Energy Tidbits

June 16, 2024

Produced by: Dan Tsubouchi

IEA Forecasts Peak Oil Demand by 2030 But Its Key Assumption EVs Displace 6 mmb/d of Fuels Has to be Questioned

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. IEA continues to forecast peak oil demand by 2030 but it's key assumption that EVs displace 6 mmb/d of fuels is based on govt policies AND objectives rather than what has happened in EVs market in last year. [click here]

2. IEA keeps increasing its lookback at 2023 oil demand such that its 2024 oil demand forecast from March of 103.2 mmb/d is unchanged despite the IEA cutting its growth rate for 2024 oil demand for 3rd consecutive month. [click here]

3. US shale/tight oil been flat for last 4 mths around 8.35 mmb/d, which is below Dec 2023 exit of 8.42 mmb/d. [click here]

4. Vortexa's crude oil floating storage last 7-weeks average is now up to 81.28 mmb. [click here]

5. Will European Parliament election results shift Europe away from left to centre right and delay climate initiatives? [click here]

6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.

7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

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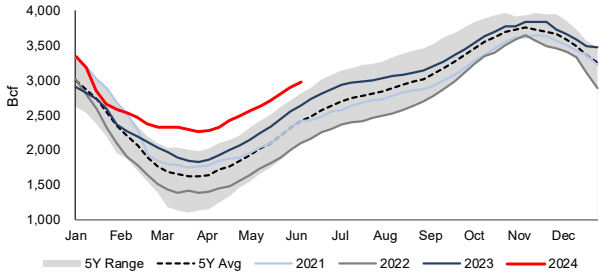
Natural Gas: Warning for risk US natural gas storage gets filled early

US natural gas storage to be filled early?

It's now halfway thru June and US gas storage is still up YoY. Plus we continue to see forecasts for Europe gas storage to be full well ahead of winter. Our concern is that we still see the risk for US gas storage to also be full before winter. And our concern is that if there is the visibility to US storage being full early, then there will be a hit to HH prices in Sept/Oct ahead of the winter. There may very well be items such as hurricane interruptions, a big spike up in natural gas for data centers, etc. that will change this outlook but when we see natural gas storage this much higher YoY and forecasts for Europe storge full by Sept 30, we still see the risk for an early fill to US natural gas storage. As noted below, US natural gas storage is now +364 bcf YoY, which is up WoW from +350 bcf YoY last week. Note that last week's storage was revised up to 2,900 bcf from 2,893 bcf.

Figure 1: US Natural Gas Storage



Source: EIA

Natural Gas: +74 bcf build in US gas storage; now +364 bcf YoY

+74 bcf build in US gas storage

For the week ending June 7, the EIA reported a +74 bcf build. Total storage is now 2.974 tcf, representing a surplus of +364 bcf YoY compared to a surplus of +350 bcf last week. Since February, total storage has remained well above the top end of the 5-yr range. Total storage is +573 bcf above the 5-year average, below last week's +580 bcf surplus. Below is the EIA's storage table from its Weekly Natural Gas Storage report [LINK].

Figure 2: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Year ago (06/07/23)		5-year average (2019-23)	
Region	06/07/24	05/31/24	net change	implied flow	Bcf	% change	Bcf	% change
East	603	575	28	28	568	6.2	485	24.3
Midwest	712	688 R	24	24	624	14.1	558	27.6
Mountain	224	218	6	6	145	54.5	138	62.3
Pacific	276	273	3	3	173	59.5	232	19.0
South Central	1,159	1,146	13	13	1,102	5.2	989	17.2
Salt	336	330	6	6	323	4.0	298	12.8
Nonsalt	823	817	6	6	779	5.6	692	18.9
Total	**2,974**	**2,900 R**	**74**	**74**	**2,610**	**13.9**	**2,401**	**23.9**

R=Revised.

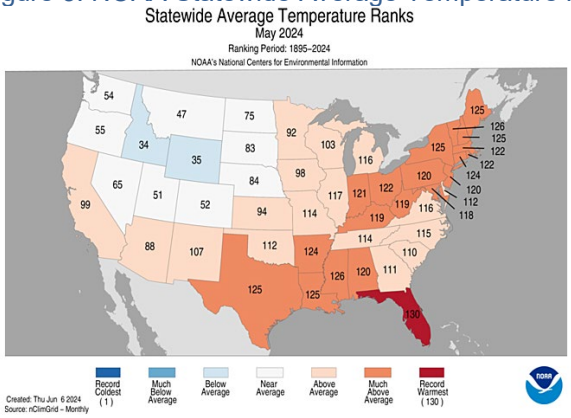
Source: EIA

Natural Gas: NOAA, 13th warmest May in last 130 years in the US

13th warmest May in last 130 years

On Monday, the NOAA published their May recap for assessing the U.S. Climate, which revealed May 2024 was the 13th warmest the US has seen in the past 130 years. May is typically the end of shoulder season for natural gas. As a general rule, there isn't really any significant weather driven demand for natural gas. And unless it is hugely warmer than normal in the major population areas, it isn't enough to drive a big air conditioning demand as it's more "leave the windows open" type of weather. In the news release [LINK], the NOAA wrote "*The average May temperature across the contiguous U.S. was 62.3 degrees F (2.1 degrees above the 20th-century average), ranking as the 13th-warmest May in NOAA's 130-year climate record. May temperatures were above average across much of the eastern contiguous U.S., including Florida, which saw its warmest May on record. Thirteen additional states had their top-10 warmest May on record…. The average temperature for the contiguous U.S. during meteorological spring was 53.7 degrees F (2.8 degrees above average), which tied with 2016 as the sixth-warmest spring on record. Arkansas, Kentucky, Ohio, Virginia and West Virginia each had their second-warmest spring on record, while an additional 21 states ranked within the top-five warmest springs."* Below is a picture of statewide average temperature ranks in May.

Figure 3: NOAA Statewide Average Temperature Ranks by State – May 2024



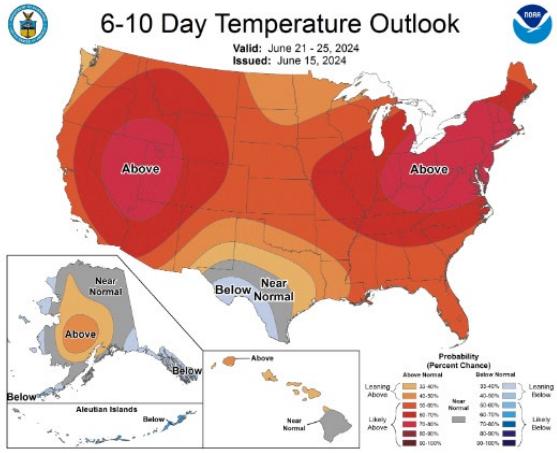
Source: NOAA

Natural Gas: NOAA sees hot weather across the Lower 48 to end June

NOAA sees hot weather to end June

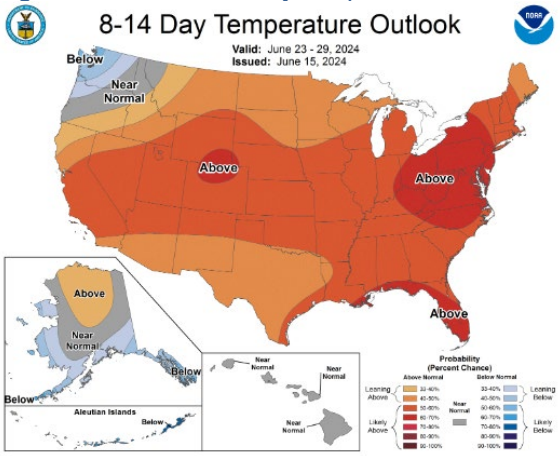
Yesterday, we tweeted [LINK] "*Positive support for HH #NatGas prices. Its going to be really hot in last half of June! @NOAA updated 6-10 & 8-14 day temperature outlook covers June 18-26. #OOTT."* Our tweet included NOAA's June 15 updated 6-10 and 8-14 day temperature outlook covering June 18-26. NOAA forecasts hot weather across all of the Lower 48.

Figure 4: NOAA 6-10 day temperature outlook for June 21-25



Source: NOAA

Figure 5: NOAA 8-14 day temperature outlook for June 23-29



Source: NOAA

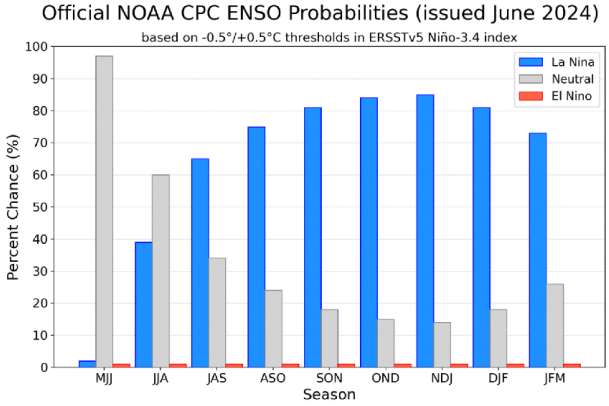
Natural Gas: NOAA sees La Nina ~65% chance for J/A/S and ~80% A/S/O

Expecting La Nina summer

On Thursday, the NOAA posted the updated monthly El Nino/La Nina outlook, which is issued on the 2nd Thurs of every month [LINK]. Our El Nino/La Nina focus is on summer and peak Atlantic hurricane season Aug/Sep/Oct. The probability forecast is at ~65% for La Nina conditions from Jul/Aug/Sep, and ~80% for La Nina in Aug/Sep/Oct, the peak Atlantic hurricane season. NOAA writes "*The most recent IRI plume indicates La Niña may develop during July-September 2024 and then persist through the Northern Hemisphere winter. The forecast team is also favoring the development of La Niña during July-September because the rate of cooling has slowed since last month. The team still favors La Niña to emerge sometime during the summer months, given the persistent below-average subsurface ocean temperatures and changes in the tropical atmospheric circulation. In summary, ENSO-neutral*

conditions are present. La Niña is favored to develop during July-September (65% chance) and persist into the Northern Hemisphere winter 2024-25 (85% chance during November-January).” Again, weather is never 100% the same, but La Nina summers normally bring a better chance for normal hurricane activity whereas El Nino summers tend to have lesser hurricane activity. Below is the NOAA El Nino/La Nina update for the month of June.

Figure 6: NOAA El Nino/La Nina Outlook

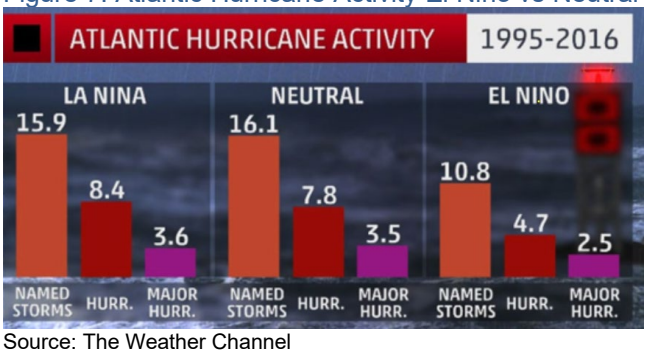


Source: NOAA CPC, IRI

La Nina summers tend to have normal to above normal hurricane seasons

Our above tweet included the below Weather Channel graph. As noted above, the latest NOAA summer outlook for El Nino/La Nina conditions calls for La Nina conditions during the summer and the normal peak Atlantic hurricane season of Aug/Sept/Oct. Weather is never 100% accurate but, historically, Neutral and La Nina conditions tend to have normal to above normal hurricane activity, whereas El Nino years tend to have lower hurricane activity seasons. Our May 24, 2020 Energy Tidbits memo included The Weather Channel Aug 28, 2018 story that had the below graphic.

Figure 7: Atlantic Hurricane Activity El Nino vs Neutral vs La Nina



Source: The Weather Channel

Natural Gas: EIA, Shale/tight gas production up +0.2% MoM, down -1.2% YoY

Shale/tight gas production

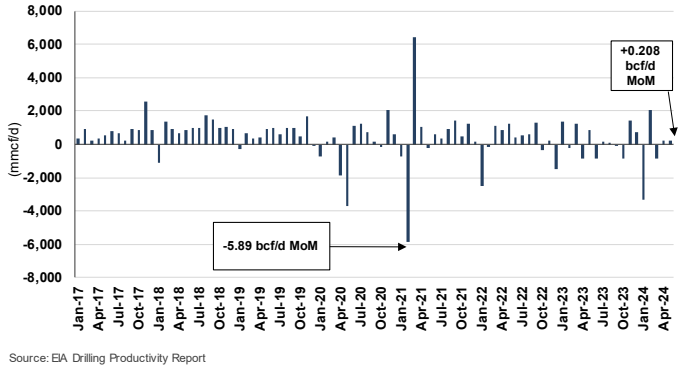
This month marked the first month that the EIA stopped releasing its Drilling Productivity Report, and began releasing shale/tight oil and natural gas data with the monthly Short Term Energy Outlook. Please note this comes with some major reporting changes, namely there are no longer monthly forecasts for tight gas production by basin. (i) On Tuesday, the EIA released its monthly STEO for June 2024 [LINK]. The EIA is no longer forecasting tight natural gas by region, they are only reporting monthly data by region, and the latest data for May 2024. (ii) Below is our new table showing the EIA STEO data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes excerpts from the EIA STEO.

