May 2023”*. Although this week 1.35 mmb/d were loaded bound for China, we want to point out some comments we heard on Gulf Intelligence’s Tuesday podcast [\[LINK\]](#) made by Victor Yang (JLC Network Technology Snr Analyst) which noted the discount on Russian oil to Brent has evaporated recently, which removes the incentive for Chinese refiners to keep up the pace of imports. In short, we will keep an eye on the Chinese import figure when summarizing Russia’s seaborne crude exports. In the week to April 21, Russia exported 3.45 mmb/d of crude via tankers, down -500,000 b/d WoW and -15,000 b/d the April target. Remember that Russia will be shifting towards a production-based cut rather than export control for their OPEC+ commitments this quarter. Our Supplemental Documents package includes the Bloomberg report.

Figure 32: Russia’s seaborne crude shipments thru Apr 21 week



Source: Bloomberg

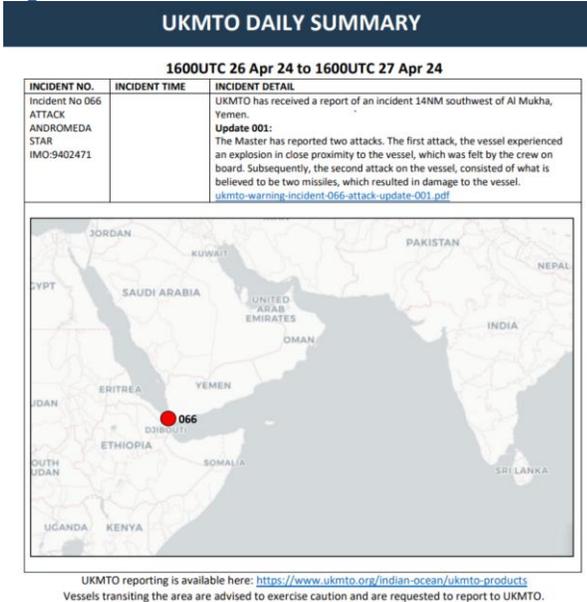
Oil: UKMTO confirms Houthis hit oil tanker Andromeda Star in Red Sea on Friday

Yesterday we tweeted [\[LINK\]](#) *“UKMTO confirms #oil tanker Andromeda Star hit by Houthi missiles in Red Sea. #OOTT.”* The UKMTO wrote *“The Master has reported two attacks. The first attack, the vessel experienced an explosion in close proximity to the vessel, which was felt by the crew on board. Subsequently, the second attack on the vessel, consisted of what is believed to be two missiles, which resulted in damage to the vessel.”*

Houthis hit oil tanker

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Figure 33: Houthis hit oil tanker Andromeda Star



Source: UKMTO

Oil: Houthis leader expanding attacks in India Ocean opposite the Gulf of Aden

The Houthis seemed to take a pause in their missile/drone attacks for a week or two but resumed this week. On Thursday, the Houthi Leader speech included what he said was the reason for lesser attacks – there were less US ships. Saba (Houthi news) wrote “He pointed out that the American naval presence had shrank, and many of its warships had disappeared and were scattered on the outskirts of the Red Sea. Sayyed Abdul-Malik stated that the movement of American ships that were passing through the Red Sea decreased by 80 percent.” The highlight of his Thursday speech was on the Indian Ocean. On Thursday, we tweeted [\[LINK\]](#) “Houthi leader “There is a continuous effort to expand and strengthen Yemeni military operations in its new theater, which it extended to in the Indian Ocean, opposite the Gulf of Aden” #OOTT.” Saba wrote “The revolution leader , Sayyed Abdul-Malik Badr al-Din al-Houthi, affirmed the endeavor to expand and strengthen Yemeni military operations in the Indian Ocean in a way that was not in the minds and calculations of the Americans, the British, the Israelis, and perhaps all countries of the world. Sayyed Abdulmalik Badr al-Din al-Houthi said in his speech today, Thursday, about the latest developments in Palestine and regional developments, “There is a continuous effort to expand and strengthen Yemeni military operations in its new theater, which it extended to in the Indian Ocean, opposite the Gulf of Aden, in a way that was never in the minds and calculations of the Americans, the British, and the Israelis and perhaps all countries of the world.” Our Supplemental Documents package includes the Saba report on the Houthi speech.

Houthis expanding Indian Ocean attacks

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Figure 34: Gulf of Aden, Arabian Sea and Indian Ocean



Source: Google Maps

03/15/24: Houthis leader warned on Indian Ocean & to Cape of Good Hope

The Houthis Leader first warned on their expanding attacks in the Indian Ocean on Mar 13. Here is what we wrote in our Mar 15, 2024 Energy Tidbits memo. *“If there is one thing that is clear from the US/UK attacks on the Houthis, it’s that the Houthis aren’t going away. Rather, they keep warning the US that they are expanding their attack areas. On Friday morning, we tweeted [\[LINK\]](#) “Houthis leader expanding missile/drone attack region from Red & Arabian Seas to “even across the Indian Ocean and from South Africa towards the Good Hope Road”. Also stepping up criticism of Arab regimes not stepping up to help Gaza. #OOTT.” The Houthis leaders made his normal Thursday night speech and the new disclosure this week was how he said the Houthis were expanding their targets t the Indian Ocaean and down to the Cape of Good Hope. Saba reported on the Houthis leader’s speech and wrote “He revealed the serious intention to continue expanding the scope of military operations to areas and locations that the enemy never expected. Al-Sayeed added, “We are moving, with Allah grace to prevent the crossing of ships linked to the Israeli enemy, even across the Indian Ocean and from South Africa towards the Good Hope Road.” Our Supplemental Documents package includes the Saba report.”*

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Oil: Still no visibility to restart Kurdistan oil exports post Iraq/Kurdistan meeting

On Tuesday, there was a high profile meeting between Kurdistan Region President Nechirvan Barzani and Iraqi President Abdul Latif Rashid in Baghdad. One of the many items discussed was the resumption of Kurdistan oil exports via Turkey. It looks like there was no specific progress and no visibility to when the Kurdistan oil exports might start. APIKUR is the oil industry association and their short release [\[LINK\]](#) “APIKUR statement on President Recep Tayyip Erdoğan’s visit to Iraq. APIKUR member companies are hopeful that the visit to Iraq by President of Türkiye Recep Tayyip Erdoğan will be a step towards a mutually beneficial resolution between the Governments of Türkiye, Iraq, the Kurdistan Region, and International Oil Companies to restore exports through the Iraq Türkiye pipeline (ITP). In the past week, the elected leaders of Iraq, Türkiye, Kurdistan Region, as well as the United States have spoken about the importance of reopening the ITP export route. For the benefit of all Iraqi people and our stakeholders, APIKUR member companies are ready to resume exports pending agreement to current fiscal terms and surety of past and future payments with the Government of Iraq and the Kurdistan Regional Government.

No visibility to restart Kurdistan oil

Oil: No production update from Libya NOC since Mar 21

As of our 7am MT news cut off, we still haven’t seen any oil production updates from the Libya National Oil Corporation since their Mar 21 update that oil production was 1.241 mmb/d. Other than the short protest that briefly shut in Sharara oil field in Q1/24, Libya’s oil production has been stable at ~1.2 mmb/d for the past several months. Our March 31, 2024 Energy Tidbits memo highlighted the suspension of then Libya Oil Minister Aoun for undisclosed reasons and the subsequent accusation of Libya NOC Chair Bengdara of conflict of interest. Our Apr 14, 2024 Energy Tidbits memo highlighted the appointment a new Libyan oil minister Khalifa Abdul Sadiq, who was previously Deputy Oil Minister. But we still haven’t seen any production update.

No Libya oil production update

Oil: China visitors to Hong Kong still nowhere near pre-Covid peak, but up MoM

On April 16, the Hong Kong Tourism Board released their March statistics for total arrivals and visitors from mainland China. We are looking specifically at visitors from mainland China to gauge how much appetite there is to travel and spend money from the Chinese consumer (and businessman). In December, there were 2.467 million mainland Chinese visitors to Hong Kong, which is down -24% MoM. Keep in mind February’s numbers were high due to Chinese new year travel. On a YoY basis, March’s figures are +25.4% higher than March 2023. There were 3.248 million visitors from mainland China in Feb, and 2.984 million in Jan. This is still nowhere near pre-Covid figures. The pre-Covid peak was 5.54 million in Jan 2019.

Chinese visitors to Hong Kong

Figure 35: Hong Kong Visitor Arrivals, 2018 – Feb 2024



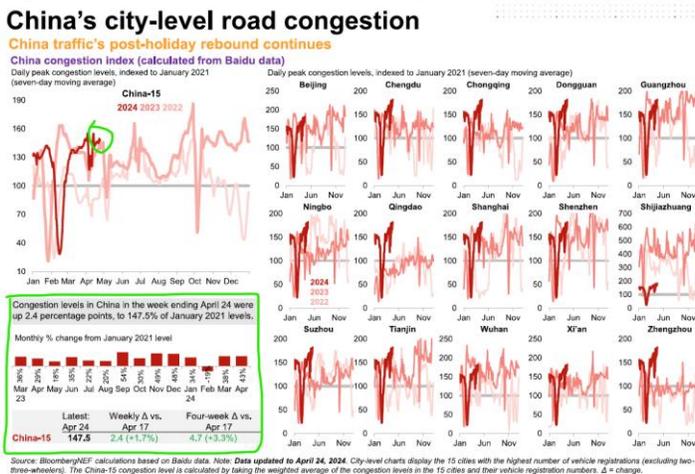
Source: Bloomberg, Hong Kong Tourism Board

Oil: Baidu China city-level road congestion gains against pre-holiday drop

It's only one indicator but it is positive to see the Baidu city-level road congestion continue to increase, save for last week where there was the national holiday with the annual tomb-sweeping festivities. More driving activity in cities is a good indicator. On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly Apr 25 report, which includes the Baidu city-level road congestion for the week ended Apr 24. This week saw traffic levels continue on their upward trend even prior to the Tomb-Sweeping holiday drop. Baidu city-level road congestion was +240bps WoW to 147.5% of Jan 2021 levels. Below is the BloombergNEF key graph.

China city-level traffic congestion

Figure 36: China city-level road congestion for the week ended Apr 24



Source: BloombergNEF

Oil: Valentino sales remind not seeing a broad luxury spending by Chinese wealthy

It looks like there isn't a broad return of the Chinese wealthy with respect to their luxury spending. Instead of seeing all luxury brands having some strength, it looks like the Chinese wealthy are discerning in where they spend their luxury dollars. This was reinforced by

Weak Valentino sales

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Valentino. Last week's (Apr 21, 2024) Energy Tidbits memo highlighted Brunello Cuchinelli Q1 and how they are seeing significant growth in China. Brunello may not be as well known as other luxury brands but is likely considered one of the, if not the, top quiet luxury brands. Chanel and Valentino would also fit into the top luxury brands but aren't having the same success, which points to the Chinese wealthy being selective on where they spend ie. not a broad return of luxury spending. On Monday, we tweeted [\[LINK\]](#) "*Brunello is exception with strong sales incl China. "This year started with an expectation that the luxury markets would grow between 2 to 4%. My personal feeling is it will be much less than that, probably it will be flat.... China is still weak." Valentino Chair to @flacqua.*" Our tweet included the our transcript of comments by Valentino Chairman Rachid Mohamed Rachid with Bloomberg's Francine Laqua on Apr 22, 2022 [\[LINK\]](#). Items in "italics" are SAF Group created transcript. Rachid "*The last three years have been really exceptional for luxury products. Post the pandemic, there has been a very significant surge. The average was 7% when usually the luxury market grows around 3, 4%. We have seen three consecutive years of 7%. I think since second half last year, we have definitely seen a slowdown. Not only in Europe but also in US. And there was always a question mark on how fast China would recover. This year started with an expectation that the luxury markets would grow between 2 to 4%. My personal feeling is it will be much less than that, probably it will be flat. The reality is that Europe, US is still very flat at the moment. And China is still weak. And we have already seen some companies coming with some results and it is very clear that it is quite a challenging environment in 2024.*"

Brunello shows some Chinese ultra quiet/gentle luxury buyers are spending

It looks like Brunello Cuchinelli is the exception to the rule. Here is what we wrote in last week's (Apr 21, 2024) Energy Tidbits memo. "*It's far from a perfect indicator, but a good indicator that China's wealthy are spending was seen in the Brunello Cuchinelli Q1 release on Wednesday. We tweeted [\[LINK\]](#) "Ultra Quiet/Gentle Luxury Chinese buyers are spending! Brunello Q1 sales: "significant growth achieved in all major Asian areas incl China, Japan, South Korea & the Middle East" "substantial growth prospects in the Chinese market are evident to our great satisfaction" #OOTT." Brunello Cuchinelli doesn't get the same amount of regular press/media as brands like Chanel but its price point is probably a lot more so Brunello buyers tend to be wealthy and not just high income. In their Q1, Brunello had strong sales in all of their major Asian markets including China. Our tweet included excerpts from the Brunello Q1. "Excellent results in all geographical areas and distribution channels". "We are convinced it is important to emphasise how the contribution of the different geographical areas and distribution channels is very healthy, balanced, and synergic. This contribution is characterised by a structural growth in the demand for the highest luxury segment in Americas, Europe and Asia, all of which fully confirms excellent development potential." "thanks to the significant growth achieved in all major Asian areas, including China, Japan, South Korea and the Middle East. The substantial growth prospects in the Chinese market are evident, to our great satisfaction".*"

Oil: China based Victor Yang sees +1.1% YoY increase in China oil demand in 2024

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. Yang only sees modest growth in