Figure 8: EIA Major Shale/Tight Natural Gas Production

	2023								2024						
mmcf/d	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	May MoM%	May YoY%
Permian	19,738	19,502	19,959	20,371	20,576	20,562	20,953	21,315	21,330	21,559	21,638	21,808	21,937	0.6%	11.1%
Haynesville	15,213	14,506	14,652	14,630	14,547	14,413	14,242	14,281	13,852	14,171	14,122	14,215	14,328	0.8%	-5.8%
Marcellus	25,390	25,667	25,532	25,462	25,048	25,039	26,037	26,190	25,190	25,694	24,974	24,969	24,964	0.0%	-1.7%
Utica	5,228	5,170	4,799	4,777	4,718	4,234	4,260	4,242	3,859	3,975	3,955	3,938	3,922	-0.4%	-25.0%
Eagle Ford	4,582	4,498	4,515	4,421	4,552	4,483	4,497	4,422	4,214	4,213	4,212	4,211	4,210	0.0%	-8.1%
Bakken	2,339	2,397	2,440	2,461	2,554	2,527	2,569	2,611	2,220	2,488	2,489	2,507	2,517	0.4%	7.6%
Barnett	1,852	1,836	1,814	1,779	1,790	1,771	1,778	1,783	1,669	1,764	1,755	1,744	1,733	-0.6%	-6.4%
Fayetteville	906	897	890	885	884	878	872	862	774	850	849	851	842	-1.1%	-7.1%
Mississippian	2,222	2,113	2,140	2,084	2,170	2,057	2,088	2,166	2,010	2,162	2,160	2,158	2,156	-0.1%	-2.9%
Niobrara-Codell	2,600	2,638	2,654	2,711	2,696	2,729	2,781	2,812	2,633	2,824	2,795	2,806	2,817	0.4%	8.3%
Woodford	2,973	2,983	2,961	2,873	2,925	2,924	2,875	2,969	2,730	2,875	2,875	2,875	2,875	0.0%	-3.3%
Rest of U.S.	2,288	2,271	2,257	2,256	2,248	2,214	2,286	2,332	2,199	2,169	2,050	2,037	2,026	-0.6%	-11.5%
Total	85,331	84,479	84,613	84,710	84,707	83,832	85,238	85,984	82,680	84,744	83,874	84,120	84,328	0.2%	-1.2%

Source: EIA, SAF

Figure 9: MoM Change – Major Shale/Tight Natural Gas Production



Source: EIA Drilling Productivity Report

Source: EIA, SAF

Natural Gas: EIA STEO, lowers forecast for 2024 natural gas production

EIA US natural gas production forecast

On Tuesday, the EIA released its monthly Short Term Energy Outlook for June 2024 [LINK]. The EIA lowered its 2024 US natural gas production estimate by -0.9 bcf/d to 102.1 bcf/d, which, on a full year average basis, now gives a YoY decline of -1.7 bcf/d from 2023. The EIA wrote "*We expect U.S. marketed natural gas production to fall by 1% in 2024 because of low natural gas prices. Marketed natural gas production in the Haynesville region in our forecast falls by 9% this year and production in the Appalachia region falls by 4%. The forecast declines are partly offset by growth of 4% in the Permian region, largely because most of the*

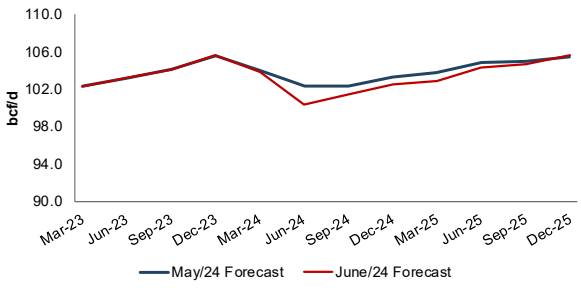
natural gas produced in the Permian is associated with oil production. We forecast U.S. marketed natural gas production will increase by 2% next year, with growth in all three of these regions, as natural gas prices rise in our forecast." (ii) The EIA raised its 2024 HH price forecast +$0.29/mcf to $2.56/mcf (was $2.27/mcf), and increased their 2025 forecast +$0.16/mcf to $3.37/mcf (from $3.21/mcf). The EIA wrote *"We expect that a drop in U.S. natural gas production in 2024 will continue to put upward pressure on the Henry Hub natural gas spot price. We expect that the Henry Hub spot price will average $2.50 per million British thermal units (MMBtu) this year, 13% higher than we expected last month, with prices rising from $2.12/MMBtu* [$2.20/mcf] *in May to $3.30/MMBtu* [$3.43/mcf] *in December 2024."*. (iii) The quarterly changes in Natural Gas production are as follows: Q1/24 -0.1 bcf/d to 103.9 bcf/d, Q2/24 -1.9 bcf/d to 100.4 bcf/d, Q3/24 -1.0 bcf/d to 101.4 bcf/d, and Q4/24 -0.8 bcf/d to 102.5 bcf/d. (iv) The EIA decreased its 2025 forecast -0.4 bcf/d to 104.8 bcf/d, which, on a full year average basis, would be up +1.80 bcf/d YoY. The quarterly changes to 2025 are as follows: Q1/25 -0.9 bcf/d to 102.9 bcf/d, Q2/25 -0.6 bcf/d to 104.3 bcf/d, Q3/25 -0.3 bcf/d to 104.7 bcf/d, and Q4/25 up +0.2 bcf/d to 105.7 bcf/d. The EIA did not comment on the changes in their natural gas consumption forecast.

Figure 10: EIA STEO Natural Gas Production Forecasts

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

Source: EIA, STEO

Figure 11: EIA STEO Natural Gas Production Forecasts by Month



Source: EIA, STEO

Natural Gas: EIA STEO estimates Nov 1, 2024 storage at 3.979 tcf, down MoM

EIA June STEO storage forecast

The EIA STEO also includes its forecast for US gas storage. (i) Please note that our bias is to not pay much attention to gas storage forecasts past the start of winter 2024/25 on Nov until we get just before Nov 1, 2024 and there is some better near term certainty to the start of winter temperatures. The reason is that winter temperatures are the driving force by far on natural gas demand and it's hard to have confidence on a winter 2024/25 temperature forecasts when we are still in Q2. (ii) EIA estimates US gas storage ended winter 2023/24 at 2.301 tcf at April 1, 2024, which was +0.451 tcf YoY and up +0.012 tcf vs May STEO of 2.289 tcf.(iii) The EIA forecasts gas storage to start winter 2024/25 at 3.979 tcf at Nov 1, 2024, which is +0.170 bcf YoY. The June STEO estimate is below the May STEO of 4.125 tcf at Nov 1, 2024. (iv) It's early and ultimately winter temperatures will determine if storage is high or low. But the June STEO forecasts a small improvement (less gas in storage) in 2025. The EIA forecasts gas storage to end winter 2024/25 at 1.931 tcf, which would be -370.3 bcf lower YoY. (v) There is even more uncertainty as you look out to winter 2025/26. The June STEO forecasts winter 2025/26 storage to be 3.866 tcf at Nov 1, 2025, which would be a little better than its forecast for Nov 1, 2024 at 3.979 tcf. Below is a table tracking the working gas inventory forecasts and actuals since 2016.

Figure 12: EIA STEO US Natural Gas in Storage (2016-2025)

US Working Natural Gas in Storage (billion cubic feet)

	Storage	2016-2025				
	Level	Low	High	Range	Average	Deviation
Mar 2016	2,486.3	1,184.9	2,486.3	1,301.4	1,835.6	35.4%
Oct 2016	4,012.7	3,236.3	4,012.7	776.4	3,624.5	10.7%
Mar 2017	2,062.5	1,184.9	2,486.3	1,301.4	1,835.6	12.4%
Oct 2017	3,816.5	3,236.3	4,012.7	776.4	3,624.5	5.3%
Mar 2018	1,390.3	1,184.9	2,486.3	1,301.4	1,835.6	-24.3%
Oct 2018	3,236.3	3,236.3	4,012.7	776.4	3,624.5	-10.7%
Mar 2019	1,184.9	1,184.9	2,486.3	1,301.4	1,835.6	-35.4%
Oct 2019	3,762.0	3,236.3	4,012.7	776.4	3,624.5	3.8%
Mar 2020	2,029.4	1,184.9	2,486.3	1,301.4	1,835.6	10.6%
Oct 2020	3,928.5	3,236.3	4,012.7	776.4	3,624.5	8.4%
Mar 2021	1,801.2	1,184.9	2,486.3	1,301.4	1,835.6	-1.9%
Oct 2021	3,665.4	3,236.3	4,012.7	776.4	3,624.5	1.1%
Mar 2022	1,401.5	1,184.9	2,486.3	1,301.4	1,835.6	-23.7%
Oct 2022	3,569.4	3,236.3	4,012.7	776.4	3,624.5	-1.5%
Mar 2023	1,849.9	1,184.9	2,486.3	1,301.4	1,835.6	0.8%
Oct 2023	3,809.4	3,236.3	4,012.7	776.4	3,624.5	5.1%
Mar 2024	2,300.9	1,184.9	2,486.3	1,301.4	1,835.6	25.4%
Oct 2024	3,979.1	3,236.3	4,012.7	776.4	3,624.5	9.8%
Mar 2025	1,930.6	1,184.9	2,486.3	1,301.4	1,835.6	5.2%
Oct 2025	3,866.2	3,236.3	4,012.7	776.4	3,624.5	6.7%

Source: EIA, STEO

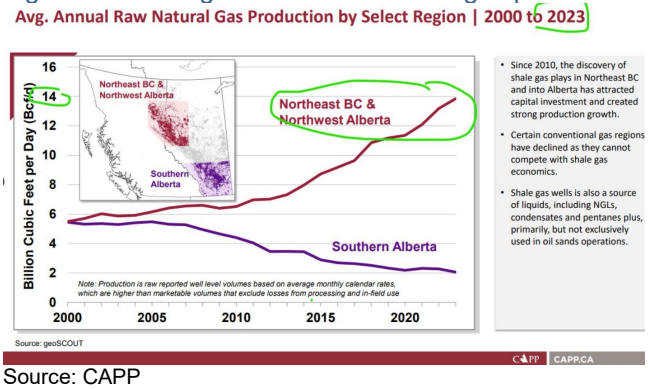
Natural Gas: Albera Premier Smith sees LNG Canada Phase 2 FID decision soon

LNG Canada Phase 2 FID

Unfortunately, we couldn't find any full reports of what Alberta Premier Danielle Smith said about LNG Canada Phase 2 FID. On Tuesday, we tweeted [LINK] *"#LNGCanada 1.8 bcf/d Phase 2 FID would be material vs NE BC/NW AB 14 bcf/d raw #NatGas in 2023. Even those who don't agree with her have to acknowledge @ABDanielleSmith is pretty straight shooter. So why would she even mention Phase 2 FID potential UNLESS she expects a Yes! #OOTT Thx @business @OilGasCanada."* Our tweet was based on a Bloomberg headline "*Decision on LNG Canada Phase 2 is expected soon: Smith*". This was one of the four headlines Bloomberg posted as Smith was speaking at the Global Energy Show on Tuesday in Calgary. What was not the norm was that Bloomberg didn't post a followup story on these

headlines. And we could not find any other reports of Smith's comments. We don't think Smith would have mentioned the LNG Canada Phase 2 FID potential if she didn't have some insight as to the potential and timing for the FID of the 1.8 bcf/d LNG Canada Phase 2. Otherwise, we don't think she would have mentioned it. Our tweet remined that LGN Canada at 1.8 bcf/d is material to Alberta/BC natural as production. We included the below CAPP chart that notes NE BC + NW Alberta raw natural gas production is ~14 bcf/d.

Figure 13: Average annual raw natural gas production by select region, 2000 to 2023



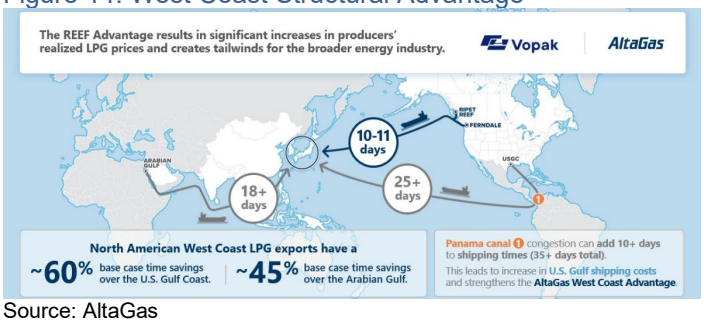
Source: CAPP

Natural Gas: AltaGas/Vopak reach FID on Ridley Island Energy [Propane] Export Facility

AltaGas and Vopak's new LPG Export Facility

We have included this propane item in the natural gas section as the propane is produced as a by-product of natural gas processing. On May 29, AltaGas and Vopak reached a final investment decision ("FID") as partners for the Ridley Island Energy Export Facility. This is a LPG [Propane] facility. [LINK]. The facility is a large-scale liquefied petroleum gas [Propane] and bulk liquids terminal on Ridley Island in British Colombia, set to operate with industry-leading environmental stewardship. The site clearing work is over 95% complete, and the project is expected to go online near the end of 2026. The projected capital cost of the project is $1.35b, excluding governmental incentives and support, with an annual partnership EBITDA of $185mm. Vopak and AltaGas expect to fund their 50% ownerships with their existing respective financial capacity with no leverage at the partnership level. The facility offers a competitive advantage in delivering liquefied petroleum gas to Asia with the shortest shipping time globally at just 10 days due to its location in BC. Vern Yu, President and CEO of AltaGas said, *"This positive FID enables AltaGas to continue connecting Canadian energy to Asian markets and drive valuable outcomes for all our customers. Canada has a structural advantage in delivering LPGs to Asia with the shortest shipping time and lowest maritime emissions footprint. AltaGas delivers more than 19 percent of Japan's propane and 13 percent of South Korea's LPG imports, connecting our upstream customers with customers in Asia. We look forward to working with our partners to drive more long-term value creation with REEF."* Below Our Supplemental Documents Package contains the press release from AltaGas and VopakaGas.

Figure 14: West Coast Structural Advantage

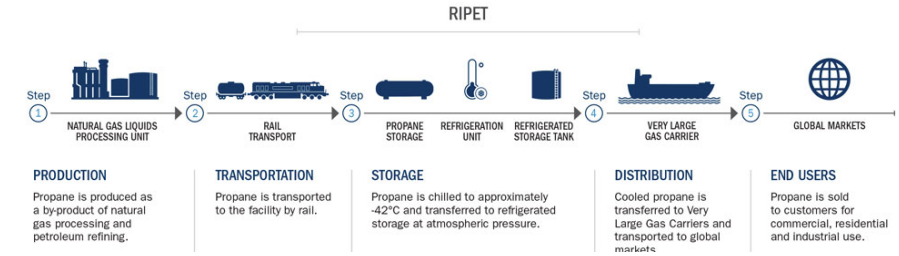


Source: AltaGas

How propane export works

AltaGas has a good "*How it works*" explaining how propane moves from the field thru transportation, storage, distribution and ultimately to the end customers. [LINK] This was for the existing Ridely Island Propane Export Terminal but should be applicable to the new Ridley Island Energy Export Facility [LPG/Propane].

Figure 15: Atlantic Hurricane Activity El Nino vs Neutral vs La Nina



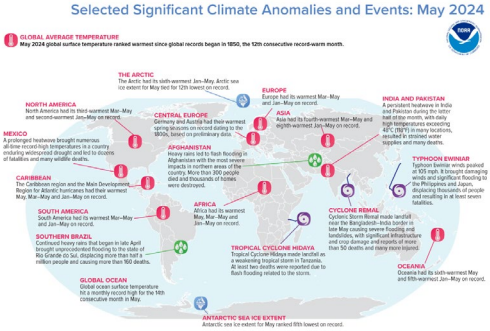
Source: AltaGas

Natural Gas: May 2024 had the hottest average global temperature on record

Hottest May on record globally

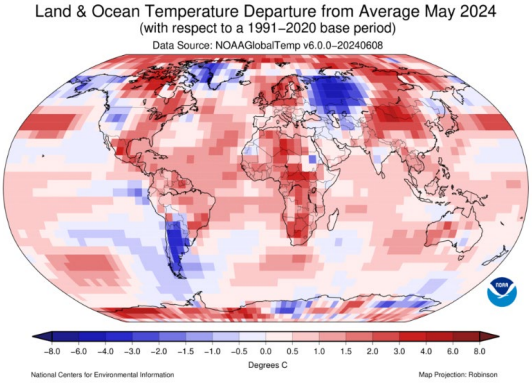
On Wednesday, NOAA posted its global climate recap for May [LINK] and it was the 12th consecutive month of record high temperatures. And importantly, it was warm around the world. It was the 5th warmest on record in North America, 3rd warmest on record in Europe, 9th warmest on record in Asia and the warmest on record in Africa. The NOAA wrote "*The May global surface temperature was 1.18°C (2.12°F) above the 20th-century average of 14.8°C (58.6°F), making it the warmest May on record. This was 0.18°C (0.32°F) above the previous record from May 2020. May 2024 marked the 48th consecutive May (since 1977) with temperatures at least nominally above the 20th-century average."* Below are the NOAA graphics for May.

Figure 16: Selected Significant Climate Anomalies and Events: May 2024



Source: NOAA

Figure 17: Land & Ocean Temperature Percentiles for May 2024



Source: NOAA

Natural Gas: NextDecade and Aramco announce 20-year LT LNG Deal

Another LT LNG Deal

On Wednesday, NextDecade signed a 20-year long deal with Saudi Arabia's Aramco for the delivery of 1.2 mmtpa or 0.16 bcf/d of LNG [LINK]. The delivery will offtake from Train 4 at the Rio Grande LNG Facility at the Port of Brownsville, Texas. Aramco and NextDecade are currently negotiating a binding agreement, which will partly be pending the Final Investment Decision on Train 4. The President of Aramco Upstream, Nasir K. Al-Naimi, said, *"We look forward to finalizing the terms of a long-term LNG offtake agreement with NextDecade, as we explore opportunities to expand our presence in international energy markets. We expect LNG to play an important role in meeting the rising demand for secure and efficient energy."* Matt Schatzman, Chairman and CEO of NextDecade, said, "*We are pleased to have reached a Heads of Agreement with Aramco for LNG from Train 4, as Aramco seeks to expand its LNG portfolio. We look forward to finalizing the LNG SPA with Aramco and to pursuing other opportunities together."* This deal is price indexed to HH pricing. Our Supplemental Documents Package includes the press release from NextDecade.

There have been 23.02 bcf/d of long-term LNG supply deals since July 1, 2021

Here is what we wrote in May 12, 2024's Energy Tidbits memo. "*The big wave in buyers locking up long term supply started in July 2021. We first highlighted this*

abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg "Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs". We included a table of the deals done in that short two week period." We continue to update that table, which now shows 23.02 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 49% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long-term supply deals since July 1, 2021.

Figure 18: Long-Term LNG Buyer Deals Since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country Buyer / Seller	Volume (bcf/d)	Duration Years	Start	End
Asian LNG Deals							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipec	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2046
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.
Mar 6, 2023	Gunvor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
May 16, 2023	KOSPO	Cheniere	Korea / US	0.05	19.0	2027	2046
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh / Qatar	0.24	15.0	2026	2031
Jun 21, 2023	Petro Bangle	Oman	Bangledesh / Oman	0.20	10.0	2026	2036
Jun 21, 2023	CNPC	QatarEnergy	China / Qatar	0.53	27.0	2027	2054
Jun 26, 2023	ENN LNG	Cheniere	Singapore / US	0.24	20.0	2026	2046
Jul 5, 2023	Zhejiang Energy	Mexico Pacific Ltd	China / Mexico	0.13	20.0	2027	2047
Aug 8, 2023	LNG Japan	Woodside	Japan / Australia	0.12	10.0	2026	2036
Sep 7, 2023	Petrochina	ADNOC	China / UAE	n.a.	n.a.	n.a.	n.a.
Nov 2, 2023	Foran	Cheniere	China / US	0.12	20.0	n.a.	n.a.
Nov 4, 2023	Sinopec	QatarEnergy	China/Qatar	0.39	27.0	2026	2053
Nov 27, 2023	Gunvor Singapore Pte	Delfin Midstream	Singapore / US	0.10	15.0	n.a.	n.a.
Dec 20, 2023	ENN	ADNOC	Singapore / UAE	0.13	15.0	2028	2043
Jan 5, 2024	GAIL	Vitol	India / Singapore	0.13	10.0	2026	2036
Jan 8, 2024	Shell	Ksi Lisims LNG	Singapore / Canada	0.26	20.0	2027	2047
Jan 16, 2024	ExxonMobil	Mexico Pacific Ltd	Singapore / Mexico	0.16	20.0	2024	2044
Jan 29, 2024	Excelerate	QatarEnergy	Bangladesh / Qatar	0.13	15.0	2026	2041
Jan 30, 2024	ADNOC	GAIL India	UAE / India	0.07	10.0	2024	2034
Feb 6, 2024	Petronet LNG	QatarEnergy	India / Qatar	0.99	20.0	2028	2048
Feb 19,2024	Deepak Fertilisers	Equinor	India / Norway	0.09	15.0	2026	2041
Feb 28, 2024	Kogas	Woodside	Korea / Australia	0.07	10.5	2026	2037
Feb 29, 2024	Sembcorp	TotalEnergies	Singapore / France	0.11	16.0	2027	2043
Apr 29, 2024	Kogas	BP	Korea / Singapore	0.12	11.0	2026	2037
May 26, 2024	AMNS	Shell	India / Canada	0.05	10.0	2027	2037
May 28, 2024	Hokkaido	Santos	Japan / Australia	0.05	10.0	2027	2037
Jun 4, 2024	IOCL	TotalEnergies	India / France	0.11	10.0	2026	2036
Jun 5, 2024	CPC	QatarEnergy	Taiwan / Qatar	0.53	27.0	2025	2052
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				**14.60**			

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country Buyer / Seller	Volume (bcf/d)	Duration Years	Start	End
Non-Asian LNG Deals							
Jul 28, 2021	PGNiG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNiG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU//US	0.13	20.0	2027	2047
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046
Apr 24, 2023	Hartree Partners LP	Delfin Midstream	US / US	0.08	20.0	n.a.	n.a.
Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042
Jun 22, 2023	SEFE	Venture Global LNG	EU//US	0.30	20.0	2026	2046
Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036
Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040
Jul 28, 2023	OMV	BP	Austria/UK	0.13	10.0	2026	2036
Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045
Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043
Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035
Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053
Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qata	0.46	27.0	2026	2053
Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053
Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043
Nov 29, 2023	OMV	Cheniere	Netherlands / US	0.11	15.0	2029	2044
Dec 5, 2023	Woodside Energy	Mexico Pacific Ltd	Australia / Mexico	0.17	20.0	2024	2044
Mar 18, 2024	SEFE	ADNOC	Germany / UAE	0.13	20.0	2024	2044
Apr 17, 2024	Shell	Oman LNG	US / Oman	0.21	10.0	2025	2035
Apr 22, 2024	TotalEnergies	Oman LNG	France / Oman	0.11	10.0	2025	2035
May 8, 2024	EnBW	ADNOC	Germany / UAE	0.08	15.0	2028	2043
June 13, 2024	Saudi Aramco	NextDecade	Saudi Arabia / US	0.16	20.0	2028	2048
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21				**8.42**			

Total New Long Term LNG Contracts since Jul/21	**23.02**

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

Source: SAF

Natural Gas: Saudi Aramco got an HH linked, not a Brent linked LNG price from NextDecade

Above, we note the Saudi Aramco the 20-yr LNG purchase from NextDecade LNG that should start around 2028. It's not a large deal at 0.16 bcf/d, but what jumped out at us was

Saudi Aramco HH linked LNG deal

that Aramco went for a Henry Hub linked LNG price and not a Brent oil linked LNG price deal. We tweeted [LINK] "*LNG supply diversification or wanting LNG price specifically tied to Henry Hub, not Brent Oil? Aramco 20-yr #LNG supply from NextDecade "at a price indexed to Henry Hub". If Aramco worries about low #Oil price in 2030s/40s, they had closer LNG options linked to Brent. #OOTT."* We expect there is some value in Saudi Aramco having geographic diversification to their LNG supply, but we have to wonder if this more of a call that oil prices will be stronger for longer in the 2030s and 2040s. If oil was going the way of the dodo bird as the climate change side expects, it will mean low oil prices in the 2030s and 2040s. The Aramco/NextDecade deal will go thru to the late 2040s. If oil was gong the way of an oversupplied commodity in a post peak oil demand timing, we have to believe they would have gone for a Brent oil linked LNG price. This is especially given the recent deals that we have seen where long-term LNG buyers are getting low slope prices. Our June 1, 2024 Energy Tidbits memo highlighted how India's AMNS signed a long term purchase deal from Shell starting in 2027 at a slope of 11.5%. If Saudi Aramco saw a low oil price outlook and a low slope of 11.5%, then they could have got long term LNG supply in a Brent oil linked deal instead of an HH linked deal. It just seems to us that given the LNG pricing options, Aramco must see more likelihood of higher for longer oil prices than higher for longer HH prices.

Explaining "slope" in LNG contracts

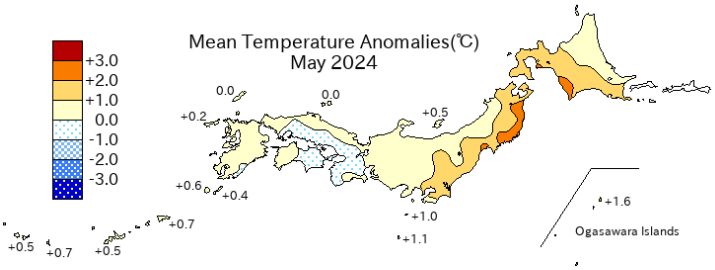
Above we note the item from our June 2, 2024 Energy Tidbits memo on how AMNS was able to get the first LNG deal with slope below 12% since Russia invaded Ukraine. Look at the slope very simply as a percentage ratio to a reference oil price. Take the slope and call it a percentage so a slope of 12 is a 12% of a reference oil price. If the reference oil price is Brent, and Brent is $80, then a slope of 12 would be a LNG price of 12% of $80 or $9.60. If the slope is 11.5, then that would be a LNG price of 11.5% of $80 or $9.20. Lower slope equals lower LNG price.

Natural Gas: Average to slightly above temperatures for in May in Japan

May's temperature recap in Japan

It was warmer than normal in Japan in May but it's May so that means its's generally not hot enough to drive any significant temperature driven natural gas demand. On Thursday, the Japan Meteorological Agency posted its climate recap for May [LINK]. It included the below mean temperature anomalies map. The JMA wrote "*Monthly mean temperatures were above normal in northern/eastern Japan, where the influence of cold air was weak and warm air flowed in mainly in the second 10 days of the month, and Okinawa/Amami, where warm air flowed in the first and the third 10 days of the month. Monthly precipitation amounts were significantly above normal on the Pacific side of eastern/western Japan, and were above normal on the Sea of Japan side of northern/eastern Japan and Okinawa/Amami, because the regions were well affected by low-pressure systems and fronts in the third 10 days of the month. On the other hand, monthly sunshine durations were above normal on the Pacific side of northern Japan and on the Sea of Japan side of western Japan, where high-pressure systems frequently covered mainly in the first and the second 10 days of the month."* Below is a temperature map of Japan for May.

Figure 19: JMA Mean Temperature Anomalies May 2024



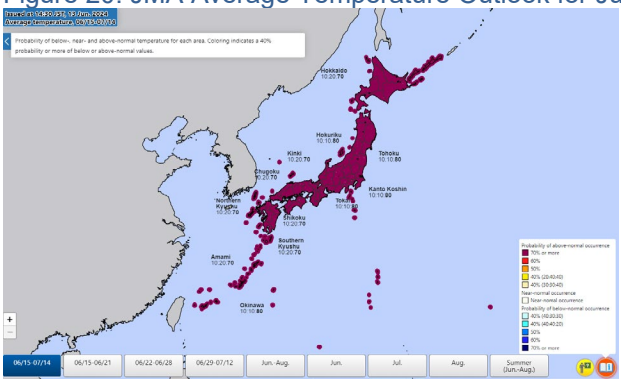
Source: Japan Meteorological Agency

Natural Gas: Japan expects warmer than normal temperature thru mid-July

On Thursday, the Japan Meteorological Agency updated its forecast for the next 30 days in Japan [LINK]. There is no JMA commentary on the forecast. JMA is calling for above normal temperatures for the rest of June and thru mid-July across all of Japan, with a +70% probability of above normal temperature occurrence. We checked AccuWeather and they are forecasting daily highs in of 27-32C for the next 30 days. Anyone who has been to Tokyo in June knows tha it is humid so we should see temperature driven demand for electricity incl natural gas. Below is the JMA temperature forecast for the next 30 days.

JMA temperature forecast for the next 30 days

Figure 20: JMA Average Temperature Outlook for June 15 – July 14



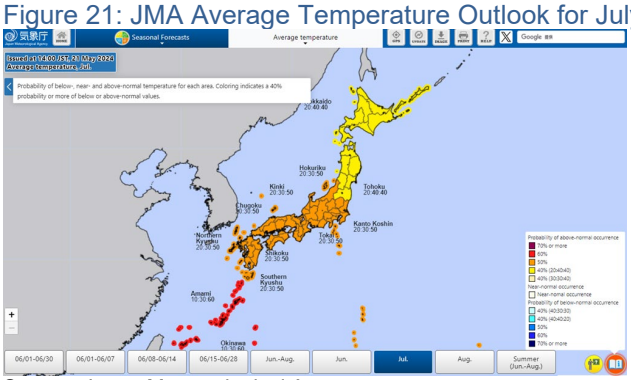
Source: Japan Meteorological Agency

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

The JMA's updated 30-day temperature forecast is in line with what the JMA has been forecasting for the summer. Here is what we wrote in June 2, 2024 Energy Tidbits memo: *Last week, the Japan Meteorological Agency updated its forecast for July in Japan [LINK] and for August in Japan [LINK]. There is no JMA commentary on the forecast. JMA is calling for much warmer than normal temperatures for both July and August. This updated for July and August is in line with the JMA's first temperature forecast for July and Aug that was posed on Feb 20. Although the new JMA temperature forecast is for much warmer than normal whereas the JMA Feb 20 forecast was for very hot Jun/Jul/Aug. High temperatures in July tend to be over 30c*

and that should increase weather driven demand. Below is the JMA temperature forecast for July and August.