Modest China oil demand growth

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Chinese oil demand of +1.1% YoY in 2024. That would be approx. 0.2 mmb/d, which is far less than OPEC's current forecast of +0.7 mm b/d YoY and IEA's current forecast of +0.54 mmb/d YoY. On Monday, we tweeted [\[LINK\]](#) *“We expect kind of modest growth [in oil demand in China] for the whole of 2024, about 1.1%.”* China based Victor Yang, JLC Network Technology on @gulf_intel Apr 22 podcast with @DyalaSabbagh_GI. See 📌 SAF Group transcript. #OOTT.” Our tweet included a transcript we made of his comments. SAF Group created transcript of comments by Victor Yang, Senior Analyst JLC Network Technology on Gulf Intelligence's Daily Energy Markets Podcast on April 22, 2024 hosted by Dyala Sabbagh (Gulf Intelligence COO and Partner). [\[LINK\]](#). Items in *“italics”* are SAF Group created transcript. On Chinese oil demand and crude imports, at 7:10 min mark Yang *“Well the country's crude imports grew by 0.75% in the first quarter, but imports from Russia surged by close to 13%. And in March, imports from Russia actually took record high share over 22%, and when we see why China's crude imports are growing, we see that demand, say for some fuel, gasoline, jet fuel is still growing. And the Country's refining capacity is on the rise too. But, we are seeing much slower growth in 2024. As we mentioned just now, 0.75% in the first quarter, this [inaudible] is slow now. And we do not expect growth to be much larger for the whole year when crude prices are high. And domestic fuel demand is not growing as fast as [China] actually as production yet. So we expect kind of modest growth for the whole of 2024, about 1.1%. 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.”*

Oil: Medium sour prices fetching premium in Asia

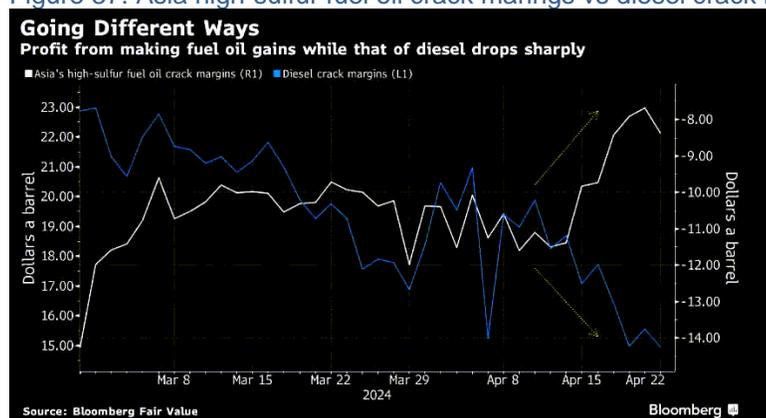
It looks like the start of some seasonal increase in oil demand is driving an increase in medium sour oil prices in Europe. Last week's (Apr 21, 2024) Energy Tidbits memo highlighted how Saudi Arabia is moving into their big seasonal increase in consumption of medium sour oil to generate electricity. That is one example of a seasonal increase in consumption that is starting to play thru on medium sour oil prices. On Monday, we tweeted [\[LINK\]](#) *“Good reminder #OPEC cuts are first to medium sour crudes, which typically leads to bigger spot premiums & refiner margins for these crudes. Refiners that run on medium sour need medium sour, not light. So medium sour crudes like Cdn WCS benefit. Thx @iamsharoncho #OOTT.”* On Monday, Bloomberg provided the below graph and wrote *“Oil that's more sulfurous and dense is gaining popularity in the Asian physical market in a rare shift away from the usual pattern as global crude flows change and rewards from refining move in its favor. Middle Eastern varieties that have medium-density and higher sulfur such as Oman and Upper Zakum are now fetching bigger spot premiums than grades like Murban. That's unusual as the latter is a lighter oil, typically regarded as better quality since it has a rich yield of refined fuels such as diesel. The new pattern reflects underlying changes in supply and demand that span the global crude market. OPEC+ supply cuts have crimped flows of dirtier crudes, while at the same time, US producers have been boosting exports of lighter varieties. Vortexa Ltd. estimates that daily supplies of medium and heavy-sour crude*

Medium sour oil prices in Asia

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into Asia have declined by 920,000 barrels on-year in the first three months.” Our Supplemental Documents package includes the Bloomberg report.

Figure 37: Asia high-sulfur fuel oil crack margins vs diesel crack margins



Oil: Opportunity or risk? 70% of global production comes from mature assets

Well before Covid hit, we put forward our view on how the energy transition was going to take way longer, cost way more and be a bumpy/rocky road. And that we saw a stronger longer view for oil and natural gas thru the 2020s. A key part of this view was what we then saw (and still see) an overlooked risk to long term supply of oil and natural gas – decline rates in the existing production base. Baker Hughes held its Q1 call on Wednesday and there was an excellent reminder how significant “mature” oil and gas assets are to today’s oil and gas production base and therefore to the future. Mgmt didn’t say it but it ties into the big picture thesis the starting point for the existing global oil and gas production base is offsetting existing decline. As an example, earlier in the memo, we note Aker BP’s continued comments that the giant Norway Johan Sverdrup oil field is about to start to decline and their challenge is how much can the partners do to minimize the decline rate. Johan Sverdrup is a good example as it is ~0.7% of global oil production and is about to decline. On Wednesday, we tweeted [LINK](#) “Opportunity or risk for #Oil in 2020s. Can industry squeeze more or less oil out of old fields? \$BKR “70% of the world’s production comes from mature assets and a mature asset being a well that’s produced 50% of its reserves or has been in production for over 25 years.” #OOTT.” So 70% of the world’s oil and natural gas production from these old assets. In the prepared remarks, mgmt said “As we move into the next phase of the upstream spending cycle, we anticipate increasing focus on optimizing production from existing assets.”: In the Q&A, mgmt said “As you know from the comments that I made at the Annual Meeting, 70% of the world’s production comes from mature assets and a mature asset being a well that’s produced 50% of its reserves or has been in production for over 25 years. And when we look at the future, there’s a tremendous focus on improving that optimization”. We didn’t find the words from CEO Simonelli at the AGM, but here is their slide. The importance of the mature assets for the mid to late 2020s is because oil and gas growth moderates. The AGM slides says “As oil and gas growth moderates, more is required from existing, more complex assets.” CEO Simonelli didn’t say it but this is the #1 challenge for oil and gas industry – how to minimize decline rates of existing oil and natural

More is required from existing mature oil and gas assets

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gas production. And the problem for many conventional oil fields, like Aker BP says on Johan Sverdrup, is that once water comes in, the only question will be how fast it declines. We put Opportunity or Risk in our tweet but we are in the camp that says its Risk rather than Opportunity to the oil and natural gas supply outlook over the coming years. And Baker Hughes said it clearly in their AGM slide “as oil and gas growth moderates, more is required from existing, more complex assets”.

Figure 38: “As oil and gas growth moderates, more is required from existing, more complex assets”



Source: Baker Hughes AGM slide

Cdn oil sands are the one major global basin not worried about declines

When we thought about the Baker Hughes risk that mature oil and natural gas assets are 70% of the world’s supply, the first thought that came to mind is that the one major global oil supply basin that isn’t at risk for fighting decline is Cdn oil sands. We tweeted [\[LINK\]](#) “The Canada Advantage! The #1 challenge to squeezing more oil out of mature assets around the world is to arrest/offset natural decline rates. The biggest global #Oil field or play that does not have this decline rate challenge is Canada #OilSands #OOTT.”

Oil: SLB “...oil and gas demand, if anything is trending upwards from the revision”

One of the common themes from the major global oil and gas service/drilling companies is their positive view for oil and natural gas over the coming years with an increase global focus on energy security. SLB (formerly called Schlumberger) echoed that view in its Q1 call on Monday. (i) On Monday, we tweeted [\[LINK\]](#) “Continued solid #Oil #NatGas outlook \$SLB Q1 call. Oil and gas demand is trending upwards. “Even deeper focus on energy security”. North America business down but more than offset by international. Broad growth continues in offshore activity across international markets. #OOTT.” (ii) “Even deeper focus on energy security”. We think one of the reasons why this isn’t as feared in North America is that we have energy security. But that is why we think it more of a concern around the world. In their opening remarks, mgmt said “We’re in the midst of a unique oil and gas cycle, characterized by strong market fundamentals, growing demand, and an even deeper focus on energy security.” (iii) Demand for oil and gas is growing as is oil and gas role in the future energy mix. Also they said their oil and gas demand view “is trending upwards from the revision”.

SLB on oil and natural gas demand

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They didn't give any specifics on for how long ie. when peak oil demand but their view on the positive outlook is linked to increasing energy demand, which was noted a few times. And in his concluding remarks, CEO Le Peuch said *"leave you with the following takeaways. First, the global energy landscape remains very compelling for our business. Demand for energy is accelerating, and this is resulting in strong activity dynamics that are closely aligned with our three engines of growth. We will continue to innovate with customers across our core, digital, and new energy to meet this demand in the years to come."* In their opening remarks, mgmt said *"In particular, we anticipate the activity momentum in international markets to continue, driven by increasing global demand and an even deeper focus on energy security. The relevance of oil and gas in energy mix continues to support further investments in capacity expansion, particularly in the Middle East and in long-cycle projects across global offshore markets, fully aligned with our international review ambitions."* In the Q&A, mgmt said *"from our perspective, I think first and foremost, I think the cycle attributes that we have described earlier, the breadth, the resilience, the durability, or the longevity of the cycle are fully in place and are driven by a combination of strong fundamental energy demand, oil and gas demand, if anything is trending upwards from the revision. Energy security is still on top of the agenda, there is no other place than Asia to realize this on the ground."*

Oil: Vortexa crude oil floating storage est 60.64 mmb at Apr 26, -15.47 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 Apr 20 at 9am MT. (i) Yesterday, we tweeted [\[LINK\]](#) *"WOW! #Oil floating storage down 32.67 in last 2 wks to 60.64 mmb Apr 26. Incl Asia -23.16 mmb, is this Iran cutting prices to find customers in China or India? Only been 11 wks in 60s/50s since Covid, IF not revised only behind 58.02 mmb on 10/20/23. Thx @vortexa @business #OOTT."* (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Apr 26 at 60.64 mmb, which is -15.47 mmb WOW vs upwardly revised Apr 19 of 76.11 mmb. Note Apr 19 was revised +1.97 mmb vs 74.14 mmb originally posted at 9am on Apr 20. (iii) The big -15.47 mmb WoW for Apr 26 followed a -17.20 mmb decrease for the Apr 19 week to bring the two week decrease to a huge -32.64 mmb. The below item notes Asia is -23.16 mmb in this period and we have to wonder if this Iran cutting prices to reduce its floating oil storage. The other highlighted item is that there have only been 11 weeks in the 60s/50s since Covid and 60.64 mmb on Apr 26 is the 2nd lowest only following 58.02 mmb on Oct 20/23. (iv) Revisions. There were no significant revisions to the past seven weeks compared to the estimates originally posted on Bloomberg at 9am MT on Apr 20. Apr 19 revised +1.96 mmb. Apr 12 revised +1.26 mmb. Apr 5 revised +1.24 mmb. Mar 29 revised +0.47 mmb. Mar 22 revised +0.56 mmb. Mar 15 revised -0.02 mmb. Mar 8 revised -0.26 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 77.32 mmb vs last week's then seven-week average of 78.79 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

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and then how Covid started to impact Covid in March/April 2020. (viii) Apr 26 estimate of 60.64 mmb is -68.74 mmb vs the recent June 23, 2023 high of 129.38 mmb. Recall Saudi Arabia stepped in on July 1, 2023 for additional cuts. (ix) Apr 26 estimate of 60.64 mmb is -29.14 mmb YoY vs Apr 28, 2023 of 91.50 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Apr 27, 9am MT Apr 20, and 9am MT Apr 13.

Figure 39: Vortexa Floating Storage Jan 1, 2000 – Apr 26, 2024, posted Apr 27 at 9am MT



Source: Bloomberg, Vortexa

Figure 40: Vortexa Estimates Posted 9am MT on Apr 27, Apr 20, and Apr 13

Posted Apr 20, 9am MT					Apr 13, 9am MT					Apr 6, 9am MT							
ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y
Fr	04/19/2024					Fr	04/12/2024					Fr	04/05/2024				
	Last Px						Last Px						Last Px				
	74136						75026						67191				
Fr	04/12/2024					Fr	04/05/2024					Fr	03/29/2024				
	Last Px						Last Px						Last Px				
	92054						69302						80112				
Fr	04/05/2024					Fr	03/29/2024					Fr	03/22/2024				
	Last Px						Last Px						Last Px				
	79659						79457						71769				
Fr	03/29/2024					Fr	03/22/2024					Fr	03/15/2024				
	Last Px						Last Px						Last Px				
	81018						69596						75740				
Fr	03/22/2024					Fr	03/15/2024					Fr	03/08/2024				
	Last Px						Last Px						Last Px				
	72932						74838						74242				
Fr	03/15/2024					Fr	03/08/2024					Fr	03/01/2024				
	Last Px						Last Px						Last Px				
	75322						76090						69932				
Fr	03/08/2024					Fr	03/01/2024					Fr	02/23/2024				
	Last Px						Last Px						Last Px				
	76387						70442						62655				
Fr	03/01/2024					Fr	02/23/2024					Fr	02/16/2024				
	Last Px						Last Px						Last Px				
	69260						62771						67326				
Fr	02/23/2024					Fr	02/16/2024					Fr	02/09/2024				
	Last Px						Last Px						Last Px				
	62745						65808						82188				
Fr	02/16/2024					Fr	02/09/2024					Fr	02/02/2024				
	Last Px						Last Px						Last Px				
	65579						82112						72050				
Fr	02/09/2024					Fr	02/02/2024					Fr	01/26/2024				
	Last Px						Last Px						Last Px				
	81703						71897						70976				
Fr	02/02/2024					Fr	02/02/2024					Fr	01/26/2024				
	Last Px						Last Px						Last Px				
	71281						71897						70976				

Source: Bloomberg, Vortexa

Oil: Did Iran cut prices to find customers in China or India for its floating oil storage?

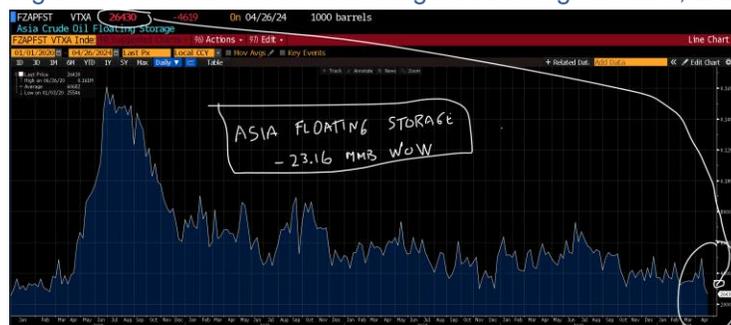
There was a huge -23.16 mmb drop in Asia floating storage from 49.59 mmb on Apr 12 to 26.43 mmb on Apr 26. Our above tweet on the Vortexa floating oil storage included “*Incl Asia -23.16 mmb, is this Iran cutting prices to find customers in China or India?*” Asia is the reason for the big drop in floating oil storage over the past two weeks. We have to wonder if this Iran slashing prices so they could clear up floating storage in Asia. Last week’s (Apr 21, 2024) Energy Tidbits memo was titled ‘*Vortexa: Iran Floating Oil Storage Up 10 mmb in March, Struggling to Find China Buyers Despite Deeper Discounts*’. Last week’s memo wrote “*There was negative oil market views on Iran and China from Vortexa on Wednesday that didn’t any market attention. On Thursday, we tweeted [LINK] “Vortexa seeing “little bit of weakness” on China buying. Iranian crude oil floating storage +10 mmb in Mar. Iran offering wider discounts than normal but “struggling to find buyers in China”. See 🗨️ SAF Group transcript. Thx*

Asia floating storage -23.16 mmb WoW

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@Vortexa Jay Maroo, @gulf_intel #OOTT.” Vortexa’s Jay Maroo highlighted Iran floating storage was up 10 million barrels in March, and that it was struggling to find buyers in China for its crude even though it was offering wider discounts than normal. Maroo was on the Gulf Intelligence Apr 17 podcast and or tweet was a day later. Maroo is Head of Market Intelligence and Analytics MENA, Vortexa. He also highlighted Iran was exporting 1.4 mmb/d in March and that was very high vs year ago levels. Maroo also said the increasing Iran floating storage of 10 million barrels “What that suggests and I think we will probably come to this later on is a little bit of weakness coming in from China on the buying side of things. And I guess that probably feeds into the wider comment about bearishness on oil prices because of demand issues.” Maroo also highlighted that “And actually looking ahead to the second half of the year, we think, at best, it will be similar to year ago levels. So when it comes to China importing much more crude, we’re not very bullish on that. The only thing that could change that is if there is a significant decrease in the price and obviously Chinese being very opportunistic buyers, they’d be quick to pick that up. But that hasn’t really happened yet. Speaking to some of our wider network, we’re hearing that some of the Iranian crude that is being offered, is being offered at deeper discounts than usual to some new buyers. And what that suggests to me is that, even with Iranian crude being priced so cheap, they’re struggling to find buyers in China that are willing to pay even below market rates. So they are going to have dig deeper to get those barrels into China.”

Figure 41: Vortexa crude oil floating for Asia region Jan 1, 2020 to Apr 26, 2024



Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Bloomberg also posts the Vortexa crude oil floating storage in key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the “Other” or rest of world. (i) As noted above, last week’s Apr 19, in total, was revised +1.97 mmb with the only revision to note being Other revised +216 mmb. (ii) As noted above, Apr 26 of 60.64 mmb was -15.47 mmb WoW vs the upwardly revised aug 19 of 76.11 mmb. The major WoW changes by region were Other -5.93 mmb Asia -4.75 mmb and West Africa -2.24 mmb. (iii) Apr 26 of 60.64 mmb is -68.74 mmb vs the summer June 23, 2023 peak of 129.38 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 -46.69 mmb and Other -22.56. (iv) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes

Vortexa floating storage by region

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the “Original Posted” regional data for Apr 19 that was posted on Bloomberg at 9am MT on Apr 20.

Figure 42: Vortexa crude oil floating by region

Region			Original Posted		Recent Peak	
	Apr 26/24	Apr 19/24	WoW	Apr 19/24	Jun 23/23	Apr 26 vs Jun 23
Asia	26.30	31.05	-4.75	30.27	72.99	-46.69
Europe	6.73	7.29	-0.56	7.70	6.16	0.57
Middle East	8.75	10.07	-1.32	9.76	6.76	1.99
West Africa	5.28	7.52	-2.24	7.45	7.62	-2.34
US Gulf Coast	1.29	1.96	-0.67	2.90	1.00	0.29
Other	12.29	18.22	-5.93	16.06	34.85	-22.56
Global Total	60.64	76.11	-15.47	74.14	129.38	-68.74

Vortexa crude oil floating storage posted on Bloomberg 9am MT on Apr 27
Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

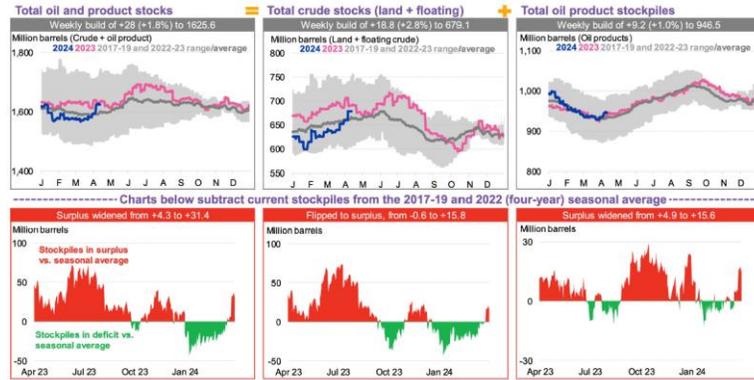
Oil: BNEF – global oil and product stocks deficit widens to -31.4 mmb

Please note that the BloombergNEF global oil and products stocks estimate are for the week ending April 12, which is a week earlier than the normal EIA US oil inventory data that is for the week ending Apr 19 which was a draw of -6.37 mmb. On Tuesday, BloombergNEF posted its “Oil Price Indicators” weekly, which provides good charts depicting near-term global oil demand and supply indicators. (i) Note BloombergNEF uses different periods to determine the surplus/deficit, sometimes using a four-year average for 2017-2019 + 2022-2023, and other times using a five-year average 2017-2019 + 2022-2023. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products deficit widened from -4.3 mmb to -31.4 mmb deficit for the week ending Apr 12. (iii) Total crude inventories (incl. floating) increased +2.8% WoW to 679.1 mmb, while the stockpile deficit flipped from a deficit of -0.3 mmb to a surplus of +15.8 mmb. (iv) Land crude oil inventories increased +1.1% WoW to 586.9 mmb, narrowing the deficit to -4.2 mmb against the five-year average (2017-2019 + 2022-23). (v) The gas, oil, and middle distillate stocks decreased -2.6% WoW to 153.2 mmb, with the deficit against the four-year average widening from -8.1 mmb to -9.1 mmb. Jet fuel consumption by international departures for the week of Apr 29 is set to decrease by -12,900 b/d WoW, while consumption by domestic passenger departures is forecast to increase by +9,600 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Global oil and products stocks

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Figure 43: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF, US EIA, PJK, IE Singapore, FEDComPlatts, PAJ, Vortexa, Genscape. Note: As of the week ending April 12, 2024.

Oil: Europe airports daily traffic 7-day average is -3.2% below pre-Covid levels

Yesterday, we tweeted [LINK](#) "Daily Europe air traffic still just below Covid. 7-day average got to -1.5% below Covid on Apr 22, but ended back at -3.2% below as of Apr 25. Vs 3.2% below Apr 18, vs 3.7% below Apr 11, 6.2% below Apr 4 and 7.0% below as of Mar 28. Thx @eurocontrol #OOTT." Other than over Christmas, European daily traffic at airports has been below pre-Covid. However, it has been inching closer over the past four weeks and the 7-day rolling average got to only -1.5% below Covid as of Apr 22 before falling back to -3.2% below Covid as of Apr 25. As of our 7am MT news cut off, the latest Eurocontrol daily traffic at Europe airports shows the 7-day rolling average to the end of Apr 25 was flat WoW at -3.2% below pre-Covid levels, flat to -3.2% for Apr 18, but down from -3.7% to end of Apr 11, -6.2% to end of Apr 4, and -7.0% to end of March 28. Eurocontrol updates this data daily and it is found at [LINK](#)

Europe airports daily traffic

Figure 44: Europe Air Traffic: Daily Traffic Variation to end of Apr 25



Source: Eurocontrol

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Look for more to follow Vitol and say jet fuel consumption back to 2019 levels

The Eurocontrol data showing Europe is inching back closer to pre-Covid is a positive. But our Apr 7, 2024 Energy Tidbits memo highlighted the IATA monthly data for Feb that noted that both international and domestic air travel was back to above pre-Covid levels. Here is what we wrote in our Apr 7, 2024 Energy Tidbits memo. “After seeing the above IATA monthly data for Feb that showed both international and domestic air passenger travel was above pre-Covid, we tweeted [LINK](#) “Positive for #Oil. Look for more to follow @vitolnews Gallagher’s 📌 03/21 call that jet fuel consumption back to 2019. @IATA Feb passenger data, both international & domestic are above 2019. Plus greater share of less fuel efficient domestic volume. #OOTT,” As noted below, on March 21, Vitol came out two weeks ago with their view that jet fuel consumption had returned to 2019 levels. But we should start to see more follow that call post the IATA’s release this morning of Feb 2019 air passenger data. Everyone will rightly focus on the below table that shows total market RPK is +5.7% vs Feb 2019 with both international +0.9% and domestic +13.7% being above Feb 2019. Total air passenger being +5.7% vs 2019 gives room to account for some replacement of older planes with newer more fuel-efficient planes. The caveat to that being is that the older planes from the big companies tend to get sold to smaller companies and not necessarily junked. But there is also one overlooked reason for higher jet fuel consumption, all things being equal, is that shorter flights are less fuel efficient due to take-offs and landings allocated over shorter distances. And what people are not likely do is look at the share. In Feb 2024, it was 60.1% international vs 39.9% domestic. We went back to the Feb 2019 data and the splits were 63.9% international vs 36.1% domestic. So shows the increasing share of less fuel-efficient shorter haul trips. A greater proportion of less fuel-efficient shorter haul trips is a positive for jet fuel demand. “

Figure 45: Air passenger market in detail – February 2024

Air passenger market in detail - February 2024

	World share ¹	February 2024 (% year-on-year)			February 2024 (% ch vs the same month in 2019)			
		RPK	ASK	PLF (%-pt)	RPK	ASK	PLF (%-pt)	PLF
TOTAL MARKET	100.0%	21.5%	18.7%	1.9%	5.7%	5.8%	-0.1%	80.6%
International	60.1%	26.3%	25.5%	0.5%	0.9%	1.2%	-0.3%	79.3%
Domestic	39.9%	15.0%	9.4%	4.0%	13.7%	13.7%	0.0%	82.6%

¹% of industry RPKs in 2023

Air Passenger Monthly Analysis – February 2024
Source: IATA

Figure 46: Air passenger market overview – February 2019

Air passenger market overview - February 2019

	World share ¹	February 2019 (% year-on-year)				% year-to-date			
		RPK	ASK	PLF (%-pt) ²	PLF (level) ³	RPK	ASK	PLF (%-pt) ²	PLF (level) ³
TOTAL MARKET	100.0%	5.3%	5.4%	-0.1%	80.6%	5.9%	5.9%	0.0%	80.1%
International	63.9%	4.6%	5.1%	-0.4%	79.5%	5.3%	5.5%	-0.1%	79.7%
Domestic	36.1%	6.4%	5.8%	0.5%	82.4%	6.9%	6.8%	0.1%	80.8%

¹% of industry RPKs in 2018 ²Year-on-year change in load factor ³Load factor level

Source: IATA

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Vitol, global jet fuel consumption reached pre-Covid level, going higher in Q2

Here is what we wrote in our March 24, 2024 Energy Tidbits memo. "On Thursday, we tweeted *"Bullish for near term #Oil. "we're seeing jet fuel now back to averaging around 6.9 million barrels per day over the last 4-weeks, which is back to 2019 levels" "we see growth in Q2, which brings it up to record highs" @vitolnews Kieran Gallagher to @sean_evers #OOTT."* Gallagher is Managing Director for Vitol Bahrain E.C. and was speaking on the Gulf Intelligence Daily Energy Markets podcast on Thurs [\[LINK\]](#) hosted . His comments on jet fuel were straightforward – global jet fuel consumption is back to pre-Covid levels and will be hitting new record levels in Q2. Our tweet included a transcript we made of his comments. Items in *"italics"* are SAF Group created transcript. At 17:00 min mark, Gallagher *"We're seeing jet fuel now back to, averaging around 6.9 million barrels per day over the last 4-weeks, which is back at 2019 levels"*. Evers *"which of course is a global number"*. Gallagher *"It's a global number. And at 6.9, you know we see growth in Q2 which brings it up to sort of record highs."*

Oil: World's Top 100 Airports 2024

On Thursday, Skytrax released its World's Top 100 Airports of 2024 [\[LINK\]](#). The rankings are determined using a variety of factors, including airport access, staff attitude, lounges, airport website, hygiene standards, luggage services, all measured by customer surveys. Doha Hamad came out as #1 on the list, and no North American airports cracked the top ten. However, Vancouver was the highest-ranking North American airport at #17 overall. The next Canadian airports were Montreal (#53) and Toronto (#63). The top 3 US airports were Seattle-Tacoma (#24), Houston Hobby (#29), and New York LaGuardia (#33). We probably shouldn't be surprised by no Canadian or American airports cracking the top 20 given the negative air travel experiences in summer 2022. That may not have been a category but we have to wonder if some of that found its way into criteria like luggage services.