Figure 21: JMA Average Temperature Outlook for July



Source: Japan Meteorological Agency

Figure 22: JMA Average Temperature Outlook for August

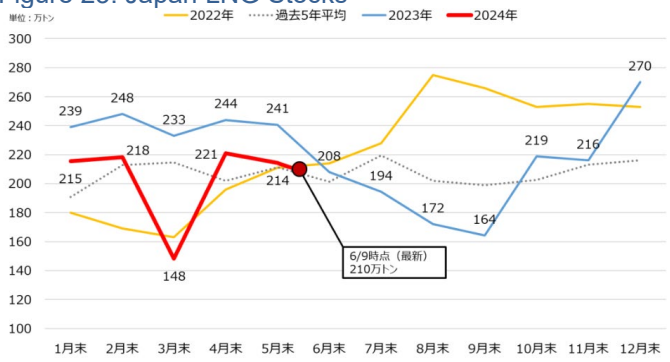
Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks down WoW, up small YoY

Japan LNG stocks down WoW

Japan's LNG stocks are still down YoY, but are up small YoY and also slightly above the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK]. LNG stocks on June 9 were 100.9 bcf, down -5.8% WoW from June 2 of 107.1 bcf, and down small vs 99.9 bcf a year ago. Stocks are up +4.5% above the 5-year average of 101.3 bcf. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 23: Japan LNG Stocks



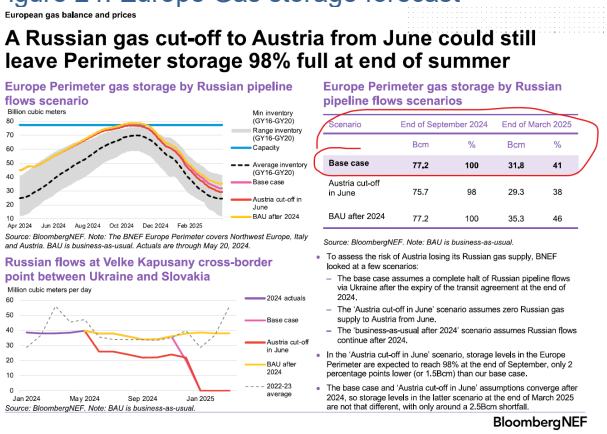
Source: METI

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

EU industrial natural gas demand

Here is what we wrote in our June 2, 2024 Energy Tidbits on the then new BloombergNEF forecast for Europe gas storage to be full by the end of Sept. "*On Friday, we tweeted [LINK] "ICYMI. @BloombergNEF base case forecasts Europe #NatGas storage full by Sept 30! If so, it won't just hurt Europe TTF prices but also push back on US #HH prices. #OOTT." BloombergNEF's European Gas Monthly also had its base case forecsat for Europe natural gas storage and they call for storage to be full by Sept 30. BloombergNEF also highlights that Eruope natural gas storage would still be 98% by Sept 30 if there is a cut off of any Russian natural gas to Austria in June. IF Europe natural ags storage is full by Sept 30, there should be some strong downward price pressure on Europe natural gas prices in Sept and Oct. And if so, there should also be some push back on US HH natural gas prices.*"

Figure 24: Europe Gas storage forecast



Source: BloombergNEF

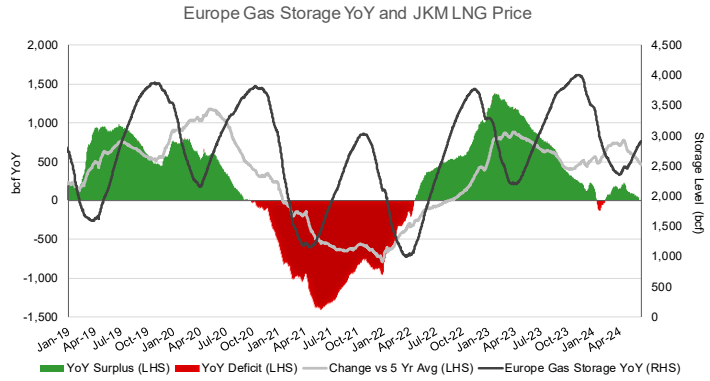
Natural Gas: Europe storage builds WoW to 72.7%, down -0.2% YoY

Europe gas storage

This week, Europe storage increased by +1.6% Wow to 72.7% vs 71.1% on June 6. Storage is now -0.2% lower than last year's levels of 72.9% on June 13, 2023, and up huge vs the 5-year average of 62.0%. As noted above, BloombergNEF's updated May 31 forecast is for

Europe gas storage to be full by Sept 30. This would be early and would bring low Europe gas prices in Sept/Oct. The big wildcard for Europe natural gas markets over the coming months will be if Russia can damage or put out of operation any Ukraine natural gas storage. Below is our graph of European Gas Storage Level.

Figure 25: European Gas Storage Level

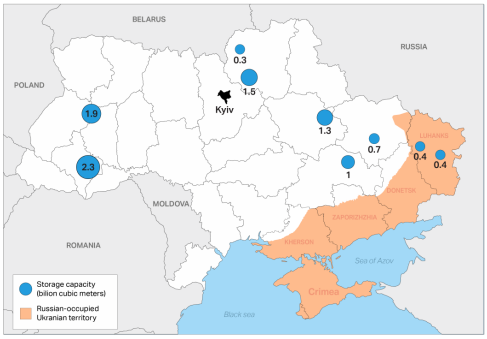


Source: Bloomberg, SAF

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

We have been breaking out Ukraine gas storage levels since the Mar/Apr Russian bombing of the Ukraine natural gas storage, which only impacted some above ground natural gas infrastructure. But it also reminded that of the risk to Europe gas storage from Russia attacks. We broke out the Ukraine storage data from the above Europe data we monitor weekly from the GIE AGSI website [LINK], and, on June 13th natural gas in Ukraine storage was at 16.14% of its total capacity, up from 15.53% of its total capacity as of June 6th. Last year, Ukraine storage started the winter on Nov 1, 2023 at 39.38%. Right now, Ukraine makes up ~6% of Europe's natural gas in storage and, at the beginning of winter 2023/24, it was ~10% of Europe's natural gas in storage. Below is a map of Ukraine's major gas storage facilities.

Figure 26: Ukraine Gas Storage Facilities as of July 2023



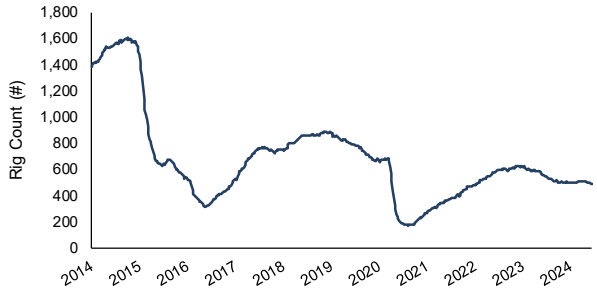
Source: Bruegel

US oil and gas rigs down WoW

Oil: US oil rigs down -4 rigs WoW at 488 rigs, US gas rigs flat WoW at 98 rigs

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Note, after we recently sent them an email, Baker Hughes confirmed they wouldn't be returning to the old format which previously allowed us to break out the basin changes by oil vs gas rig type. (ii) Total US oil rigs were down -4 rigs WoW to 488 oil rigs as of June 14. US oil rigs went below 520 rigs on Aug 25 and has been around 490-510 rigs for the past several months, however, this week's 488 rigs marks the lowest oil rig count since September 2021. (iii) Note we are able to see the basin changes but not by type of rig. The major changes were Cana Woodford -1 rig WoW to 16 rigs, Granite Was -1 rig WoW to 3 weeks, Haynesville -1 rig WoW to 35 rigs, and Permian -1 rig WoW to 309 rigs. It looks like we may be seeing a pull back with the WTI back down in the $70s. (iv) The overlooked US rig theme is the YoY declines. Total US rigs are -97 YoY to 594 rigs including US oil rigs -64 oil rigs YoY to 488 oil rigs. And for the key basins, the Permian is -33 rigs YoY, Haynesville is -16 rigs YoY and Marcellus -10 rigs YoY. (v) US gas rigs were flat rigs this week at 98 gas rigs.

Figure 27: Baker Hughes Total US Oil Rigs



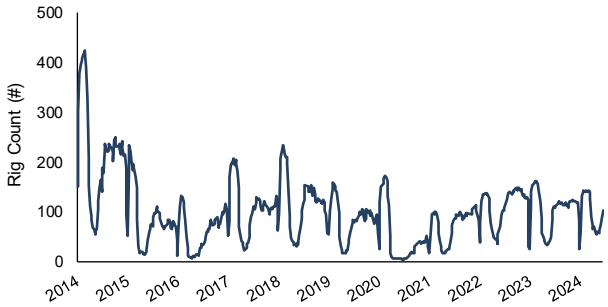
Source: Baker Hughes, SAF

Cdn total rigs up WoW

Oil: Total Cdn rigs up +17 rigs WoW, ramping up post spring breakup

As happens every year in Canada, the rig count drops dramatically from early March thru the end of April/beginning of May as winter drilling season ends and the industry moves into spring break up. Spring break up is the period when it warms up and the melting snow leads to road access being limited/restricted in many parts of Alberta and BC. Total Cdn rigs declined from 231 at the beginning of March to 114 one month ago. This week's increase in rigs looks to continue the ramp up we saw beginning two weeks ago that follows every spring break up. Cdn oil rigs were up +15 rigs WoW this week to 104 rigs and are up +1 rig YoY. Gas rigs are up +1 rig WoW this week to 54 rigs and are down -1 rig YoY, and miscellaneous rigs are up +1 rig WoW, AND UP +1 rig YoY. Baker Hughes did not update their old format report, so we weren't able to see the provincial breakouts.

Figure 28: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

Oil: US weekly oil production up +0.100 mmb/d WoW to 13.200 mmb/d

It's worth noting that historically, the EIA weekly estimates have been off of the Form 914 actuals, which sometimes require re-benchmarking. Here's what the EIA wrote on their website back in April with the April STEO: "*When we release the Short-Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude oil production are reviewed to identify any differences between recent trends in survey-based domestic production reported in the Petroleum Supply Monthly (PSM) and other current data. If we find a large difference between the two series, we may re-benchmark the weekly production estimate on weeks when we release STEO. This week's domestic crude oil production estimate incorporates a re-benchmarking that decreased estimated volumes by 177,000 barrels per day, which is about 1.3% of this week's estimated production total".* On Tuesday, the EIA released its June STEO. There was an immaterial downward revision to Q1/24 production estimates to 12.94 mmb/d from 12.96 mmb/d in May's STEO. The latest Form 914 (with March actuals) was +0.062 mmb/d higher than the weekly estimates of 13.120 mmb/d. This week, the EIA's production estimates were up WoW +0.100 mmb/d to 13.200 mmb/d for the week ended June 7, the first increase after 13 consecutive weeks at 13.100 mmb/d. Alaska was down -0.001 mmb/d WoW to 0.425 mmb/d from 0.426 mmb/d last week. Below is a table of the EIA's weekly oil production estimates.

US oil production flat WoW

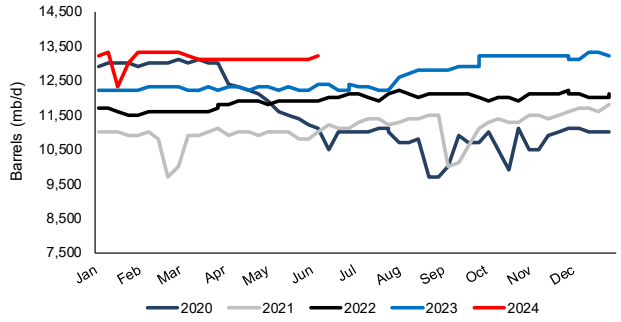
Figure 29: EIA's Estimated Weekly US Field Oil Production (mb/d)

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

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

Source: EIA

Figure 30: EIA's Estimated Weekly US Oil Production

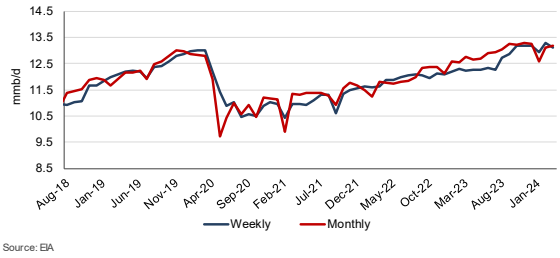


Source: EIA, SAF

EIA Form 914, US March oil actuals were +79,000 b/d vs weekly estimates

Here is what we wrote in last week's (June 9, 2024's) Energy Tidbits memo: *"On May 31, the EIA released its Form 914 data [LINK] , which is the EIA's "actuals" for March US oil and natural gas production. As noted previously, over the past four months the EIA has had to make big upward adjustments to their weekly oil supply estimates to bring them more in line with the Form 914 actuals. (i) This month, the EIA revised February down by -49,000 b/d from 13,154 mmb/d to 13,105 mmb/d. As a result, the February actuals were -174,000 b/d vs the weekly supply estimates of 13,279 mmb/d. (ii) The EIA Form 914 March "actuals" at 13,182 mmb/d, which was +79,000 b/d above the weekly supply estimates of 13,103 mmb/d. (iii) March "actuals of 13,182 mmb/d are +77,000 b/d MoM vs 13,105 mmb/d in Feb. And also +412,000 b/d YoY vs March 2023 of 12,770 mmb/d."* Below is a chart of monthly actuals vs. weekly estimates.

Figure 31: EIA Form 914 US Oil Production vs Weekly Estimates



Source: EIA, SAF

Shale/tight oil production

Oil: US shale/tight oil production fairly flat the last 7 months

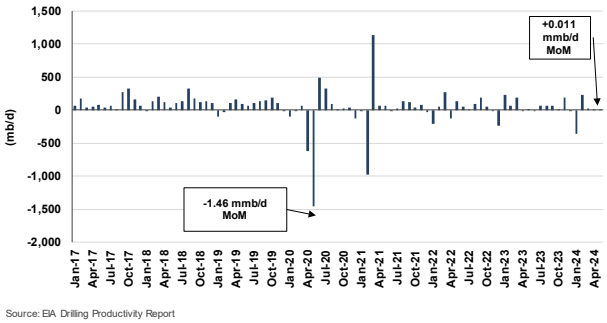
As mentioned above, the EIA combined its prior shale/tight oil information with its STEO, which was released on Tuesday for June 2024 [LINK]. The EIA stopped forecasting future oil production by region and has updated their data until May for oil production from the major shale/tight oil and gas plays. Sale/tight oil production in May was 8.362 mmb/d, flat MoM from April and up 4% YoY. Shale/tight oil has been fairly flat for the last 7 months other than January when cold weather led to a temporary drop in production. Note that shale/tight oil is approx. ~75% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production.

Figure 32: US Major Shale/Tight Oil Production

	2023								2024						
Thousand b/d	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	May MoM%	May YoY%
Austin Chalk + Eagle Ford	1,155	1,158	1,161	1,137	1,139	1,106	1,105	1,056	997	999	995	991	987	0%	-14%
Bakken	1,100	1,133	1,145	1,180	1,259	1,226	1,252	1,246	1,078	1,222	1,220	1,219	1,218	0%	11%
Mississippian + Woodford	256	242	240	226	219	220	222	225	199	214	212	210	209	-1%	-18%
Niobrara	452	460	454	462	456	471	482	494	422	465	465	464	464	0%	3%
Permian	5,083	5,021	5,105	5,164	5,166	5,224	5,373	5,403	5,387	5,408	5,447	5,465	5,483	0%	8%
Rest of US L48	295	305	285	292	290	293	290	284	270	280	274	274	273	0%	-8%
Total	8,045	8,015	8,105	8,169	8,240	8,247	8,434	8,424	8,082	8,308	8,339	8,350	8,362	0%	4%

Source: EIA, SAF

Figure 33: MoM Changes in US Major Shale/Tight Oil Production



Source: EIA, SAF

Oil: EIA DUCs essentially flat MoM in May, DUCs down -12% YoY

DUCs flat MoM in May

We have been warning that we see a key risk to how much US oil production can sustainably grow in 2024 and 2025 is the need to increase rig counts (not have less frac spreads) to replenish the inventory of Drilled Uncompleted wells at higher levels and the challenge for oilfield services to add capacity to increase frac spreads and completions. The EIA's STEO [LINK] now contains the estimate of Drilled Uncompleted wells. (i) The EIA estimates DUCs were essentially flat MoM (-12% YoY) in May at 5,495 DUCs. (ii) To put in perspective, there were 9,845 DUCs in the height of the Covid slowdown in June 2020, 7,324 DUCs in May 2021, 6,109 DUCs in May 2022, 6,254 in May 2023, and now 5,495 DUCs in May 2024. (iv) We still believe there is still the need for drilling rigs to pick up to replenish the DUC inventory if the US is to have sustained strong oil growth in 2024 and beyond. (v) The largest YoY April DUCs declines are the Bakken (-40% YoY), and Eagle Ford (-42% YoY). (vi) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DUC Wells.

Figure 34: Estimated Drilled Uncomplete Wells in 2023/24

	2023					2024						
DUCs	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	May MoM%	May YoY%
Appalachia region	863	840	827	816	814	807	801	806	808	807	-0.1%	-6%
Bakken region	408	377	364	338	319	322	324	325	325	325	0.0%	-40%
Eagle Ford region	464	436	405	386	402	379	345	344	342	341	-0.3%	-42%
Haynesville region	787	785	781	773	771	773	778	782	787	792	0.6%	4%
Permian region	976	967	898	887	880	877	877	880	882	881	-0.1%	-5%
Rest of Lower 48 States, excluding GOM	2528	2477	2441	2411	2381	2374	2371	2368	2360	2349	-0.5%	-9%
Total	6,026	5,882	5,716	5,611	5,567	5,532	5,496	5,505	5,504	5,495	-0.2%	-12%

Source: EIA, SAF

Oil: North Dakota April oil up MoM to 1.241 mmb/d, May should be higher

North Dakota April oil production up MoM

On Friday, the North Dakota Industrial Commission posted its monthly Director's Cut, which includes April's oil and natural gas production data as well as other data such as well completions, DUCs, number of producing wells, etc. [LINK] North Dakota's oil production in April was up MoM +11,570 b/d from March to 1.241 mmb/d, and is up +9.5% YoY against 1.133 mmb/d in April 2023. We always listen to the NDIC monthly webcast of the North Dakota monthly oil and gas production data for insights as we look forward to the next month or two. Our April 14, 2024 Energy Tidbits highlighted the NDIC warning that North Dakota was expecting a pause in oil production growth in April due to weather restrictions. In Friday's webcast, NDIC reiterated the April issue but also that May production should be higher. NDIC's Lynn Helms said "*and as you know, in April, we were still working our way out of winter. May, we should see healthier, stronger numbers. That's what the daily gas nominations are indicating to us*." Our Supplemental Documents package includes excerpts from the NDIC Director's Cut.

Figure 35: North Dakota Oil Production by Month

(b/d)	2018	2019	2020	2021	2022	2023	2024	24/23
Jan	1,179,564	1,403,808	1,430,511	1,147,377	1,088,613	1,060,708	1,102,976	*4.0%*
Feb	1,175,316	1,335,591	1,451,681	1,083,554	1,089,091	1,158,837	1,252,102	*8.0%*
Mar	1,162,134	1,391,760	1,430,107	1,108,906	1,122,640	1,122,693	1,229,536	*9.5%*
Apr	1,225,391	1,392,485	1,221,019	1,123,166	900,597	1,133,435	1,241,106	*9.5%*
May	1,246,355	1,394,648	859,362	1,128,042	1,059,060	1,135,009		
June	1,227,320	1,425,230	893,591	1,133,498	1,096,783	1,166,604		
July	1,269,290	1,445,934	1,042,081	1,076,594	1,072,632	1,180,611		
Aug	1,292,505	1,480,475	1,165,371	1,107,359	1,075,307	1,223,617		
Sept	1,359,282	1,443,980	1,223,107	1,114,020	1,121,063	1,280,052		
Oct	1,392,369	1,517,936	1,231,048	1,111,910	1,121,754	1,254,475		
Nov	1,375,803	1,519,037	1,227,138	1,158,622	1,098,389	1,278,909		
Dec	1,402,741	1,476,777	1,191,429	1,144,999	957,864	1,274,869		

Source: NDIC, NDPA

04/12/24: North Dakota warned on potential pause in production in March/April

Here is what we wrote in our Apr 14, 2024 Energy Tidbits memo. "*North Dakota oil industry gets impacted much like Saskatchewan in terms of road bans/restrictions as snow melts as temperatures warm up leaving the winter. The melting snow/warming temperatures puts secondary and rural roads at risk so North Dakota will put weight restrictions on roads and this impacts the ability to move any heavy road equipment on these non-primary roads. Every month North Dakota Industrial Commission holds a webcast to discuss the just issued Director's Cut and there are always good insights. The call was on Friday afternoon. Yesterday, we tweeted [LINK] "It's temporary but North Dakota warns Mar road restrictions should impact #Oil production in Mar/Apr. "March completions fell off pretty dramatically …. 92 completions in Feb and only 56 in Mar., That's not enough to sustain and grow production" NDIC's Lynn Helms. #OOTT." Our tweet included the transcript we made of Helms' comments. SAF Group created transcript of comments by North Dakota Director of Mineral Resources, Lynn Helms on the monthly Director's Cut webcast on April 12, 2024. Items in "italics" are SAF Group created transcript. At 3:10 min mark, Helms "March completions fell off pretty dramatically. So we had 92 completions in February and only 56 in March. That's not enough to sustain and grow production. We think again that is a temporary thing. The weather in March was not really very conducive to a lot of truck traffic and movements. Particularly in late March when we had the return of winter weather. My grandmother used to say in like a lamb, out like a lion. That's what we experienced this year. " At 4:46 min mark, Helms "down to 12 frack crews today. So again, as we are coming out of winter weather, we're looking at road restrictions, weight restrictions on the road." Note, there were 102 well completions in Jan."*

Oil: Bakken players keep advancing drilling technology to get more oil out

Bakken drilling advancements

As usual, there were good insights from the monthly NDIC Directors Cut webcast on Friday. NDIC's Lynn Helms highlighted drilling technology advancements in the Bakken. It reinforced how the shale players keep pushing the envelop to to get more oil. And these technology advances have quickly become the standard. Helms said 70-75% of the permits are now for 3-mile lateral wells. Yesterday, we tweeted [LINK] "*Shale players keep advancing to get more oil out. Bakken #Oil drilling technology advancements from ND's Lynn Helms. - issued our first 4-mile lateral permits - 70-75% of the permits are for 3-mile long laterals - first two*

switchback [U-turn] wells have bene fracked #OOTT." Our tweet included the transcript we made of Helms comments. SAF Group created transcript of comments by Lynn Helms (North Dakota Director of Mineral Resources) on the monthly The Directors Cut webcast on June 14, 2024 [LINK]. Items in *"italics"* are SAF Group created transcript. At 3:35min mark, Helms *"we permitted four, I believe four 4-mile laterals now. So we've issued in this last month . we issued our first 4-mile lateral permits. And that's pre"tty ground breaking. Lots of 3-mile laterals being drilled out there. Like we said about 70, 75% of the permits are for 3-mile long laterals. But we're now permitting 4-mile long wells. So we'll see how that technology works out. They just completed, after the Williston Basin conference, those first two switchback wells. And we've got another company that now that has permitted a switchback well. So I don't have the results on the flowback yet. They fracked the wells but they haven't started the flowback. So I don't know the results or how those wells are performing. But the frack jobs went fine and so it's possible to drill a mile in one direction, make a 180 degree turn and drill a mile back in the other direction, hydraulically fracture that well and get ready to put it on production. Pretty exciting technology developments going on. "*

Oil: North Dakota crude by rail up MoM to 138,321 b/d in April

North Dakota CBR up MoM in April

On Friday, the North Dakota Pipeline Authority posted its Monthly Update "*June 2024 Production & Transportation"* [LINK]. Please note that we always go to the backup excel sheets from the North Dakota Pipeline Authority that provide low and high estimates for Williston crude by rail exports. While the NDPA's chart shows a high and low estimate by month, we always take the midpoint when summarizing the update. In the backup excel, the NDPA estimates crude by rail in April from a low of 123,321 b/d and a high of 153,321 b/d for an average of 138,103 b/d. There was an upward revision to March's numbers which used to have an average of 137,562 b/d, but is now 138,103 b/d. Because of this, the MoM export volumes have decreased. The NDPA did not comment on the MoM changes. Below is a chart showing the crude by rail volumes since 2014. Our Supplemental Documents package includes excerpts from the NDPA Monthly Update.

Figure 36: Estimated North Dakota Rail Export Volumes

Source: NDPA

Oil: EIA June STEO small increase to 2024, small decrease to 2025 US oil production

EIA STEO US oil production

On Tuesday, the EIA released its Short-Term Energy Outlook for June 2024 [LINK], which included a small increase to its 2024 oil production forecasts and a small decrease to its 2025 US oil production forecast. (i) The June STEO forecasts for 2024 US oil production

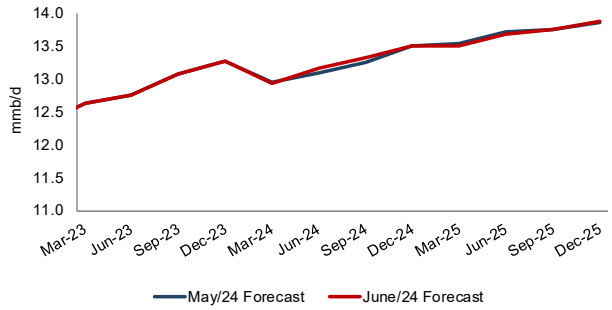
estimates were revised up vs the last STEO in May, which had been bumped down from April. The 2025 forecasts for US oil production were revised down for 2025, which were bumped up in May from April. (ii) The lookback to 2023 was unchanged with the June STEO estimate for 2023 was kept flat at 12.93 mmb/d from the May STEO of 12.93 mmb/d. Recall the big +140,000 b/d revision in October's STEO from the September STEO's forecast of 12.78 mmb/d, as the EIA had to play catch-up with higher oil production actuals being reported over weekly estimates. (iii) The June STEO forecast for 2024 is up +0.04 mmb/d to 13.24 mmb/d from the May STEO of 13.20 mmb/d. There were some small revisions by quarter: Q1/24 down -0.2 mmb/d to 12.94 mmb/d, Q2/24 up -0.07 to 13.17 mmb/d, Q3/24 +0.08 mmb/d to 13.33 mmb/d, and Q4/24 flat at 13.50 mmb/d. (iv) The EIA expects oil production to ramp up to 13.71 mmb/d over 2025, down -0.02 mmb/d from the May STEO. The revisions by quarter were Q1/25 -0.04 mmb/d to 13.51 mmb/d, Q2/25 -0.05 mmb/d to 13.68 mmb/d, Q3/25 flat at 13.76 mmb/d, and Q4/25 +0.01 mmb/d to 13.88 mmb/d. Below is our EIA STEO forecast comparison by month.