World's top airports

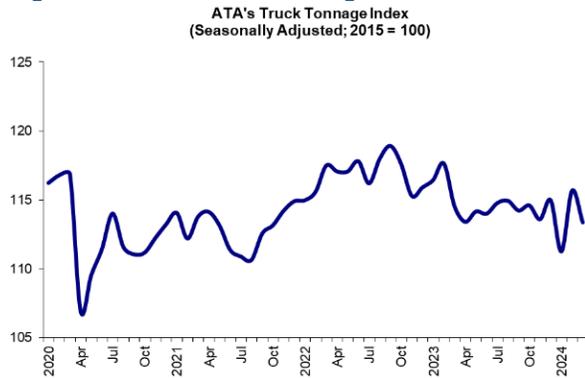
Oil: ATA Truck tonnage index in Mar down -2% MoM, -1% YoY

We look to items like truck tonnage for indicators on the US economy, and the March truck tonnage is indicative of a slowing US economy. Truck tonnage decreased -2% MoM and fell -1% YoY from February 2023. The American Trucking Association released its seasonally adjusted Truck Tonnage Index for December on Tuesday [\[LINK\]](#). Chief Economist Bob Costello noted *"Tonnage in March suggests that truck freight volumes remain lackluster, and it is clear the truck freight recession continued through the first quarter...In the first three months of 2024, ATA's tonnage index contracted 0.8% from the previous quarter and declined 2.4% from a year earlier, highlighting ongoing challenges the industry is navigating."* Recall the index in February was up +4% MoM but was -2% on a YoY basis. Trucking serves as a barometer of the U.S. economy, representing 72.6% of tonnage carried by all modes of domestic freight transportation, including manufactured and retail goods. Trucks hauled 11.46 billion tons of freight in 2022. Motor carriers collected \$940.8 billion, or 80.7% of total revenue earned by all transport modes. Our Supplemental Documents package includes the ATA truck tonnage index.

March Truck
Tonnage -2%
MoM

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Figure 47: ATA Truck Tonnage Index



Source: ATA

Oil & Natural Gas: Zero Out of Control Alberta Wildfires with some precipitation today

It's still only April and we are still a few months away from peak wildfire season in Canada. But with the small recent Out of Control wildfires a week ago, we have been checking the status each day. Fortunately, the smaller wildfires moved to under control. Yesterday afternoon, we tweeted [LINK](#) "Zero Out of Control Wildfires in Alberta as of 3pm MT. Plus precipitation expected across the province this weekend. Lets hope for more rain/snow to help the Being Held Wildfires. #OOTT." There are zero Out of Control Wildfires. Plus the CBC weather forecast yesterday afternoon was calling for precipitation across almost all of Alberta.

Alberta Wildfires

Figure 48: Alberta Wildfires Status as of 3pm MT on Apr 27, 2024



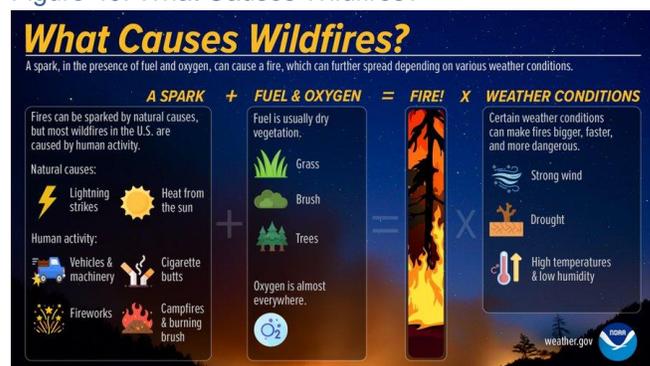
Source: Alberta Wildfire Status Dashboard

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US National Weather Service “What Causes Wildfires?”

On Monday, the US National Weather Service posted its “What Causes Wildfires?” [\[LINK\]](#) It shouldn’t surprise anyone although one that many forget is that vehicles and machinery are causes of wildfires. Plus it’s a good reminder for people to watch on cigarette butts and campfires. The NWS writes “Wildfires are caused by a spark in the presence of fuel and oxygen. Strong winds, high temperatures, low humidity and drought conditions can further impact the fire’s spread. To stay #WeatherReady and protect yourself from wildfires, visit <http://weather.gov/safety/wildfire>.”

Figure 49: What Causes Wildfires?



Source: National Weather Service

Oil & Natural Gas: sector/play/market/global insights from Q1 calls

This was the first big week of Q1 reporting with all the major oilfield service companies and the start of supermajors reporting. The oil and gas services companies are first to report and we typically get some of the best macro insights from the services, pipelines, refineries and utilities. We find we get the best insights into a range of oil and gas themes/trends, sectors and plays from the conference calls. As a reminder, our Energy Tidbits memo does not get into the quarterly results, forecasts, or valuation. Rather the purpose of highlighting a company is to note themes/trends and plays that will help shape a reader’s investment thesis to the energy sector. In the conference calls, we also tend to find the best insights from the Q&A portion as opposed to the prepared remarks.

Sector insights
from Q1 calls

Baker Hughes: Low to mid single digit decline in North America activity in 2024

Baker Hughes held its Q1 call on Wednesday. (i) Earlier in the memo, we noted their call that the energy transition not working as planned means this is the age for gas, and their forecast on LNG FIDs to 2030. (ii) Later in the memo, we note their view on mature assets and how that links to global decline rates. (iii) Later in the memo, we note Baker Hughes perspective on data centers. (iv) Seeing more natural gas infrastructure projects emerge all around the world ie. more midstream projects. (v) Because the energy transition isn’t working as planned, it means that every type of energy is needed and that means the focus turns to emissions and not the fuel source. This focus on emissions is similar to the OPEC Secretary General speech this week. In the prepared remarks, mgmt said “*With the growing realization that we*

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need and all of the above approach to the energy transition, the focus is shifting towards the emissions rather than the fuel source. I have spoken about this important shift for several years now and we are pleased to see it taking hold in our customer's operations and policy initiatives.” (vi) And with the shift to emissions and therefore more oil and natural gas, then it means that there is the need for CCUS. In the Q&A, mgmt said “Yeah, definitely, James. And as we look at what's happening and we've been discussing for some time the continued increasing demand for energy and the realization that we need an all of the above approach to the energy transition, it means there's a shifting focus towards emissions rather than the fuel source. And that puts the forefront CCUS. And as you know, we've been playing and participating in CCS [ph] for many decades. But we've also been investing in CCUS capabilities. And so as we go forward, we think CCUS is going to be a first mover. And as you look at our order intake also on the new energy front, you can see from last year also that a large portion of our orders was associated with carbon capture, utilization and storage.” (vii) North America drilling and completion work down low to mid-single digits YoY in 2024. In prepared remarks, rmgmt said “In North America, our outlook remains for a year-over-year decline in the low to mid-single-digit range. We continue to anticipate declining activity in US gas basins, partially offsetting modest improvement in oil activity during the second-half of the year.” Our Supplemental Documents package includes excerpts from the Baker Hughes Q2 call transcript and Q2 call slides.

Core Labs: Bullish on natural gas in the coming years

Core Labs held its Q1 call on Thursday. (i) US frac activity “relatively flat” in 2024. On Thursday, we tweeted [LINK](#) “Core Labs Q1. “U.S., frac spread activity peaked in the fall of 2022; however, the declines experienced in completion activity during 2023 appear to have stabilized. Core Lab continues to project completion activity in 2024 to remain relatively flat compared to 2023.” #OOTT.” That was in the Q1 release there were no questions on this on the call. (ii) Core Labs also believing in the multiyear cycle in international. They were asked if they have similar view to others about “about strong offshore activity and international growth.” Mgmt replied “Yeah, so we certainly align with the folks that see a multiyear cycle unfolding. As we've talked about before, we tend to be a little bit not front of the cycle like the people involved in well construction. Our wheelhouse is really, as we move into appraisal, development and production, rather than exploration activity. And so we see that.” (iii) Mgmt also hears 14% of Russian refinery capacity is down. This was on Thursday so before the latest Ukraine drone attack on a Russian refinery. In the Q&A, mgmt replied “There was a Reuters story fairly recently, earlier this month, that said that 14% of Russian refining infrastructure was shut down. Now we've got our own information from our folks on the ground there, and so we dialed that in as well. But it is impacting crude oil trading and the assay work that goes with that trading and transportation. And so that's a bit of a headwind for us on the growth rate that we might expect for reservoir description for the full year.”

Halliburton: Bullish on natural gas in the coming years

Halliburton held its Q2 call on Tuesday. (i) Earlier in the memo, we highlighted Halliburton's expectations for lower YoY frac activity in the US in 2024. (ii)

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Weakness in US seems from natural gas. Halliburton didn't specifically say the lower North America activity was more due to natural gas but they say they don't expect any recovery in natural gas activity. In the prepared remarks, mgmt said *"And while we expect an eventual recovery in natural gas activity driven by demand from LNG expansions, our 2024 plan does not anticipate this recovery."* (iii) Halliburton's large customers moving to industrial approach, which we believe means not moving up much if oil prices stay strong. In the prepared remarks, mgmt said *"Looking ahead for the rest of 2024 in North America, we expect steady activity levels for Halliburton. Our customers are planning for the long-term and I expect they will execute work throughout the year as planned. This is consistent with a more industrialized approach to asset development in North America."* (iv) Longer wells. In his prepared remarks, the CEO said *"The key trend that I see in North-America drilling is the move to longer laterals and more complex wells, which customers drill to improve economics."* (v) . Unconventional growing in international markets, in particular in Saudi Arabia and we assume Argentina. In the Q&A, mgmt said *"But I think that more broadly, just the discussion around unconventional internationally, what can you see today or two markets at least outside the US that are truly at-scale. And I think that serves as a bit of a template for how that can be done because it was really unclear a decade ago, as you recall, but I think we're in a different place with unconventional today."* Later in the Q&A, mgmt specifically highlighted Saudi Arabia unconventional growth. (vi) Warns on a tight service/frack market ahead once natural gas picks up." (vii) Bullish on natural gas as it's needed. In the Q&A, mgmt said *"I'd say gas is a critical fuel. And look, yes, I think we mentioned in the prepared remarks that the growth in-demand for gas or gas and electricity and that being the most effective way to deliver power, certainly today and the most reliable. So I think that this is almost becoming it's one of those things that you don't see it until it's on top of you and I think that right now that demand is on-top of us. And so I think that can only be additive to demand. I have no question that will be additive. And clearly AI consumes more power than traditional data centers. So I think all of that combined, there's almost -- it's not almost, it is a secular trend towards demanding more power and that can only be good for our industry and for Halliburton."* (viii) Halliburton sees the strong oil and gas cycle extending thru the end of the decade. In the Q&A, mgmt said *"Yeah. Thanks. Look, some of its work that will begin in '25 that is planned to go through the end-of-the decade. So I feel very confident about that. Others are work that we're working on planning with clients that again are the types of projects that extend that far. I think the price of the commodity and the tightness and the rising demand for oil and gas gives me confidence and it gives our clients confidence. And clearly, we've seen a bit of a return to oil and gas and its importance in a lot of places. But the type of work that we're starting, the type of offshore work that we're starting is takes time to get started and it takes a long-time to do. And so very confident about that broadly. And I would include -- anyway, the outlook for North America is similar in terms of duration. I mean, this is the kind of investments that we've seen in North America that are not for a quarter or two. These are decade long investments that we've seen happen. And the next leg on gas and the demand for gas that's already been talked about on this call. I feel very confident in the resilience of this cycle."* Our Supplemental Documents package includes excerpts from the Halliburton Q1 call.

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Helmerich & Payne: Expects lower rig levels in Apr-June quarter

Helmerich & Payne held its Q2 F2024 call on Thursday. Its Q2 F2024 is for the three months ended Mar 31, 2024. (i) Earlier in the memo, we highlighted HP not having any info if Permian oil players will be adding Permian rigs in H2/24. (ii) Expects is North American rigs down small for its Q3 F2024. CFO said *“Currently, we expect our rig count in the third fiscal quarter to average in the high--140 range, which is lower compared to the 155 rig average realized during the second fiscal quarter”*. (iii) Remind that M&A is a factor in lower rigs BUT they also say that *“in many cases”*, it leads to equal or more rigs. When we saw this *“in many cases”*, it felt like trying to suggest that a good percentage of M&A leads to equal or higher rigs. We don't recall many mergers where they end up having more rigs. But mgmt stressed this later in the Q&A *“Clearly, the consolidation that we see usually in the first period of time there's some slowdown in activity. But at the end of the day they're going to want to keep their production levels up. And in many cases that means keeping the same amount or even adding some rigs.”* (iv) Moving super specs rigs to international. Part of this is because there is increasing international interest, but part is also to alleviate oversupply that looks to be driven by natural gas weakness. The fact they are offering these rigs internationally with the low natural gas prices right now is interesting because once they move the rigs international, they aren't likely to come back. So we have to wonder with their mid term natural gas view. (v) Seemed like an unenthusiastic natural gas view for the US. Later in the Q&A, mgmt said *‘You know, I think if you just look at the activity set over the last several years, the super spec segment of the market continues to grow on the percent on a percentage basis. Obviously, we've had a pull back in activity, both H&P and the general industry in general primarily as a result of natural gas prices like we've talked about. But I think it's you know, I think the outlook is very positive. I think the ability to continue to drive efficiencies and reliability do it in a safe fashion and. Leverage technologies are really those key things that are going to be needed That's what customers are looking for. So I feel good about overall the super spec space in the US in terms of trying to pick the timing. As you know, that's very challenging to do, but obviously oil prices are strong, but the gas basins, we've had quite a bit of pullback in activity. But again, I think we'll see some improvements here in the future.’* (vi) Hoping for natural gas to come back sooner and still waiting for US natural gas drilling to ramp up for new LNG projects supply in 2025. In the Q&A, mgmt was asked *“Long winded way of asking a question is, are any of these topics on the front of mind of your customer base? And how do you think about how that's going to translate into incremental drilling activity, first for LNG going into next year, and then potentially looking at the dynamics related to the data center?”* Mgmt replied *“Well, Kurt, it's a great question, and it's a question on everybody's mind, and no doubt there's a lot of opinions out there. Our opinion, our hope is that it's going to be sooner as opposed to later. I think at some point in time it's definitely going to happen on the gas side. It's just that natural gas is just a great energy source for lots and lots of reasons. And there's a huge opportunity ahead, obviously, the unconventional gas that opportunities that we see in the Middle East. So there's a market out there, and I think there's a huge opportunity ahead for us. It's just as I said earlier, Kurt, it's hard to say when that's going to be. I think we're going to play, H&P will play a very large role in that when that recovery takes off, just*

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like we were playing previously before the correction in the natural gas activity.” Our Supplemental Documents package includes excerpts from the HP Q2 F2024 call transcript.

Nabors: Small decrease in its Lower 48 rig count in Q2/24

Nabors reported its Q1 on Thursday and we tweeted [\[LINK\]](#) “Nabors Q1. Lower 48 rig activity. *“Looking to the second quarter, we continue to experience sluggish activity in the natural gas basins. This should keep average rig count slightly below the average for the first quarter” #OOTT #NatGas.*” Nabors guidance for Q2 is for “U.S. Drilling. Lower 48 average rig count of approximately 70 rigs”, which is down from 72 Lower 48 rigs in Q1/24.

SLB: North American business to be down YoY in 2024

SLB (formerly called Schlumberger) held its Q1 call on Monday. (i) Earlier in the memo, we noted SLB’s call on increasing oil and natural gas demand. (ii) Sees North America business down YoY. It was down 6% YoY in in Q1. And it sounds like full year 2024 will be down YoY. They noted a couple of times that International would more than offset any slowdown in North America. It wasn’t 100% clear but in the Q&A, mgmt was asked “*Okay and then maybe on North America it’s a smaller piece of your business but can you talk about how you see it developing over the course of the year past 2Q?*” Mgmt replied “*Yeah I think we have been originally guiding and we are keeping our guidance that we believe that on a full year basis it will be more muted than we had anticipated at the beginning of the year considering the softness of the market at the start of the year. The -- persistent low gas price, the capital discipline, and also the consolidation in the market. And we expect going forward, we guaranteed low single-digit growth sequentially. We anticipate at the end of the year to still outperform the market that we see year-on-year decline on reactivity by posting muted but positive growth. But the shortfall that we may have concerning this offset will be fully offset by international growth as we commented, where we see resilience and we see further growth potential in many markets.*” (iii) Non-OPEC supply. They didn’t get specifics but they highlighted International activity is broad and lots of long cycle developments and capacity expansions, including out of OPEC. In their opening remarks, mgmt said “*Specifically in the Middle East and North Africa, year-on-year growth was supported by continued investments in long cycle developments and capacity expansion projects in both oil and gas across Algeria, Egypt, Iraq, Libya, Qatar, Saudi Arabia, and the United Arab Emirates. And in Asia, we saw strong activity across the region led by offshore, notably in China, Indonesia, Malaysia, the Philippines, and India. Meanwhile, in North America, activity remained soft due to weaker gas prices, sustained capital discipline, and the effects of ongoing market consolidations. The slower activity contributed to revenue in the region declining by 6% year-on-year.*” (iv) Note we, at SAF Group do not have any detailed major project FID projects (recent FIDs and potential FIDs) like the big energy agency and sellside research teams should have. They should be able to give an analysis/forecast of potential supply addition by area. So we can’t say if SLB is pointing to non-OPEC supply continuing to increase or not. But they are saying continued offshore activity and that could infer continued growth in international oil supply. SLB said “*This cycle continues to be defined by broad growth across the*

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international basins. And it is nowhere more evident than in the Middle East and global offshore markets. In the Middle East, countries are investing to increase both oil and gas supplies to the end of the decade. The long cycle nature of the investments provides further confidence in the durability of the cycle. And we look forward to continue working for our customers to deliver on these targets. And offshore, many of the FIDs from the past few years have come out, leading to broad-based activity across Asia, Africa, Latin America, and Europe.”

Energy Transition: IEA GEVO 2024 scenario EVs will displace more oil by 2030

Peak oil demand

On Tuesday, the IEA released its Global EEVs Outlook 2024, which is their annual scenario look at how much EVs could be sold and how much oil EVs can displace by 2030. GEVO 2024's scenario (NOT a forecast) is for greater EV sales and greater oil displacement by 2030 than in GEVO 2023. Our Supplemental Documents package includes excerpts from the GEVO 2024.

The IEA specifically says this is NOT a prediction ie. not a forecast. This is NOT a forecast or prediction and the IEA explicitly say so. Rather this is an outlook based on a SCENARIO based on stated govt policies AND objectives. And the IEA specifically says these scenarios do not make predictions about the future!. This is the same concept as GEVO 2023. But they also say these scenarios are to inform decision-making by govt. So not a forecast, but a scenario. Pg 102. They use “A scenario-based approach is used to explore the outlook for electric mobility, based on recent market trends, policy drivers and technology developments. The purpose of the scenarios is to assess plausible futures for global electric vehicle (EV) markets and their potential implications. The scenarios do not make predictions about the future. Rather, they aim to provide insights to inform decision-making by governments, companies and other stakeholders about the future of EVs.”

The IEA base scenario is Stated Policies Scenario, which includes policy ambitions and outlooks. So whenever the government says here is their ambition is for EVs, that gets rolled into the scenario. “*The Stated Policies Scenario (STEPS) reflects existing policies and measures, as well as firm policy ambitions and objectives that have been legislated by governments around the world.*” Note the IEA says this includes objectives ie. something a government has said in is their ambition and put it in on paper. It would likely include any ambitions stated in the State of the Union address or throne speeches. The advantage of the IEA not having a prediction or forecast is that they have a scenario of EV sales based on government ambitions and objectives.

IEA says the outlook for US EVs “has remained stable over the past year”

We were wrong in saying how can the IEA not take into account all the negative comments from US and other global EV players in their GEVO 2024 and reduce their scenarios for EV sales. As noted above, their scenario is based on govt policies, objectives and ambitions so they don't have to change the EVs numbers. But they do make a point of saying that the US EVs outlook is stable over the past year! On pg 118 for their industry outlook, you wouldn't know the tone from GM, Ford and others is negative on their EVs outlook Rather the IEA writes “As a result of missed near-

term targets but robust longer-term ambition, the outlook for the United States based on OEM targets has remained stable over the past year.” We have trouble believing that any analyst would call the US EVs outlook stable over the past year..

The IEA did not change its critical assumption that a new EV basically displaces the miles driven by an ICE ie. when a new EV is bought, for their scenario, it's like an ICE is junked. This is the big assumption that we went on last year saying made no sense and is the key reason why the math is for oil being displaced. If you buy this assumption, then you can buy the math. This is the same assumption but they must know it is crazy because they don't even put in the text. In the GEVO 2023, this assumption was in a shaded highlighted box as if this is important. But we have to believe others besides other criticized this assumption so GEVO 2024 put it in a long small font note at the bottom of graph. Last year, they at least wrote it out in the general text. And you gotta love the way they write. They don't raise any questions on this particular assumption and try to imply it's conservative. They specifically say *“the accuracy of this assumption is uncertain”* but then immediately follow *“There is some evidence to suggest that EVs are driven further than their ICE counterparts, for example”*. Note this run-on sentence is new and was not included in GEVO 2023. It's hard to see due to the font size in the footnote, but here is what the long footnote says *“Notes: STEPS = Stated Policy Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario; RoW = Rest of the world; LDV = light-duty vehicle. Oil displacement is based on internal combustion engine (ICE) vehicle fuel consumption to cover the same mileage as the EV fleet. Oil displacement is calculated by assuming that the distance (total kilometres) travelled by EVs by segment each year would have been otherwise travelled by ICE vehicles or hybrid electric vehicles (HEVs). In the case of PHEVs – where the powertrain uses both oil-based fuel and electricity, only the distance covered by electricity is included. This method of estimation assumes that EVs replace ICE or hybrid vehicles of the same segment, and that these vehicles follow the same driving behaviour. The accuracy of this assumption is uncertain. There is some evidence to suggest that EVs are driven further than their ICE counterparts, for example.”*

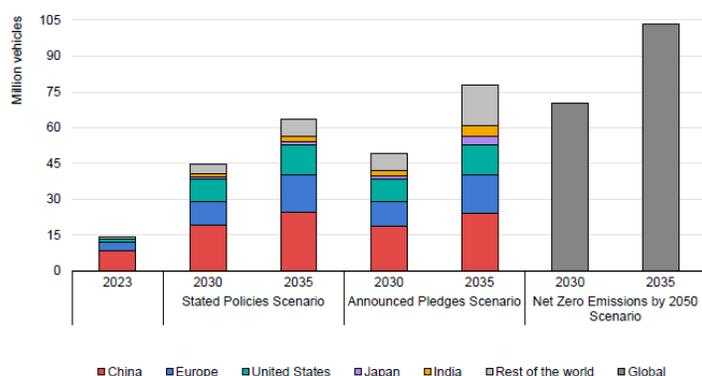
GEVO 2024 increases EV sales outlook based on STEPS. GEVO 2024 extended the horizon to 2035. (i) GEVO 2024: One annoying change is for some reason they have used the word “stock” of EVs as opposed to prior years of using “total fleet”. We couldn't see why so we don't know if the terms mean the same thing. Pg 104: *“In the STEPS, the stock of EVs across all modes except for two/three-wheelers (2/3Ws) grows from less than 45 million in 2023 to 250 million in 2030 and reaches 525 million in 2035. As a result, in 2035, more than one in four vehicles on the road is electric. On average, the EV stock grows by 23% annually from 2023 to 2035.”* (ii) *“In the STEPS, EV sales (excluding 2/3Ws) reach almost 45 million in 2030 and close to 65 million in 2035, up from around 14 million in 2023. The sales share of EVs grows from around 15% in 2023 to almost 40% in 2030 and over 50% in 2035”.* (iii) GEVO 2023: Pg 109. *“The total fleet of EVs (excluding two/three-wheelers) grows from almost 30 million in 2022 to about 240 million in 2030 in the Stated Policies Scenario (STEPS), achieving an average annual growth rate of about 30%. In this scenario,*

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EVs account for over 10% of the road vehicle fleet by 2030. Total EV sales reach over 20 million in 2025 and over 40 million in 2030, representing over 20% and 30% of all vehicle sales, respectively.”

Figure 50: EV sales by region and scenario 2023 vs 2030 vs 2035

Electric vehicle sales by region and scenario, 2030 and 2035



IEA. CC BY 4.0.

Note: Regional EV sales projections can be explored in the interactive [Global EV Data Explorer](#).

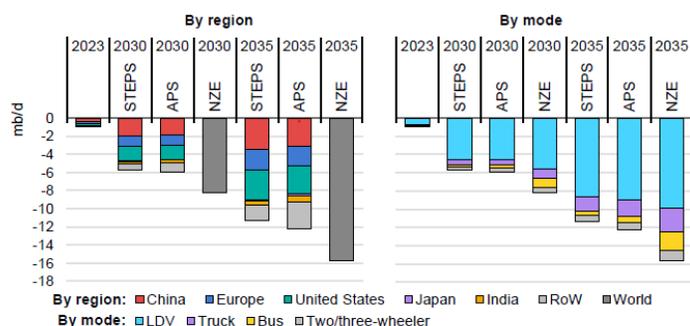
Source: IEA

GEVO 2024 increases oil displaced based on STEPS. (i) GEVO 2024. 6 mmb/d in 2030 and 12 mmb/d by 2035. Pg 150/151 “Globally, the projected EV fleet displaces 6 million barrels per day (mb/d) of diesel and gasoline in 2030, a sixfold increase on displacement in 2023. By 2035, even less oil is needed for road transport, with displacement reaching 11 mb/d in the STEPS” (ii) GEVO 2024 is displacing 6 million barrels per day vs GEVO 2023 of “nearly 6 mb/d in 2030”. GEVO 2023 “nearly 6 mb/d” was actually ~5.5 mbd. Pg 131 “Oil displacement increases from 0.7 mb/d in 2022 to nearly 6 mb/d in 2030 if pledges supporting electromobility in road transport around the world are fulfilled.”

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Figure 51: Oil displacement by EVs

Oil displacement by region and mode in the Stated Policies, Announced Pledges and Net Zero Emissions by 2050 Scenarios, 2023-2035



IEA, CC BY 4.0.

Notes: STEPS = Stated Policy Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario; RoW = Rest of the world; LDV = light-duty vehicle. Oil displacement is based on internal combustion engine (ICE) vehicle fuel consumption to cover the same mileage as the EV fleet. Oil displacement is calculated by assuming that the distance (total kilometres) travelled by EVs by segment each year would have been otherwise travelled by ICE vehicles or hybrid electric vehicles (HEVs). In the case of PHEVs – where the powertrain uses both oil-based fuel and electricity, only the distance covered by electricity is included. This method of estimation assumes that EVs replace ICE or hybrid vehicles of the same segment, and that these vehicles follow the same driving behaviour. The accuracy of this assumption is uncertain. There is some evidence to suggest that EVs are driven further than their ICE counterparts, for example.