Figure 37: EIA STEO Oil Production Forecasts by Month

(million b/d)	Q1/23	Q2/23	Q3/23	Q4/23	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	Q1/25	Q2/25	Q3/25	Q4/25	2025
June-24	12.63	12.75	13.07	13.26	12.93	12.94	13.17	13.33	13.50	13.24	13.51	13.68	13.76	13.88	13.71
May-24	12.63	12.75	13.07	13.26	12.93	12.96	13.10	13.25	13.50	13.20	13.55	13.73	13.76	13.87	13.73
Apr-24	12.63	12.75	13.07	13.27	12.93	12.84	13.13	13.32	13.54	13.21	13.56	13.72	13.74	13.86	13.72
Mar-24	12.63	12.75	13.07	13.28	12.93	12.91	13.13	13.25	13.47	13.19	13.49	13.66	13.68	13.78	13.65
Feb-24	12.63	12.75	13.07	13.29	12.93	13.03	13.12	13.06	13.18	13.10	13.37	13.46	13.50	13.64	13.49
Jan-24	12.63	12.75	13.07	13.22	12.92	13.27	13.22	13.15	13.21	13.21	13.36	13.44	13.43	13.53	13.44
Dec-23	12.63	12.75	13.06	13.26	12.93	13.09	13.07	13.07	13.23	13.11					
Nov-23	12.63	12.75	13.07	13.17	12.90	13.06	13.08	13.11	13.35	13.15					
Oct-23	12.63	12.75	13.13	13.16	12.92	13.07	13.02	13.07	13.31	13.12					
Sep-23	12.63	12.71	12.86	12.94	12.78	13.03	13.09	13.15	13.36	13.16					
Aug-23	12.63	12.67	12.81	12.93	12.76	12.98	13.01	13.08	13.27	13.09					
Jul-23	12.61	12.55	12.48	12.63	12.56	12.67	12.71	12.88	13.13	12.85					
Jun-23	12.60	12.56	12.57	12.70	12.61	12.69	12.63	12.76	13.00	12.77					
May-23	12.54	12.51	12.46	12.61	12.53	12.63	12.58	12.68	12.85	12.69					
Apr-23	12.54	12.50	12.50	12.61	12.54	12.69	12.71	12.77	12.83	12.75					
Mar-23	12.31	12.43	12.48	12.54	12.44	12.58	12.58	12.64	12.71	12.63					
Feb-23	12.44	12.46	12.49	12.56	12.49	12.63	12.62	12.65	12.70	12.65					
Jan-23	12.37	12.34	12.40	12.51	12.41	12.63	12.72	12.86	13.03	12.81					

Source: EIA STEO

Figure 38: Estimated US Crude Oil Productions by Forecast Month



Source: EIA STEO

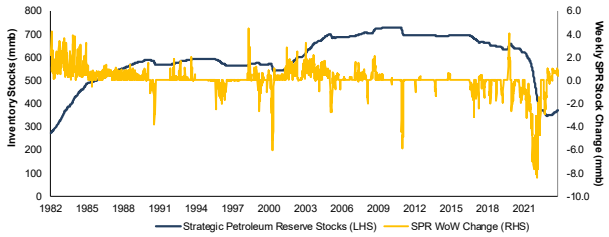
Oil: US SPR less commercial reserve deficit widens, now -89.126 mmb

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

US SPR reserves

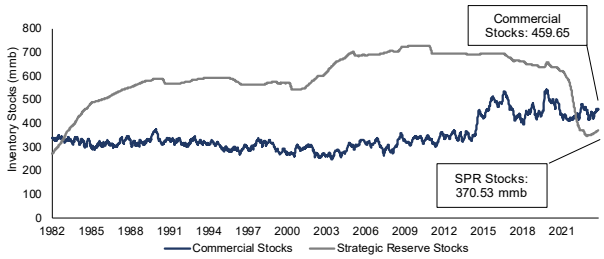
1983 in the Sep 16, 2022 week. This week, we saw a build on the SPR side and on the commercial side. The EIA's weekly oil data for June 7 [LINK] saw the SPR reserves increase +0.339 mmb WoW to 370.526 mmb, while commercial crude oil reserves increased +3.730 mmb to 459.652 mmb. There is now a -89.126 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 39: Strategic Petroleum Reserve Stocks and SPR WoW Change



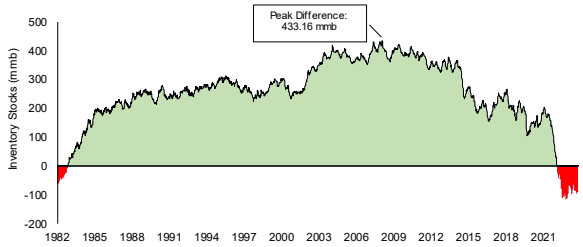
Source: EIA

Figure 40: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 41: US Oil Inventories: SPR Less Commercial



Source: EIA

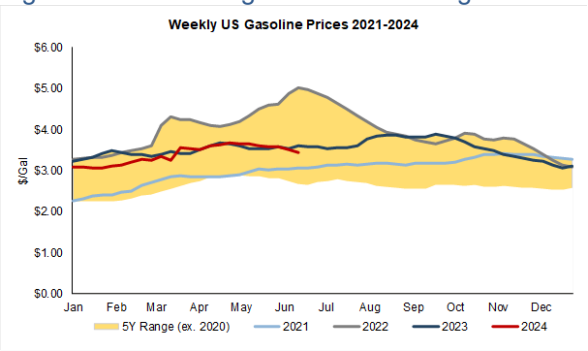
Oil: US national average gasoline prices -$0.01 WoW to $3.45

US gasoline prices

Yesterday, we tweeted [LINK] "*US gasoline prices keep drifting down. Jun 15 $3.46, -$0.01 WoW, -$0.16 MoM & -$0.14 YoY. California -$0.09 WoW to $4.85 on Jun 15. See 👇05/24 @GasBuddyGuy nailed it "progressive decreases between Memorial Day, July 7 & Labor Day" Thx @AAAnews #OOTT.*" Yesterday, AAA reported that US national average prices

were $3.45 on June 15, which was -$0.01 WoW, -$0.16 MoM and -$0.14 YoY. Yesterday, AAA reported California average gasoline prices were $4.85 on June 15, which was -$0.09 WoW, -$0.41 MoM and -$0.01 YoY. Below is our graph of Bloomberg's National Average Gasoline prices.

Figure 42: Bloomberg's National Average Gasoline Prices



Source: Bloomberg

GasBuddyGuy forecasts US gasoline prices to decline thru Labor Day

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

Oil: Crack spreads down -$0.86 WoW to $23.45

Crack spreads closed at $23.45

On Friday, we tweeted [LINK] "*321 crack spreads down -$0.86 WoW to $23.45 on Jun 14. Yet WTI was +$2.92 WoW to $78.45 but that was driven by OPEC clarifying won't add barrels on Oct 1/24 if market isn't there. Otherwise $23.45 would have pointed to softer WTI. Thx @business #OOTT."* Crack spreads were down $0.86 WoW to $23.45, which is down $6.94 over the past two months, when crack spreads were over $30 on Apr 12. We have always said crack spreads around $30 are a big incentive for refiners to buy as much crude as possible. But crack spreads drifting below aren't high enough to point to higher WTI ahead. However, WTI was +$2.92 WoW to $78.45 but that was driven by global factors in particular OPEC clarifying that it wouldn't be adding oil back to markets on Oct 1/24 unless the market could handle the volumes. Otherwise, we would have expected WTI lower this week. Crack spreads were -$0.86 WoW to close at $23.45 on Friday and WTI was +$2.92 WoW to $78.45. Crack spreads at $23.45 on June 14, followed $24.31 on June 7, $24.04 on May 31, $25.65 on May 24, $27.04 on May 17, $25.89 on May 10, $27.59 on May 3, $28.96 on Apr 26, $28.30 on Apr 19, and $30.39 on Apr 12. Crack spreads at $23.45 are still above the high end of the more normal pre-Covid that was more like $15-$20 but shouldn't be a driver up of WTI.

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 $23.45 as of the Friday June 14, 2024 close.

Figure 43: Cushing Oil 321 Crack Spread & WTI June 14, 2014 to June 14, 2024

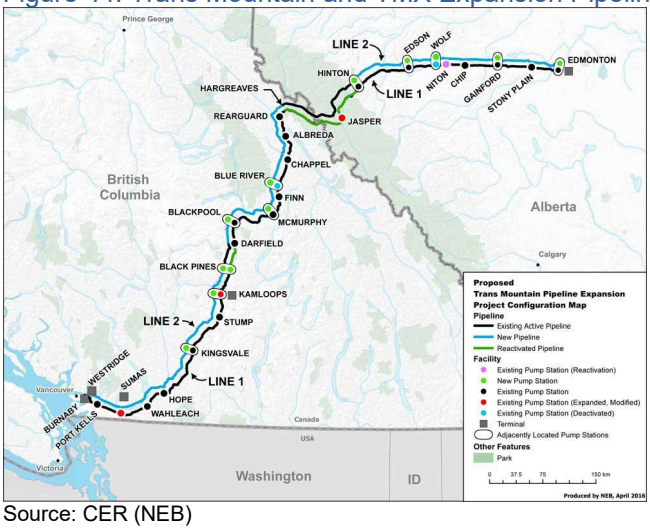
Source: Bloomberg

Oil: Trans Mountain Pipeline running 80% full, to load 22 oil tankers in Vancouver

Expanded Trans Mountain Pipeline Operations update

On Wednesday, Reuters reported on comments from Trans Mountain on tanker loadings after 6 weeks of operations, detailing that over June, 22 oil tankers with crude are scheduled to load with in Vancouver, and the pipeline is running at 80% capacity [LINK]. According to Trans Mountain Corp's chief financial and strategy officer Mark Maki, so far the system is operating as expected and final costs for the expansion are not expected to rise significantly. Reuters reported, *"The Trans Mountain expansion, which tripled pipeline capacity from Alberta to Canada's Pacific Coast to 890,000 barrels per day (bpd) started commercial operations on May 1 and traders are closely watching flows to gauge demand. Eighty percent, or 707,000 bpd, of the pipeline's capacity is reserved for long-term contracted shippers, while the remaining 20% is available to spot barrels. "We're basically running at effectively right around contract level with a little bit of spot on the system," Maki said, adding that volumes were expected to rise towards winter".* Below is a map of the expanded TMX Pipeline. Our Supplemental Documents Package contains the Reuters report.

Figure 44: Trans Mountain and TMX Expansion Pipeline Map



Source: CER (NEB)

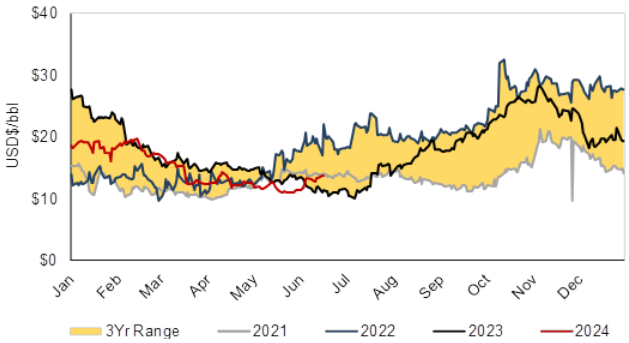
Oil: Cdn heavy oil differentials widen +$0.70 WoW to close at $13.80 on June 14

WCS differential widens

The negative to WCS less WTI differentials this week was the report that BP Whiting refinery was moving to turnaround in early July and not early Sept. BP Whiting runs on Cdn crude from the Enbridge mainline. The positive for WCS less WTI differentials continues to be the May startup of the TMX 590,000 b/d expansion. As noted above, Trans Mountain's has increased loadings by 407,000 b/d so far with the TMX startup. We believe that if TMX had not happened, WCS less WTI differentials would be wider. And that the key test for TMX is times like now and coming up in July/Aug /Sept to see if there will be less of the normal seasonal widening in WCS less WTI differentials. Right now, we are in the normal late Q1 and Q2 period that normally sees WCS less WTI differentials in the low double digits as US refiners maximize production of asphalt for annual paving season and to maximize production of summer grade fuels as well as asphalt ahead of the annual summer driving and paving season. So it's hard to determine how much of an impact TMX has had on WCS less

WTI differentials although with the last two weeks have been below the bottom end of the 3-yr range. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials in late Q1 and Q2. The WCS less WTI differential closed on June 14 at $13.80, which was a widening of +$0.70/bbl WoW vs $13.10/bbl on June 7.

Figure 45: WCS less WTI oil differentials to June 14 close



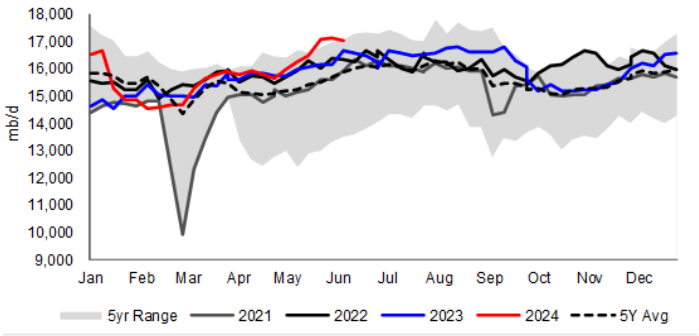
Source: Bloomberg

Oil: Refinery Inputs down -0.098 mmb/d WoW to 17.047 mmb/d

Refinery inputs -0.098 mmb/d WoW

There are always unplanned refinery items that impact crude oil inputs into refineries. And there are always different timing for refinery turnarounds. But, as a general rule, this is the normal seasonal ramp up in refinery runs for the summer that normally peaks in August. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended June 7 [LINK]. The EIA reported crude inputs to refineries were down -0.098 mmb/d this week to 17.047 mmb/d and are up +0.460 mmb/d YoY. Refinery utilization was down -0.4% WoW to 95.0%, which is up +1.3% YoY.

Figure 46: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: BP Whiting Advances Work on CDU to July from September

Whiting Advances work on CDU to July

On Thursday, Bloomberg reported that BP's Whiting refinery has advanced their planned turnaround from September up to early July, so it will be down sooner than originally

expected. As noted earlier, the 435,000 b/d Whiting refinery impacts Cdn crude oil because it runs almost all on Cdn crude oil from the Enbridge main line so the turnaround is a negative to WCS less WTI differentials. . Bloomberg wrote, "*The work on the largest of three crude units and its 95k b/d companion coker is scheduled to extend into early September with additional days needed to restore operations to normal…..The shutdown of the biggest crude unit, coming in the middle of the summer gasoline season, could tighten Midwest fuel supplies, sending regional gasoline prices higher at the pump and margins higher……Whiting, the largest US inland refinery, has a total crude processing capacity of 435k b/d*" BP has not given a reason for advancing the work. Our Supplemental Documents Package contains the report from Bloomberg.

Oil: US refinery capacity +324,000 b/d YoY to 18.384 mmb/d

Refinery inputs -0.098 mmb/d WoW

On Friday, we tweeted [LINK] "*US #Oil refinery capacity +324 kb/d YoY to 18.384 mmb/d as of Jan 1/24. 2nd consecutive YoY increase off post Covid decline. Jan 1/19: 18.802 mmb/d. Jan 1/20: 18.976. Jan 1/21: 18.127. Jan 1/22: 17.944. Jan 1/23: 18.060. Jan 1/24: 18.384. Thx @EIA [LINK] #OOTT."* On Friday, the EIA posted its annual Refinery Capacity Report June 2024 with data as of January 1, 2024. This is a good report to add to reference libraries. The EIA estimates US refinery capacity was +324,000 b/d YoY to 18.384 mmb/d at Jan 1, 2024 vs 18.060 mmb/d at Jan 1, 2023. These were the first two increases after refinery capacity declines post Covid. Prior to Covid, US refinery capacity was 18.976 mmb/d on Jan 1, 2020. The report lists all refineries by owner by location by refining capacity. So the data can be rolled up by state, operator, PADD district, etc. For example, PADD III Gulf Coast has refining capacity of 9.987 mmb/d, which is 5% of total US refinery capacity and PADD II Midwest is 4.246 mmb/d, which is 23% of total US refining capacity. Our Supplemental Documents package includes excerpts from the EIA Refinery Capacity report.