Source: IEA

04/12/24: IEA keeps its call for peak oil demand by 2030

Knowing the Global EVs Outlook 2024 was coming in April, we were surprised when we saw the IEA's 04/12/24 blog that maintained its call for peak oil demand by 2030. We would have thought they would wait until after Global EVs Outlook 2024 report. Here is what we wrote in our Apr 14, 2024 Energy Tidbits memo. "On Friday morning, we tweeted [LINK](#) "No change to @IEA call peak #Oil demand by 2030. See 🙌 IEA post. But absent added energy/climate policies & increased \$\$ push into clean energy, "decline in global oil demand following the peak will not be a steep one, leaving demand close to current levels for some time" #OOTT." Separate but alongside the OMR, the IEA posted a brief "Oil demand growing at a slower pace as post-Covid rebound runs its course" [LINK](#) It's a good recap of the reasons why IEA sees slowing oil demand ahead. The conclusion from the piece is that there is no change to the IEA view that they see peak oil demand by 2030. We were surprised that the IEA came out with this call as we have been vocal in our view that we expected the IEA to push back its forecast of peak oil demand by 2030 in light of the EV assumptions they used in their April 2023 global EVs outlook major report. So they have certainly proven us wrong in that call. And the IEA highlighted that, after reaching peak demand, they don't see a steep drop off in demand. Rather, they see oil demand remaining around current levels for some time. They are certainly suggesting a long plateau. The IEA wrote "Global consumption of oil is set to peak, but its centrality remains. While we expect growth in oil consumption in 2024 (1.2 mb/d) and 2025 (1.1 mb/d) to remain robust by historical standards, structural factors will lead to a gradual easing of oil demand growth over the rest of this decade. Continued rapid gains in the market share of EVs, particularly in China; steady improvements in vehicle fuel economies; and, notably, efforts by Middle Eastern economies, especially Saudi Arabia, to reduce the quantity of oil used in power

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generation are together expected to generate an overall peak in demand by the turn of the decade. Oil remains extremely important to the global economy, and across some of its key applications, alternatives still cannot easily be substituted. In the absence of additional energy and climate policies and an increased investment push into clean energy technologies, the decline in global oil demand following the peak will not be a steep one, leaving demand close to current levels for some time. Nevertheless, cooling Chinese demand growth and considerable progress on the deployment of clean energy transition technologies mean that the oil market is set to enter a new and consequential period of transformation.” Our Supplemental Documents package includes the IEA brief.”

Energy Transition: Saudi Abdulaziz “world in future will require every molecule”

One of the big reality checks for the energy transition is that natural gas for electricity generation hasn’t gone down with the rapid increase in solar and wind. It’s a reality check that renewable is additive and that every electricity molecule is needed including from hydrocarbons. Earlier this morning, we tweeted [\[LINK\]](#) “Reality check! “The world now and the world in the future will require every molecule. Let’s work together, comprehensively, to make sure these molecules will be clean” Saudi Prince Abdulaziz. Energy demand incl #Oil & especially #NatGas is going higher. Thx @staunovo. #OOTT.” Our tweet included the transcript we made of Saudi Energy Minister’s comments this morning in Riyadh. SAF Group created transcript of comments by Saudi Energy Minister Abdulaziz at WEF in Riyadh on Apr 28, 2024. Video posted by UBS Giovanni Staunovo [\[LINK\]](#) Items in “italics” are SAF Group created transcript. Abdulaziz “*I just want to make sure that we depart with some hopefully with an idea or two. First of all, let’s congregate on the principle that being green is not an ideology or demagoguery or a religion. There is a script for it and upon which people will be tested. Are you faithful or a believer or are you not a believer. So we have to take that out of our radar. Because what is going on now in today’s environment is that it reminds me of the inquisition period. Are you a believer or non-believer. If you are a believer, you are a good boy. If you are not a believer, may God they send you to hell. And get you to be burned by hydrocarbon. Unabated hydrocarbon to make it worse. [chuckle]. But I honestly believe that being environmentally conscious is I think a humanistic view for all of us. Those who are incubating the Earth today and those that will incubate it afterward. In fact, our duty is to make sure that whatever we do today cannot bring any harm and cannot disturb the potential of any future commitment, future aspiration to these generations to come. Be it as it may, I think we should also be conscious of the fact that the energy challenge is so big because we still, now we talking about AI, data centers, the amount of electricity that will be required. The electrification itself, and the component of the electrification which would require also hydrocarbons including plastic and what have you,. My point, simply said, the world now and the world in the future will require every molecule. Let’s work together, comprehensively, to make sure that these molecules will be clean molecules or electrons that will be also clean electrons. The world needs all of the above.”*

World needs every molecule

Energy Transition: Last Sunday, Elon Musk signaled low sales were coming

No one should have been surprised that Tesla reported low sales numbers on Tuesday. Last Sunday afternoon, we tweeted [\[LINK\]](#) “How can you not at least appreciate direct reality check on EV market by @elonmusk? “Tesla prices must change frequently in order to match production with demand” Lesser demand for EVs = Tesla cutting prices this weekend.

Musk signaled low Tesla sales were coming

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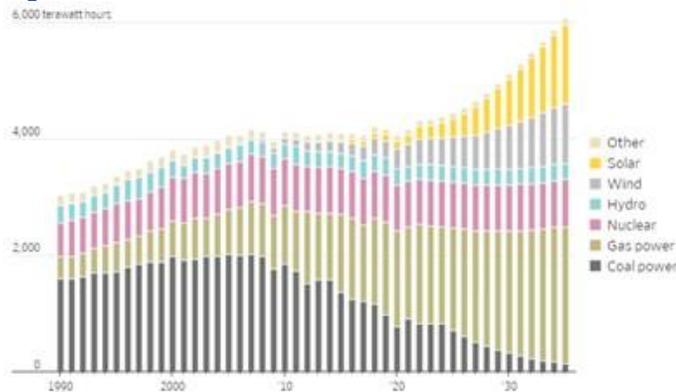
#OOTT.” We forwarded an Elon Musk Sunday tweet that said “*Other cars change prices constantly and often by wide margins via dealer markups and manufacturer/dealer incentives. Only a fool thinks the “MSRP” is the real price. Tesla prices must change frequently in order to match production with demand.*” Musk was commenting on the big price cuts last weekend and his saying that the price changes are to match production with demand was a clear indication that demand was less than expected so they have to cut prices to get demand.

Energy Transition: WSJ – AI Datacenters to drive US nat gas demand, potentially +8%

We have been saying for months now that there is a big upcoming energy crunch with the enormous amounts of energy needed to power AI datacenters. On Friday, the Wall Street Journal released an article [\[LINK\]](#) titled “*Air Conditioning and AI Are Demanding More of the World’s Power – Renewables Can’t Keep Up Renewables can’t keep up with growth, which means more coal and more emissions*”. The main narrative of the article is that with the developing world becoming increasingly industrialized, the world becoming hotter, and the novelty of AI datacenters that “guzzle” energy, renewables are not on track to meet this growing demand. In the US, their next major challenge is the rising demand for energy from data centers. The IEA forecasts data centers will go from making up 4% of total energy consumption in the US in 2022 to 6% by 2026, and Thunder Said Energy estimates AI alone could add 8% to natural gas demand in the US by 2030. The way to think about the shift in the US’ energy mix is that everything that used to be coal is essentially being replaced by natural gas as the reliable source of power, delivering on-demand electricity as needed, whereas solar farms, wind and hydro are either constant or intermittent contributors to the electric grid (what happens when the sun doesn’t shine, or the wind doesn’t blow, etc). In the developing world, India’s demand for electricity alone has grown at >8% YoY and basic utilities for their growing population like electricity and lighting are making them burn their cheapest form of fuel: coal. There are currently 30 gigawatts worth of coal plants currently under construction in India. Karthik Ganesan of India’s Council on Energy, Environment and Water, was quoted as saying “*If anybody was expecting India’s coal to peak anywhere before the mid-2030s, they were probably unrealistic*”. And that’s just India – China too has been having issues with their renewables push, because while they have expanded their wind and solar generating facilities, their major problem is the grid cannot connect these projects fast enough. We sat in on a Citi Mining and Metals call earlier this month which pointed out while renewable projects are relatively quick to complete (about 1 year), the grid expansion needed to connect them to meaningful facilities and cities takes about 2-3 years. So there is a lag factor to consider. Below is a chart of America’s forecasted energy mix, along with India’s power generation sources since 2015.

**AI centers =
more nat gas
demand**

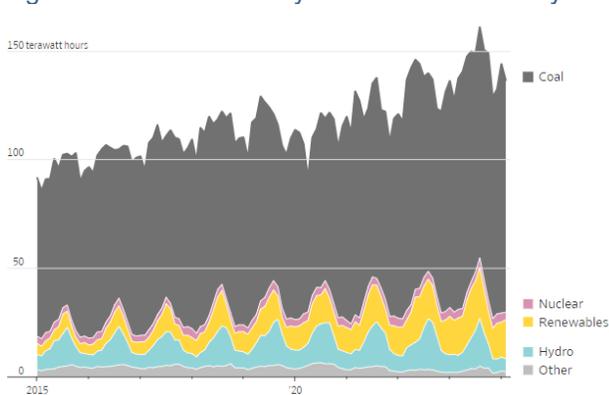
Figure 52: US Power Mix Forecast



Note: Figures are projections from 2024.

Source: Thunder Said Energy, Wall Street Journal

Figure 53: India's Monthly Power Generation by Source



Source: Central Electricity Authority via McCloskey, Wall Street Journal

Energy Transition: Baker Hughes data centers need off-grid & distributed power

Baker Hughes had a different perspective on the rapidly emerging problem/opportunity on how to power the escalating growth in power required by data centers/AI. Everyone talks about the hugely increasing power demand but Baker Hughes took it a little deeper and said this means a growing need for “off-grid solutions as well as distributed power generation”, . Most talk about the need for more power but don't say anything more specific. In the Q&A, mgmt said “Yes, I'd agree with you that there is a growing realization that there is a growing demand for energy and that's being driven by some of the datacenters. And look, AI provides huge benefits both internally and also from an external perspective to us internally to drive optimization for our customers, but also externally to drive growth for our equipment and the services that we provide. And that's why we like the ready gas turbines that go on natural gas today, but then can switch to hydrogen. That's also why we like the solutions that we're offering with regards to other clean power solutions. And as we talk to our customers, that's what they're looking for. And when you look at the datacenter developers, they're all coming

Data centers need off-grid power

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to a realization that there is going to be a growing need for off-grid solutions as well as distributed power generation with a view to continuing the aspect of reducing emissions. So there's also opportunities for geothermal and others where we play and we look at it as being a growing element of our equipment portfolio and a nice segment that again diversifies us versus others because of the portfolio that we have."

Energy Transition: Exxon direct air capture is way too expensive even costs cut in half

Exxon held its Q1 call on Friday and repeated the reality check on Direct Air Capture – the costs are nowhere near low enough to be able to be broadly applicable at a reasonable cost. We tweeted [\[LINK\]](#) "Same Reality check on Direct Air Capture as 🙌 Mar 1 tweet! \$XOM Q1, CEO Woods "our initial goal is to cut the cost in half, which will still be too expensive,.."
Woods "focused on how we can make this [DAC] technology broadly applicable at a cost that society can afford" #OOTT." Exxon CEO Darren Woods made a point of repeating what he said two months ago – Direct Air Capture costs are nowhere near they need to be to be able to be commercially available to a large number of customers at a reasonable price. In his prepared remarks, Woods said "Today, many technologies are competing to crack the code and make DAC scalable and affordable. Our scientists and engineers are hard at work on this problem. We've launched a pilot project at Baytown that has demonstrated feasibility with the use of a proprietary capture process. Our initial goal is to cut the cost in half, which will still be too expensive, but will help move us down the cost curve. The current market for DAC is tiny at less than 10,000 tons per year of CO2 captured, but the long-term potential is huge." Our Supplemental Documents package includes excerpts from Exxon mgmt prepared remarks and the Q1 call Q&A.

Direct Air Capture

A huge amount of air has to be processed [by DAC] to remove a ton of CO2

Exxon CEO Woods reminded of the huge challenge for Direct Air Capture to remove CO2 from the air. In his prepared remarks, Woods said "The last technology I'll touch on today is Direct Air Capture, or DAC. For the world to reach net zero, negative emissions technologies are going to be needed. None holds greater long-term promise than DAC. The challenges, however, are as big as the opportunity. Atmospheric CO2 is extremely dilute at about 425 parts per million. A massive amount of air has to be processed to remove a single ton of carbon dioxide."

XOM not looking at commercializing s very small DAC with really high costs

There was an excellent reminder by Exxon CEO Woods that there is a big difference between some who are working to commercialize a very small project to a limited number of customers who will pay a very high price to prove it can work ie. they don't believe the objective is show DAC can work but at nowhere near a price point that people can broadly pay. Rather they think the objective is to try to make DAC work at scale at a price that people can afford to pay. In the Q&A, CEO Woods was asked about others who say they have a commercial DAC ready soon. Woods replied "Yeah. What I would say with--Oo, may I start with the last point of your comment, which is, yeah, there are alternatives out there today versus what we're working on. The issue is the cost associated with them, and we're not looking at what we can commercialize in the short term based on what I would say is a very narrow market of limited customers who are willing to pay a very high price to demonstrate a level of decarbonization. We're focused on how we can make this technology broadly

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applicable at a cost that society can afford. So that's we are very focused on the long term, not the short term, and our view is the available technologies today don't meet the cost requirements, and that's, somewhere between the \$600,000 per ton of CO2 removed, and our view is if you try to apply that across the emissions challenge the planet has, the world won't be able to pay for that. So we've got to find a reduction. Our cost -- we've set an initial target of cutting the cost in half just because that is a significant step change, recognizing it won't be enough, but if we can get the technology-- If we can develop the technology to a point that we're successful there, that gets us on this path and demonstrates the value of the concepts that we're developing to keep on going and drive further down. With respect to the technology and how it compares to what's commercially available out there, I would say part of the reason why this is proprietary technology is today it's proprietary, and so I'm going to keep it that way. I would say it is a brand-new approach. There are others who are out there working on new approaches as well, which, frankly, we're happy about. This is a tough challenge to break, and I'm not pretending like we're going to be the ones to solve it, but I am confident that we will give it our all, applying our capabilities. Others are doing that."

03/01/24: Exxon CEO direct air capture/sustainable aviation fuel reality check

Our tweet included our Mar 1, 2024 tweet on comments by Exxon CEO Woods on what we then called the reality check on direct air capture. Here is what we wrote in our Mar 3, 2024 Energy Tidbits memo. *"We shouldn't have been surprised to see there wasn't much coverage of Fortune's report on its interview as the last thing the pro climate change media side give credit to Exxon for its reality check on the energy transition. (i) Surely no one disagrees with the concept that we all want a planet that has cleaner air and is more sustainable. Our concern for several years has been the western governments put out an aspiration as an achievable plan despite it being dependent some unknown technological advancements and key elements like sustainable aviation fuel that everyone knew would be hugely expensive. It's why we have said for several years the Energy Transition will take way longer, cost way more and be a bumpy/rocky road. So Exxon CEO Darren Woods comments weren't going to get big attention. (ii) Woods had a simple message that people aren't prepared to pay the price for the energy transition. Fortune wrote "To have any chance of achieving carbon neutrality within the next 25 years, civilians must "be willing to pay for carbon reduction, because today we have opportunities to make fuels with lower carbon, but people aren't willing to spend the money to do that," he said. Businesses aren't keen on shelling out, either. "We could, today, make sustainable aviation fuel for the airline business, but the airline companies can't afford to pay." (ii) Direct air capture of CO2 will be hugely expensive. On Friday, we tweeted [\[LINK\]](#) "Reality check on Direct Air Capture! Exxon CEO Woods "We just built a pilot plant prototype that we're working on to try and cut the cost in half—which by the way, will still be too expensive," reports @thier_jane #OOTT [\[LINK\]](#)." So even if Exxon can reduce the Direct Air Capture pilot in half, it will still be too expensive." (iii) Sustainable Aviation Fuel is too expensive for airline companies. This should not surprise anyone. And it is something we have highlighted for years that the cost of SAF is way too expensive. On Friday, we tweeted [\[LINK\]](#) "Sustainable Aviation Fuel is very, very expensive!. Similar to @qatarairways CEO 06/19/23, Exxon CEO Woods "We could,*

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today, make sustainable aviation fuel for the airline business, but the airline companies can't afford to pay." #OOTT Thx @thier_jane [\[LINK\]](#). Our Supplemental Documents package includes the Fortune report."

Biggest direct air capture of carbon plant offsets <900 cars

As we noted above, Exxon CEO Woods highlighted the huge amount of air that required to capture 1 one of CO₂. And Woods also highlighted there is a huge way to go for anyone to a direct air capture CO₂ project to scale. Right now the world's largest direct air capture of CO₂ is the Orca Iceland project that offsets the impact of ~900 cars. Here is what we wrote in our Sept 26, 2021 Energy Tidbits, when we first reported on Orca. "We are well aware that governments and capital providers are going to make sure the world is put on a push to get to Net Zero, we just don't want to see that ambition result in an massive energy crisis for multiple years in the 2020s. But it gets increasingly harder to not believe a massive energy crisis is coming because we continue to see capital allocation go to energy transition technologies that are Not Ready for Prime Time. Yet, capital continues to pour into them. A good example is the push into direct capture of carbon from the air. On Tuesday, NowThis news tweeted a video [\[LINK\]](#) from Climeworks CEO (Jan Wurzbacher) on how they just turned into operation their Orca plant in Iceland, "which is the largest direct air capture plant currently operational in the world with a capacity of 4,000 tonnes of CO₂ that are captured from the air every year. So that's phenomenal capacity." We hadn't realized that the capacity of the direct air capture plants was that low, which is why we tweeted [\[LINK\]](#) "World needs massive cuts to #CO₂ emissions & need demonstration projects like this to show it can be done. But world's biggest project can remove 4,000 tonnes CO₂/yr only offsets <900 cars, EPA est tycpial car emits ~4.6 tonnes CO₂/yr. #EnergyTransition will be hugely expensive." Our tweet included the main page from the EPA's Greenhouse Gas Emissions from a Typical Passenger Vehicle [\[LINK\]](#) "a typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year". The math perspective is that the world's largest operating direct air capture of carbon plant will only offset the CO₂ emissions of <900 cars. Climeworks did not disclose the capital or operating costs of the Orca plant. But this must be hugely expensive to take the equivalent of <900 cars off the road. Yet direct air capture of carbon is still able to attract massive capital. To illustrate the challenge, the number of cars in the US is approx. 290 million, or the equivalent of ~325,000 Orca direct air capture of carbon plants.

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Figure 54: Climeworks Direct Air Capture Plant



Source: Climeworks, NowThis

Energy Transition: SunPower cutting 1,000 staff amid slowing solar power sales

One of the challenges for companies like SunPower is that they aren't huge with any diversified income streams so when their principal business (selling and installing solar panels for residences) doesn't work, they have to shut down the business. They aren't like big auto companies that can lose billions on EV, move to a slow down on EVs and have big ICE cash flows to survive. On Thursday, we tweeted [\[LINK\]](#) "More delays to growth in US residential solar. SunPower cutting ~1,000 staff (>1/4 of total), "Specifically, we are winding down our SunPower Residential Installation (SPRI) locations and closing SunPower Direct sales". #NatGas will be needed for longer for power. #OOTT". SunPower is a major residential solar supply and installer and it is cutting over ¼ of its staff and closing down its residential installation and direct sales. Our tweet reminds that natural gas is normally the key beneficiary from less solar power. To use our auto manufacturer analogy, SunPower doesn't have a big ICE cash flow stream to wait it out. On Thursday, SunPower released a Wednesday note to staff from Principal Executive Officer Tom Werner. Werner wrote "To position SunPower for the future, we need to achieve financial viability, which includes simplifying our business structure, transitioning away from areas where we have been unable to sustain profitable operations, and improving financial controls... while we worked hard to avoid this outcome, the market has been slower to recover than we initially expected". This is in line with our longstanding view on the Energy Transition: it will take way longer, cost way more and be a bumpy/rocky road. SunPower was one of the pure play green companies that had huge price moves up after Biden won. SunPower shares were <\$16 on Oct 31, jumped up to >\$54 in the week following Biden's inauguration and are now <\$2. Our Supplemental Documents Package includes the SunPower press release.

SunPower exits residential solar and direct sales

Energy Transition: Toyota hybrids continue their big growth

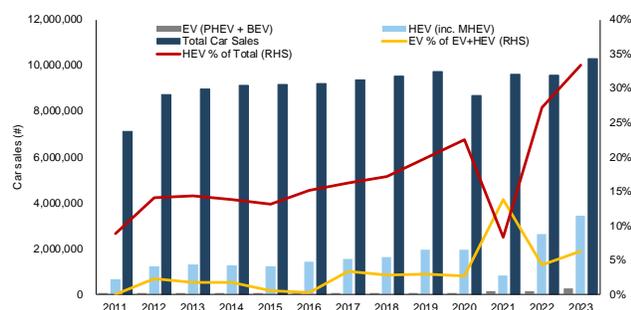
On Thursday, Toyota released their March car sales which includes a breakdown by region but also by vehicle type. Toyota has always heavily focused its new energy vehicles on hybrids rather than EVs as the way to go. And so they have been alone in the past several months in not having to change their future vehicles priorities. The March car sales continue

Toyota Sales

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to show hybrids are becoming the favoured vehicle of choice. Recall Toyota's first hybrid vehicle, the Prius, was released way back in 1997. On Thursday, we tweeted [LINK](#) "Everyone wants a Toyota Hybrid! Toyota #HEV March sales. Mar 24: 358,899, +14.9% YoY FY 24: 3,557,609, +31.1% YoY. Its dominance in HEV looks to be helping grow its small EVs sales. Toyota #EVs March sales Mar 24: 15,604, +84.5% YoY FY 24: 116,654, +210.1% YoY #OOTT." Hybrid vehicle (HEVs+MHEVs) sales went from 628,979 in 2011 to 3,446,937 in 2023 and now make up 33% of Toyota's total car sales (including ICE). Meanwhile, EVs (PHEVs+BEVs) went from 54 sold in 2011 to 228,671 in 2023, and only make up 6% of the electrified vehicle category (in 2023 it made up ~2% of total car sales). See the chart below to see the trend in sales mix of Toyota's lineup; while the EV category has increased somewhat since the pandemic boost, HEVs have been on an upward trend since early on.

Figure 55: Worldwide Toyota car sales, 2011-2023



Source: Toyota

Energy Transition: Texas power prices for Aug up from worries on electricity supply

It's only April but the concerns are already being raised for electricity supply in Texas in the summer if it's another hot summer. This is increasingly so because Texas has become more reliant on interruptible solar and wind. Yesterday, Bloomberg reported "Texas Power Prices Signal Grid Stress in Long, Hot Summer Repeat". And "A surge in Texas power prices for August suggests another summer of heavy electricity demand — and potential grid strain — to meet air-conditioning needs. Traders start looking at prices months in advance to gauge the outlook for demand. Already in mid-April, August power prices for Dallas soared to \$168.70 a megawatt-hour, which was the highest level in five years for this time of the year, according to Bloomberg Fair value data. Prices were still hovering around that level on Friday, an 82% premium versus a year earlier. The state's grid operator warned the same day of possible deficient power reserves from April 29 through May 1. The Texas grid repeatedly has suffered from tight electricity supplies in the past two years as extreme weather and surging power demand stress aging infrastructure. As the state becomes more reliant on renewable energy that hinges on the whims of the sun and the air, there's a rising concern about potential electric scarcity as solar power plunges at dusk. At those times — often when demand is still very strong — natural gas-fired plants and batteries need to ramp up quickly to keep the power flowing." Our Supplemental Documents package includes the Bloomberg report.

Texas Aug power prices up

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Figure 56: Dallas Summer Electricity Prices Climb



Source: Bloomberg

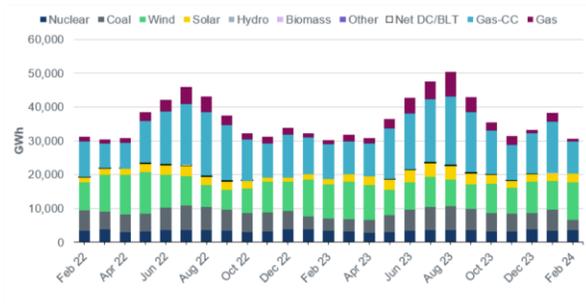
Texas wind generation typically declines in May/June/July

We remind that Texas is moving into its seasonally low period for wind generation, which happens every summer. One key Texas electricity to remember for May is that normally Texas wind generations starts to seasonally decline in May June and July. This is the key reason why the worries in Texas about electricity reliability are in the summer more than the winter. Fortunately for Texas when the wind doesn't blow in the summer and wind generation is at its low, Texas has natural gas to step and fill the void. Below is ERCOT's current Monthly Energy Generation Mix [\[LINK\]](#), which shows how wind generation seasonally declines around now and natural gas generation seasonally increases. Below that is a graph we used in our July 31, 2022 Energy Tidbits memo from Platts that shows the average hourly wind output in 2022 compared to the 5-year historical output.

Figure 57: Monthly Energy Generation Mix

MONTHLY ENERGY GENERATION MIX

The monthly energy generation increased by 1.3% year-over-year to 30,625 GWh in February 2024, compared to 30,228 GWh in February 2023. The chart below shows the generation type fueling the grid each month.

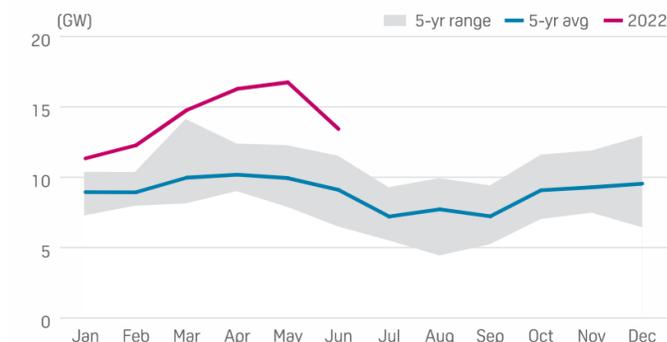


Data for the last two months is based on preliminary settlements.