Oil: US net oil imports up +2.558 mmb/d WoW to 8.304 mmb/d, highest level since 2018

US net oil imports

The EIA reported US "NET" imports were up +2.558 mmb/d to 5.116 mmb/d for the June 7 week. US imports were up +1.245 mmb/d to 8.304 mmb/d, which is the highest since 2018. Exports were down -1.313 mmb/d to 3.188 mmb/d. Top 10 was up +0.363 mmb/d. (i) Venezuela weekly imports. We know the EIA doesn't have any data in the row for Venezuela weekly oil imports but we still don't know if the weekly oil imports are off or if Venezuela is included in the weekly oil imports in the Others number. But we do know the EIA monthly data shows Padd 3 imports from Venezuela around 150,000 b/d. Give the EIA credit for putting out weekly oil import estimates, but it's a reminder that we have to be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. Top 10 was up +0.363 mmb/d. Some items to note on the country data: (ii) Canada was up +0.206 mmb/d to 3.974 mmb/d, which we expect is due to more Canadian oil hitting PADD 5 (West Coast) from tankers loading off the new TMX expansion. (ii) Saudi Arabia was down -0.097 mmb/d to 0.278 mmb/d. (iii) Mexico was up +0.449 mmb/d to 0.987 mmb/d. The increase was due to refinery outages freeing up more Mexico oil for export. (iv) Colombia was down -0.421 mmb/d to 0.075 mmb/d. (v) Iraq was up +0.102 mmb/d to 0.228 mmb/d. (vi) Ecuador was down -0.051 mmb/d to 0.149 mmb/d. (vii) Nigeria was up +0.208 mmb/d to 0.208 mmb/d.

Figure 47: US Weekly Preliminary Imports by Major Country

	Apr 12/24	Apr 19/24	Apr 26/24	May 3/24	May 10/24	May 17/24	May 24/24	May 31/24	Jun 7/24	WoW
Canada	3,458	3,423	3,847	3,659	3,812	3,495	3,666	3,768	3,974	206
Saudi Arabia	229	398	402	355	196	486	422	375	278	-97
Venezuela	0	0	0	0	0	0	0	0	0	0
Mexico	208	351	459	805	507	184	551	538	987	449
Colombia	246	215	363	183	211	215	32	496	75	-421
Iraq	308	309	307	326	123	239	233	126	228	102
Ecuador	0	124	0	129	207	163	103	200	149	-51
Nigeria	173	136	89	322	212	144	71	0	208	208
Brazil	189	492	0	217	293	315	127	254	134	-120
Libya	21	100	98	1	86	0	262	0	87	87
Top 10	4,832	5,548	5,565	5,997	5,647	5,241	5,467	5,757	6,120	363
Others	1,629	949	1,207	972	1,097	1,422	1,302	1,301	2,184	883
Total US	**6,461**	**6,497**	**6,772**	**6,969**	**6,744**	**6,663**	**6,769**	**7,058**	**8,304**	**1,246**

Source: EIA, SAF

Oil: Kpler on why there's been no impact on Russia exports despite the sanctions

Kpler on Russia sanctions

On Friday, Kpler Senior Freight Analyst Matthew Wright was on the Gulf Intelligence Daily Energy Markets podcast. Wright explained the simple clear way of the tanker business. Where there is a gap in tankers due to something like sanctions, other tankers move to fill that gap. And because of this, Russian oil exports are higher than last year. And the other factor with respect to sanctions on Russian tankers and insurance, Kpler reminds the tankers will keep going and there it means there will be no coverage in the event of a spill or incident. We tweeted [LINK] ""*Vessels will move around and fill the gaps. There is no such thing as a vacuum in shipping." Kpler's @mattwright8 to @sean_evers on why there's been no impact on Russian crude exports despite sanctions on more tankers related to Russian shipping. And more in 👇SAF Group transcript #OOTT."* Our tweet included the transcript we made of Wright's comments. SAF Group created transcript of comments by Matthew Wright (Senior Freight Analyst, Kpler) with Sean Evers (Founder & Managing Partner Gulf Intelligence) on the Gulf Intelligence Daily Energy Markets podcast on June 14, 2024. [LINK] Items in *"italics*" are SAF Group created transcript At 19:10 min mark, Wright "… I wanted to touch on one thing Rachel said around sanctions and I completely agree, which is the sanctions on ships have, when you look at the effect on Russian crude exports, there's been no impact. Russian crude exports are higher this year than they were last year. Part of that to be far is because we had all of those drone strikes on refineries, which resulted in higher crude output. However, we just had the UK's just sanctioned the Russian insurer, Ingosstrakh. So they're almost causing more problems because that just means that no one is going to pay out when there is a spill or an incident. Right, rather than that you're going to say oh well our insurers not covering us anymore, we won't do this. People were engaging in this trade knowing the risk. So I think now, we've got 80 Russian tankers or 80 tankers related to Russian trade that were sanctioned in the last year alone. And Russian exports have only increased. More vessels are just continuing to fill the gap if vessels leave that trade. The Greek vessels that left the Russian trade moved down to do a lot of the Venezuelan trade. Now we've had sanctions reimposed on Venezuela, a lot of them are now looking for something. So vessels will move around and fill the gaps. There is no such thing as a vacuum in shipping."

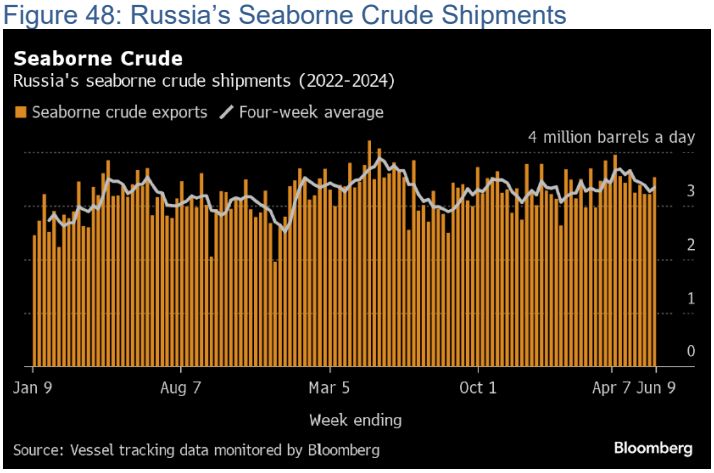
Oil: Russia's seaborne crude oil exports up WoW after OPEC+ meeting

Russia's seaborne crude exports

Information on the impacts on Russian oil infrastructure and its impact on moving crude is still a black hole. So it's far from clear how drone strikes have affected refinery capacity in Russia

would free up crude for export assuming the crude oil volumes can be moved to export terminals. And as noted previously, Russia has been moving more crude and products via rail, however, this week shows an increase in seaborne crude exports. On Tuesday, Bloomberg reported, "*Russia's four-week average crude exports ticked up in the period to June 9, ending a run of declines. Exports had fallen in each of the previous four weeks on that measure, producing a cumulative cut of 390,000 barrels a day, or 11%. That was the biggest such reversal since November. The gain of 70,000 barrels a day in the latest number was driven by a jump in weekly shipments to a five-week high."* In the week to June 9, Russia exported 3.53 mmb/d via tankers, up WoW from the week to May 31 which was 3.22 mmb/d, and the four-week average increased by ~ +70,000 b/d to 3.27 mmb/d, after four straight declines. Russia has pledged to compensate for overproduction against its April target, which was attributed to "technicalities of making significant output cuts". Russia made significant output cuts in May, however they were still above their promised target. Our Supplemental Documents package includes the Bloomberg report.

Figure 48: Russia's Seaborne Crude Shipments



Source: Bloomberg

Russia oil exports to China still down vs two months ago with lesser discounts

Russia oil shipments to China averaged 1.36 mmb/d for the first half of April. But they have been down since then with the reports that Russia had cut its discounts to China and that meant China was taking less Russian oil. Bloomberg's above report this week highlighted Russia oil shipments to China were up to 1.24 mmb/d for the June 9 week, which brings the last six weeks average to 1.21 mmb/d. We were warned that China oil imports from Russia were being hit on April 22 by one of our favorites commentators on the Gulf Intelligence Daily Energy Podcasts is Victor Yang, Senior Analyst JLC Network Technology. He is based in China so we like hear his on-the-ground views on oil, natural gas and markets in China. Here is what we wrote in our April 28, 2024 Energy Tidbits memo referencing Yang's comments from our April 22, 2024 tweet [LINK] that included a transcript we made of Yang's comments. "*And for the second quarter, we see a lot of refinery maintenance, is imports will actually come down. And for now, the premium for Russian cargoes have strengthened this year, from -0.5 barrels to -0.3 barrels. And now it's flat to Brent,*

meaning 0 now. So this has dampened refiners, particularly independents, interest in Russian crude. Their margins for imported crude, including Russian crude, actually turned negative late last month and the beginning of this month. So it's now kind of [inaudible] slightly above the breakeven point. So the interest in this has been dampened too. So we are not expecting imports to grow much in the second quarter, yes." Below is the table from Bloomberg's Russia oil exports report this week.

Figure 49: Russian Crude Exports to Asia

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

4 weeks ending	China	India	Other	Unknown Asia	Other Unknown	Total
May 5, 2024	1.25	2.01	0.04	0.00	0.00	3.29
May 12, 2024	1.17	1.86	0.04	0.00	0.00	3.06
May 19, 2025	1.24	1.68	0.00	0.08	0.00	3.00
May 26, 2024	1.24	1.59	0.00	0.15	0.00	2.99
June 2, 2024	1.09	1.63	0.00	0.21	0.00	2.93
June 9, 2024	1.24	1.43	0.00	0.28	0.05	3.00

Source: Vessel tracking data compiled by Bloomberg — Bloomberg

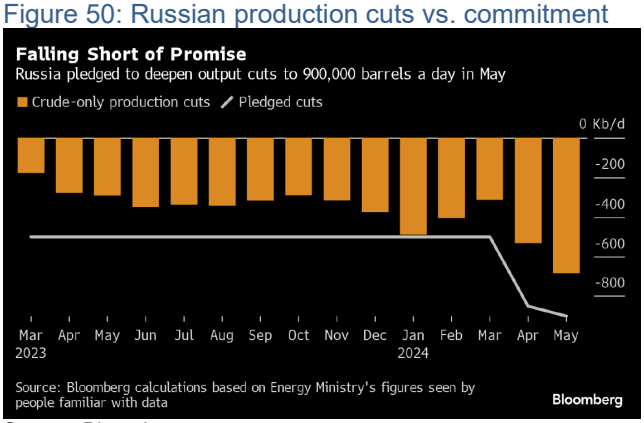
Source: Bloomberg

Oil: Russia exceeds production target again in May

Russia exceeds production commitment

On Monday, Bloomberg reported that, in May, Russia produced more than they committed to in their voluntary cuts, the same as what happened April. Recall that Russia committed to cutting an extra 350,000 b/d in April, which is on top of their 500,000 b/d cut announced back in February 2023, and they committed to cutting an extra 900,000 b/d in May. Bloomberg wrote *"The size of Russia's daily output cut in May, relative to the baseline, was about 93,000 tons, or some 683,000 barrels, according to the calculations. That's the deepest monthly reduction since it started curbing its crude output unilaterally in response to international energy sanctions in March 2023. Russia has acknowledged that it overproduced in April "due to technicalities of making significant output cuts," and pledged to compensate for the extra barrels. The nation is due to present a compensation schedule by the end of the month, according to OPEC+. Russia is the only OPEC+ nation splitting its curbs between production and exports of both crude and refined products. This quarter, Moscow promised to make deeper reductions to its output while expanding its exports by a similar amount. For June, the production cuts are set to deepen to a total of 971 thousand barrels a day from the baseline."* Our Supplemental Documents Package includes the Bloomberg report.

Figure 50: Russian production cuts vs. commitment



Source: Bloomberg

Oil: Russia says will compensate for OPEC+ overproduction thru end of Sept 2025

Russia says it will compensate

We expect that most are in the "show me" view for Russia compensating for its over-production to its OPEC+ commitment. But, on Thursday, Russia's Energy Ministry posted Russia on Telegram [LINK] that explained they will comply with their OPEC+ commitments for the "limiting exceeding" of production and will do so thru Sept 2025. Here is the Google Translate of the Telegram post "*"On reducing oil production. Russia remains fully committed to the fundamental principles of the OPEC+ deal. Based on data from independent sources agreed to monitor the agreement, there was limited exceeding of agreed levels in May. In June, the issue of overproduction will be resolved with the achievement of target levels. Production volumes exceeded since April will be fully adjusted in the future. Excess production will be reimbursed during the compensation period, which will last until the end of September 2025. An updated production compensation schedule will soon be sent to the OPEC Secretariat."*

Oil: OPEC MOMR no change to oil demand growth in 2024 and 2025

OPEC Monthly Oil Market Report

On Tuesday at 5:30am MT, OPEC released its June Monthly Oil Market Report. (i) We thought it was neutral to slightly positive based on the numbers vs the May MOMR. OPEC's demand and non-OPEC supply forecasts were unchanged. So neutral on the forecast but slightly positive with OPEC estimating a slightly wider deficit in crude oil stocks at April 30 vs March 31. (ii) However the naysayers will continue to criticize OPEC for being too optimistic in its forecast oil demand growth and will also point to zero changes in the demand by region for Q3 and Q4 as saying OPEC didn't really take a good look at any update to their demand forecast. (iii) There was no change to oil demand forecasts for 2024 and 2025. 2024 still shows a +2.25 mmb/d YoY growth to 104.46 mmb/d, and 2025 is up +1.85 mmb/d YoY to 106.31 mmb/d. (iv) (iii) Note that last month, there was a change in how OPEC reports oil supply. Up until last month, they reported the global oil supply by major countries and regions to provide a non-OPEC supply total. Last month it changed, so we are not able to see the breakdown. They are now reporting on a non-Declaration of Cooperation ("non-DoC") country/region basis (the countries not participating in OPEC+). For example, there is no split out of Russia in the forecasts, meaning they do not have a call on OPEC but have a call on DoC oil. Due to the change are unable to do a complete comparison for MoM MOMR by

country. June MOMR has non-DoC supply at 47.7 mb/d for 2021, 49.3 mmb/d for 2022, and 51.7 mmb/d for 2023. For 2024, June MOMR has non-DoC up +1.23 mmb/d YoY to 52.96 mmb/d. The major growth areas are the U.S. at +0.44 mmb/d YoY to 21.34 mmb/d which is flat from last month, Latin America +0.38 mmb/d YoY to 7.34 mmb/d, and Canada at +0.23 mmb/d YoY to 5.92 mmb/d. June MOMR has Canada at 5.69 mmb/d in 2023, +0.23 mmb/d YoY to 5.92 mmb/d in 2024, and +0.17 mmb/d YoY to 6.09 mmb/d in 2025. (v) There were a few items to note on what countries directly reported vs Secondary Sources estimates: MOMR only has direct communications for OPEC, not for the countries in non-DoC. Direct communications are the production reported by the OPEC members. Iraq does its norm and says it produced less at 3.860 mmb/d in May vs. Secondary Sources of 4.195 mmb/d, Venezuela does its norm and says it produced more at 910,000 b/d vs. Secondary Sources of 822,000 b/d, Libya did not provide direct communications for May, but Secondary Sources reported production of 1.173 mmb/d, and Nigeria does its norm and claims less production than Secondary Sources, at 1.251 mmb/d in May vs 1.419 mmb/d from Secondary Sources. (vi) June MOMR says demand for DoC for 2024 is unchanged at 43.2 mmb/d, which is +0.9 mmb/d from 2023, and demand for DoC for 2025 is unchanged at 43.9 mmb/d, which is up +0.7 mmb/d from 2024. Crude oil stocks were up MoM, and product stocks were down MoM in June. June MOMR reports a small increase in supply from non-DoC countries of +1.23 mb/d in 2024, unchanged from May's assessment in non-OPEC supply, and OPEC production was down -1.24 mb/d MoM. Crude only oil stocks are up +19.5 mmb MoM to 1,376 mmb, which is -96 mmb below the 2015-2019 average. Product only stocks were down -2.9 mmb to 1,396 mmb, which is -58 mmb below the 2015-2019 average. (vii) Our Supplemental Documents package includes excerpts from the OPEC June MOMR.