Source: ERCOT

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Figure 58 ERCOT Average Hourly Wind Output From SAF 07/31/22 Energy Tidbits



Source: ERCOT

Capital Markets: Several G20 members insist on 2% wealth tax on Billionaires

On Thursday, the economic ministers of Germany Brazil, South Africa and Spain wrote a comment piece in the Guardian [\[LINK\]](#) outlining their solution (among others) to fight global wealth inequality: a annual 2% wealth tax on billionaires. The ministers referenced the work by Brazilian economist, Gabriel Zucman, who spoke at a G20 press conference suggesting the measure be applied to “unlock” an additional US\$250 billion in tax revenues every year. In the commentary piece, the finance chiefs said “*The tax could be designed as a minimum levy equivalent to 2% of the wealth of the super-rich. It would not apply to billionaires who already contribute a fair share in income taxes. However, those who manage to avoid paying income tax would be obliged to contribute more towards the common good...we need to enhance the ability of our tax systems to fulfil the principle of fairness, such that contributions are in line with the capacity to pay. Persisting loopholes in the system imply that high-net-worth individuals can minimise their income taxes. Global billionaires pay only the equivalent of up to 0.5% of their wealth in personal income tax. It is crucial to ensure that our tax systems provide certainty, raise sufficient revenues, and treat all of our citizens fairly*”. We aren’t sure what they mean by “billionaires who already contribute a fair share in income taxes”. Remember that a wealth tax is a lot different than an income tax; wealth taxes an individual’s net worth regardless of how much they made or lost each year. These G20 members (not all members) believe that if they band together, they can address the common rebuttal that billionaires will just shift their assets to a more tax-friendly country. Our Supplemental Documents package includes the Guardian commentary piece and the Gabriel Zucman press conference summary.

G20 members suggest 2% wealth tax

Capital Markets: IFIC, mutual funds back to net redemptions but equity sales remain

We have been highlighting the big change to Cdn mutual funds that started in Q2/22 – when there started a shift from net sales to massive net redemptions in balanced and equity funds. What started in H2/22 played out even bigger in 2023 and is continuing to start 2024. On Tuesday, IFIC (Investment Funds Institute of Canada) reported [\[LINK\]](#) mutual funds and ETF sales for March. IFIC reported net redemptions (sale of positions) for balanced mutual funds were -\$2.727b in March vs net redemptions of -\$0.871b in February and -\$4.475b in January. This brings the YTD figure for Balanced net redemptions to -\$8.073b. Equity funds saw sales (buying) of \$0.722b in March, after sales of \$1.548b in February and -\$1.058b of redemptions

IFIC Cdn mutual fund data

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in January. So not totally negative signs in March, but combined the net redemption was still - \$0.826b in March (balanced + equity). Recall February was the first net mutual fund sale in 12 months, with the last positive net sale being February 2023, and it has been brutal since. Recall in January we learned that in 2023 there were \$82.5b of net redemptions in balanced and equity mutual funds! This is more than double the net redemptions of 2022. Last year net redemptions in balanced and equity funds totalled \$38.47b, which was a massive YoY crashing of \$138.92b vs 2021 that saw net sales in balanced funds and equity funds of \$100.45b. Note that Q2/22 was when it flipped from net sales into the massive net redemptions to end 2022. Our Supplemental Documents package includes the IFIC release.

Figure 59: Cdn Mutual Fund Net Sales/Net Redemptions (\$ Millions)

Mutual fund net sales/net redemptions (\$ millions)*

Asset class	Mar 2024	Feb 2024	Mar 2023	YTD 2024	YTD 2023
Long-term funds					
Balanced	(2,727)	(871)	(4,167)	(8,073)	(9,512)
Equity	722	1,548	(2,013)	1,212	(2,257)
Bond	1,688	1,768	480	7,198	6,307
Specialty	626	777	456	1,969	1,169
Total long-term funds	309	3,221	(5,244)	2,306	(4,293)
Total money market funds	(107)	(40)	1,800	340	4,118
Total	202	3,182	(3,445)	2,646	(175)

Source: IFIC

There were massive redemptions in Cdn active equity/balanced funds in 2023

2023 was a brutal year for net redemptions for Cdn balanced and equity funds and even more than in 2022. Here is what we wrote in our Jan 28, 2024 Energy Tidbits memo. *On Friday, we tweeted [LINK](#) "Brutal year for net redemptions in balanced and equity mutual funds in Canada. @ifc reflects \$82.5 billion net redemptions including \$56.9b from balanced mutual funds and \$25.6b from equity mutual funds. #OOTT." One of the big Cdn equity stories in 2022 continued to play out in an even bigger way in 2023 – the continued net redemptions from active managed Cdn equity and balanced mutual funds. This flipped in Q2/22 from massive net sales into balanced and equity mutual funds to massive net redemptions in equity and balanced mutual funds. This year, the 2023 net redemption total dwarfed those in 2022. On Wednesday, IFIC (Investment Funds Institute of Canada) reported [LINK](#) mutual funds and ETF sales for November. IFIC reported net redemptions for balanced mutual funds were \$4.612b in December vs \$6.510b in November and \$8.569b in October. IFIC also reported net redemptions for equity mutual funds were \$2.514b vs net redemptions of \$3.178b in November and \$4.142b in October. This means, barring any major revisions, that in 2023 there were \$82.5b of net redemptions in balanced and equity mutual funds! This is more than double the net redemptions of 2022.*

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Figure 60: Cdn Mutual Fund Net Sales/Net Redemptions (\$ Millions)

Mutual fund net sales/net redemptions (\$ millions)*

Asset class	Dec 2023	Nov 2023	Dec 2022	2023	2022
Long-term funds					
Balanced	(4,612)	(6,510)	(4,935)	(56,866)	(29,959)
Equity	(2,514)	(3,178)	(3,069)	(25,568)	(8,461)
Bond	845	(435)	(2,187)	6,986	(13,811)
Specialty	176	391	102	3,538	1,306
Total long-term funds	(6,105)	(9,732)	(10,088)	(71,909)	(50,925)
Total money market funds	790	1,227	1,802	14,825	7,196
Total	(5,315)	(8,506)	(8,286)	(57,084)	(43,729)

Source: IFIC

Capital Markets: AARP, >50% ages 50+ worry will run out of money in retirement

We recognize it is a sensitive subject but we continue to believe there is a big confrontation that has to come up between young people and old people to ensure that there is a fair allocation of government social funding such that there is something left for young people. And our concern remains that baby boomers will increasingly want more of the pie as their own savings and any inheritance from their parents is less than they expected. One of the trends that we have seen is that the silent generation have had longer lives and normal income silent generation run out of money in retirement, which means there is zero money being passed down to their boomer kids. And in many cases, the silent generation have to move back in with their boomer kids so that adds costs to boomers, who can then have both their parents and their kids still living with them. So we aren't surprised to see the AARP release [\[LINK\]](#) "New AARP Survey: 1 in 5 Americans Ages 50+ Have No Retirement Savings and Over Half Worry They Will Not Have Enough to Last in Retirement." AARP did not mention our above concern. But wrote "A new AARP survey finds that 20% of adults ages 50+ have no retirement savings, and more than half (61%) are worried they will not have enough money to support them in retirement. The findings also reveal a decline in overall sense of financial security among men, 42% of whom describe their financial situation as "fair" or "poor," up from 34% in the beginning of 2022." And "America is facing a serious retirement crisis. AARP has a long history of supporting legislation to expand access to retirement savings, but Congress must act more swiftly to provide the financial support older Americans need and deserve," said Nancy LeaMond, AARP Executive Vice President and Chief Advocacy & Engagement Officer." Our Supplemental Documents package includes the AARP release.

AARP survey on Ages 50+ in retirement

Demographics: Japan population declines for 13th consecutive year

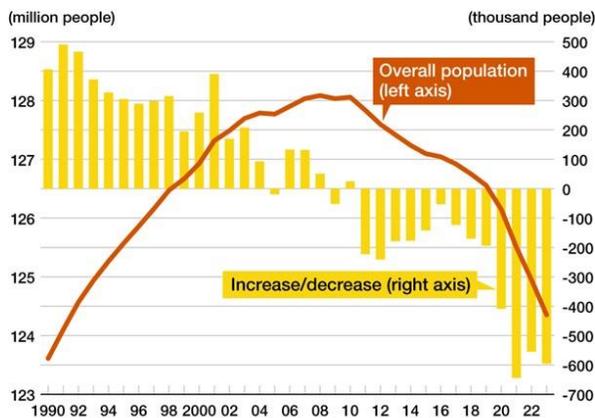
Increasing immigration has helped but only slightly given how the age of the Japanese population. No one is surprised to see the reports this week that Japan population declined for the 13th consecutive years to 124,352,000 and that its Seniors 75 and over are now over 20 million people or 16.1% of total population. Nippon reported [\[LINK\]](#) "In 2023, Japan's overall population declined for the thirteenth consecutive year, but its population aged 75 and over rose above 20 million for the first time, as more of the baby boom generation joined this cohort. An estimate published by Japan's Ministry of Internal Affairs and Communications shows that the total population as of October 1, 2023, was 124,352,000. This was a drop of 595,000 (0.48%) from the previous year. It is the thirteenth consecutive year that the population decreased. The population of Japanese citizens was 121,193,000, for a record

Japan population now 124,352,000

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year-on-year decrease of 837,000, or 0.69%. The natural population decline, calculated by subtracting births from deaths, reached a record high of 837,000, rising for the seventeenth year running. This decline was 414,000 for women and 423,000 for men. For the second straight year, there was a net increase in immigration, with 242,000 more people entering than leaving Japan.” Our Supplemental Documents package includes the Nippon report.

Figure 61: Population Change in Japan
Population Change in Japan



Created by Nippon.com based on data from the population estimate of the Ministry of Internal Affairs and Communications (as of October 1, 2023).

nippon.com

Source: Nippon

Demographics: AAA, raising highway speed can lead to more side street crashes

Who hasn't been on the highway driving for awhile and then exited onto a side street and had to remind themselves that the speed limit is way lower. On Thursday, the AAA posted a blog *“Fast on the Freeway Can Lead to Fury on the Side Streets. New AAA Research Exposes the Crash Danger of Spillover Speeding.”* [\[LINK\]](#) We were a little surprised to see the AAA blog as we hadn't realized that raising highway speeds was under consideration anywhere. But the AAA blog reminded of this concern that drivers coming off the highway don't slow down to side street speeds, which increases the risk of side street accidents. AAA wrote *“Raising speed limits on highways could lead to more crashes on nearby roads, according to new research by the AAA Foundation for Traffic Safety. This “spillover effect” creates unintended safety hazards for local communities that might not be involved in the decision-making process to raise the posted speed limit on a nearby highway. According to NHTSA, speeding is a significant safety concern, contributing to almost one-third of road fatalities in the past 20 years.”* Our Supplemental Documents package includes the AAA blog.

AAA warns on raising highway speeds

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

In January, I went over 10,000 followers on Twitter/X. I really appreciate the support and, more importantly, some excellent insights and items to look at from Twitter followers. It helps me do a better job. For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at

@Energy_Tidbits on Twitter

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[\[LINK\]](#). 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

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

Look for energy items on LinkedIn

Misc Facts and Figures.

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

Another TV day for Cdn golf fans: Calgary's Stephen Ames in the final group

It seems like most weeks, Cdn golf fans have a reason to watch golf on Sunday. Calgary's Stephen Ames is 2nd at -9, one stroke off the lead in the Mitsubishi Electric Classic on the PGA Tour Champions. Ames has had another great year on the tour with one victory so far and sitting 4th on the money list. There is a tougher challenge for Nick Taylor and Adam Hadwin who are T5, 3 shots behind the leaders in the team event on the PGA tour – the Zurich Classic of New Orleans. But tomorrow is an alternate shot format which always brings unpredictable results.

Boston Bruins about to extend their playoff streak over Toronto Maple Leafs

Any Leafs fan wasn't happy to draw the Bruins in the first round of the playoffs. The Boston Bruins beat the Toronto Maple Leafs 3-1 last night in Toronto to take a 3-1 lead in the first round series. The Bruins have had the Leafs numbers in the playoffs and look like they will continue their streak. The last time the Leafs beat the Bruins in the playoffs was in the old original six team days when they beat the Bruins in the 1959 playoffs. This year is only the 7th playoff meeting since 1959. The Bruins beat the Leafs in 1969, 1972, 1974, 2013, 2018 and 2019.

Toronto Maple Leafs 1958-59 was the core for the last 4 Stanley Cup wins

The Leafs haven't won the Stanley cup since their 4 Stanley Cup wins in 1961-62, 1962-63, 1963-64 and 1966-67. The core of those winners were from the 1958-59 Leafs that beat the Bruins. In the 60s', the Leafs would practice at the Tam O'Shanter rink at Kennedy Road & Sheppard Ave in Agincourt (northeast part of Toronto) when there were events at the Maple Leaf Gardens. My mom would take get as lunch time so we could go watch and get autographs and broken sticks from the Leafs. These were in the days when autographs were for kids. I don't know exactly in the early 60's but it is sometime between Nov 1963 and 1966-67 season. Below are the autographs of Frank Mahovlich, Bob Nevin, Bob Baun, John Bower, Bob Pulford and Carl Brewer.

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Figure 62: Toronto Maples Leafs early 1960s



Source: SAF Group

Edmonton Oilers replace T-shirts with Donairs for fans

The Edmonton Oilers beat the LA Kings 6-1 on Friday in Edmonton. It was a big win but one other story from the game that got national news attention was the DonAir. Everyone at hockey games has seen the T-shirt guns that are used to fire T-shirts up in the stands for fans. But the Oilers did it differently on Friday with what was called DonAir. They replaced the T-shirts with Donairs that were tightly packed in a soft foam cylinder. Donairs are a Canadian thing and variation of the Turkish Doner Kebab. Donairs were first created in Halifax with credit, disputed by many, to the King of Donair. Donair is street food, a rolled up pita, seasoned beef, tomatoes, onions, and Donair sauce.

10-day stretch of palindrome dates about to end

After we went to press for last week's (Apr 21, 2024) Energy Tidbits, AccuWeather tweeted [LINK](#) "Did you know we're inside a 10-day stretch of palindrome dates?! That means every date reads the same backward as it does forward!", which included the below graphic noting this period from 2/20/24 thru 2/29/24.

Figure 63: Palindrome Week



Source: AccuWeather

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