Oil: IEA OMR reduces YoY 2024 demand growth because they increased 2023 demand

IEA Oil Market Report

On Wednesday, the IEA released its monthly Oil Market Report for June at 2am MT. (i) For the 3rd consecutive month, the IEA messaged a clear negative to oil by highlighting they were reducing oil demand growth in 2024. That is true but they didn't say there was no change to 2024 oil demand estimate of 103.2 mmb/d and the only reason for the lower growth rate is that they increased their 2023 oil demand. (ii) On Wednesday, we tweeted [LINK]: "*Rinse and repeat. IEA June OMR cuts 2024 YoY #Oil demand growth, just like it did in May & Apr OMRs. BUT IEA also increased its lookback at 2023 #Oil demand just like it did in May & Apr OMRs Therefore IEA's 2024 oil demand forecast is unchanged at 103.2 mmb/d in June, May, Apr, Mar OMRs #OOTT. Thx @business Kristian Siedenburg for monthly data*". (iii) We thought the takeaway from the IEA June OMR vs May OMR was neutral for 2024 and 2024 demand was unchanged at 103.2 mmb/d, but YoY demand growth was lowered to +1.1 mmb/d from +1.2 mmb/d, but that was due to the IEA raising the 2023 starting point by +0.1 mmb/d to 102.2 mmb/d. Note the IEA did the same thing in May and in April, and 2024 oil demand of 103.2 mmb/d is unchanged from April to June OMRs. slightly negative for 2025 based on the numbers. The demand forecast for 2025 was decreased -0.100 mmb/d to 104.2 mmb/d from 104.3 mmb/d in last month's OMR. (iv) Non-OPEC supply for 2024 is unchanged at 70.2 mmb/d from last month's forecast. The IEA forecasts non-OPEC supply growth at +1.7 mmb/d to 71.9 mmb/d, an increase from last month's at +1.3 mmb/d to 71.8 mmb/d. (v) There was a slight decrease to IEA's calls on OPEC for 2025, while 2024's were unchanged. Bloomberg wrote *"Call on OPEC crude 2025 was revised to 26.7m b/d from 26.9m b/d. Call on OPEC crude 2024 was unrevised at 27.4m b/d"* (vi) Global oil inventories were up in April +19.3 mmb, while land stocks surged and oil on water fell. The IEA wrote, "*On land stocks*

surged by 83.5 mb after eight-months of draws, while oil on water plunged by 64.2 mb following 112.6 mb of increases in the previous two months….. Preliminary data suggest a further 48.2 mb build in May." Our Supplemental documents package includes the IEA release and the Bloomberg tables and reports.

Figure 51: IEA Global Demand Forecast by OMR Report

mmb/d	2023	Q1/24	Q2/24	Q3/24	Q4/24	2024	24-23	Q1/25	Q2/25	Q3/25	Q4/25	2025	25-24
June 24	**102.2**	101.5	103.0	104.2	104.1	**103.2**	*1.0*	102.6	103.9	105.3	105.1	**104.2**	*1.0*
May 24	**102.1**	101.7	102.9	104.1	103.9	**103.2**	*1.1*	102.8	104.1	105.3	105.1	**104.3**	*1.1*
Apr 24	**102.0**	102.0	103.0	103.9	103.8	**103.2**	*1.2*	103.1	104.0	105.1	105.0	**104.3**	*1.1*
Mar 24	**101.9**	102.0	103.0	104.0	103.7	**103.2**	*1.3*						
Feb 24	**101.8**	101.7	102.8	103.8	103.7	**103.0**	*1.2*						
Jan 24	**101.7**	101.7	102.7	103.7	103.8	**103.0**	*1.3*						
Dec 23	**101.7**	101.4	102.4	103.4	103.9	**102.8**	*1.1*						
Nov 23	**102.0**	101.5	102.4	103.5	104.1	**102.9**	*0.9*						
Oct 23	**101.9**	101.3	102.2	103.5	103.9	**102.7**	*0.8*						
Sep 23	**101.8**	101.1	102.6	104.0	103.5	**102.8**	*1.0*						
Aug 23	**102.2**	101.5	102.6	104.2	104.3	**103.2**	*1.0*						
July 23	**102.1**	101.4	102.6	104.3	104.5	**103.2**	*1.1*						
June 23	**102.3**	101.5	102.5	104.1	104.4	**103.1**	*0.8*						

Source: IEA, Bloomberg, SAF

IEA success – media messaging was all on reducing oil demand growth

We don't think it makes a difference if you are fan or not of the IEA but everyone has to give them kudos for their ability to message their story and have all the media pick up the desired message. Just like the prior two OMRs, the IEA did a good job of getting the media to focus on the negative message of lowering oil demand growth for the 3rd month in a row. The reports were all how the IEA, once again, lowered its oil demand growth for 2024 by 0.1 mmb/d, which followed its May OMR that also lowered oil demand growth by 0.1 mmb/d and the April OMR that lowered oil demand growth by 0.1 mmb/d. So the message was all about lowering oil demand growth rates but there wasn't coverage that says the IEA has left unchanged for the last 4 OMRs their oil demand forecast for 2024 of 103.2 mmb/d. Nor did the IEA highlight that the reason they were able to do so is because they keep increasing their lookback at 2023 oil demand so higher 2023 oil demand with unchanged 2024 oil demand equals lower oil demand growth YoY. The IEA's lookback at 2023 oil demand has increased 0.5 mmb/d this year. Jan OMR had lookback at 2023 oil demand at 101.7 mmb/d and now the June OMR has lookback at 2023 oil demand at 102.2 mmb/d. So we always say give the IEA credit for knowing how to increase their historical data to get their message of lower oil demand growth in 2024.

Oil: IEA forecasts peak oil demand by 2030 & unprecedented surplus capacity by 2030

IEA's negative call for oil

On Wednesday, the IEA posted its 157-pg "*IEA 2024: Analyst and forecast to 2030*", which is their forecast for oil supply and demand to 2030. The IEA messaging was clear and is a big negative to oil prices. The Wednesday morning headlines picked up by Bloomberg and CNBC were on "*surplus global supply capacity will reach unprecedented levels by 2030*" and on peak oil demand reached before 2030. Those are the two big negatives to oil. And those were the headlines picked up by all the media coverage. Below are some of our key comments on the Oil 2024 call that peak oil demand is before 2030. Our Supplemental Documents package includes excerpts from the IEA Oil 2024.

We expect the IEA will push back peak oil demand by 2030 after COP29

We continue to believe the IEA will push back its peak oil demand by 2030 call because of the assumptions behind the most important factor for that call – EVs to displace around 6 mmb/d of road fuels by 2030. We expressed that view in our April 28, 2024 Energy Tidbits memo. And if this key assumption is wrong, then their peak oil demand by 2030 is wrong. We wouldn't expect this to change until after US elections and COP2. They will want to keep the message on track but need to accelerate Net Zero efforts. Don't forget the IEA is funded by the western nations and so their bosses are people like Jennifer Granholm and Stephen Guilbeault.

IEA's EVs displacing 6 mmb/d is based on GEVO2024 in April

It's hard for readers to get into assumptions on a 157-pg report but the iea does a good job of not going into key details and leads the reader to believe this is a forecast. Oil 2024 says "*EVs to curtail consumption of key fuels. Global electric car sales continue to display stellar growth. According to the IEA's Global Electric Vehicle Outlook 2024, sales could reach around 17 million in 2024, increasing from 14 million in 2023, with EVs accounting for nearly one in five cars sold globally. This ascent is set to persist, with total sales projected to reach 40 million in 2030, when almost one in two new cars will be an EV. This will displace around 6 mb/d of road fuels demand by the end of our forecast period."* So you have to go back to the Global Electric Vehicle Outlook 2024 (April 20240 for the assumptions to the 6 mmb/d displacement. And there are two key items in GEVO2024 that we highlighted in our April 28, 2024 Energy Tidbits memo. EVs displacing 6 mmb/d by 2030 is NOT a forecast and it based on govt policies AND objectives.

IEA's EVs displacing 6 mmb/d is NOT a prediction or forecast

There is nothing in the above excerpt from Oil 2024 that gives any indication that EVs displacing 6 mmb/d of road fuels is NOT a prediction or forecast. The 6 mmb/d comes from GEVO2024 and that is not a forecast. And the IEA explicitly says so in GEVO 2024. GEVO 2024 explicitly says this is NOT a forecast or prediction. Rather the IEA says it is a scenario that is used to inform decision-making by govt. So not a forecast, but a scenario. On pg 102 of GEVO2024, the IEA says 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."* So displacing 6 mmb/d is NOT a forecast but we didn't see anyone else highlight this key fact in commenting on Oil 2024.

IEA GEVO2024 scenario is based on govt policies AND objectives not markets

So GEVO2024's EVs displacing 6 mmb/d of road fuels is NOT a forecast. The other issue with their scenario is that the scenario is based on government policies AND objectives. So whenever the government says here is their objective or 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 in the GEVO2024, the IEA said 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. The IEA is clear that it's the stated policies AND objectives is what determines their EV sales growth. And that means it didn't use the big change in EV markets over the past year.

IEA Oil 2024 warns a 15% delay in EVs pace means oil demand grows thru 2030

We thought the IEA's comments in Oil2024 was a set up comments for when the IEA pushes back its peak oil demand ie. where they can say they warned in Oil2024. As noted above, the EVs sales and displacement of 6 mmb/d by 2030 is from GEVO2024 as noted above. Oil2024 says that if the pace of global EV adoption is 15% less than in their STEPS scenario from April 2024, that would put oil demand back into growth in 2030. This looks like the set-up comment for when the IEA pushes back peak oil demand ie. where they can say they warned readers in Oil 2024. The pace of global EVs is based on government policies AND objectives. And think about what has been happening in the EVs sales market. Surely people have knocked down their EV adoption pace by at least 15%. Whenever the IEA make a modest cut to their EV adoption pace (that was based on govt stated policies and objectives) , then it means peak oil demand is sometime in the 2030s and also that oi demand growth thru 2030 will be greater than in the Oil 2024 forecast. In Oil 2024, the EIA wrote "*Moreover, oil's flattish, plateauing demand profile post-2027 means that it would only take relatively minor changes in its underlying drivers to directionally shift oil's demand trajectory. For example, either a 0.3% quickening in global GDP growth, a USD 5/bbl annual decline in real oil prices or a 15% slowdown in the pace of global EV adoption would be sufficient for oil consumption to cross the narrow dividing line back from shrinkage to growth at the end of the decade. Conversely, opposite shifts of the same magnitude would accelerate oil demand's slide into contraction*."

IEA Oil 2024 back end loads the reduction in gasoline demand

We like to compare this year vs last year to see if any items jump out at us. One I sthe gasoline assumptions. The IEA increases near term gasoline consumption so it is more back end loading its demand reduction. We compared IEA Oil 2024 vs Oil 2023. Oil 2023 assumed lower gasoline consumption of 26.6 mmb/d in 2024 and 2025 but Oil2024 increases 2024 to 27.2 mmb/d and 2025 and to 27.2 mmb/d. Oil2024 gets down to 26.4 mmb/d in 2028, which is basically where Oil2023 expected it would be in 2024. But then down to 25.4 mmb/d in 2030. So an accelerated reduction in demand. Our Supplemental Documents package includes the comparison of Oil 2023 and Oil2024.

The very bullish oil price for 2030 and beyond case from IEA Oil 2024

The IEA messaging is very negative for oil. However, we can see two items from Oil2024 that present a very bullish oil price for 2030 and beyond. There is a sentence that fits to what Saudi Arabia and Exxon warn and one that we have not

seen highlighted. So it is a sentence that is being overlooked. But if you assume the EVs replacing 6 mmb/d 2030 is way too optimistic, combine it with this sentence on global oil supply that they see beginning to contract by 2030 following strong growth until then. IEA expects global oil supply growth to turn to contraction towards end of 2020s. In the Executive Summary, the IEA writes "*Rising world oil supplies, led by non-OPEC+ producers, are expected to surpass forecast demand from 2025 onwards. Mirroring demand's break with long-term trends, a front-loaded build in oil production capacity is forecast to lose momentum and swing into contraction towards the end of our medium-term outlook*." So if the world oil supply swings into contraction by 2030 and the IEA's EVs displacement of 6 mmb/d is too optimistic, it will be very bullish for oil in 2030 and beyond. And, as noted above, if the pace of EVs adoption is 15% less than in GEVO2024, then oil demand increases thru 2030.

Oil: OPEC calls IEA peak oil "*a dangerous commentary especially for consumers*"

OPEC on IEA's peak oil demand by 2030 call

No surprise, OPEC Secretary General Al Ghais made a public commentary on the IEA peak oil by 2030 scenario. Needless to say, he wasn't impressed and reminded of the risk to accepting the IEA's views as being correct. Early Friday morning, we tweeted [LINK] "*IEA says peak oil demand by 2030. OPEC says that "is a dangerous commentary, especially for consumers, and will only lead to energy volatility on a potentially unprecedented scale." And much more. My Energy Tidbits June 16 memo will highlight the big questionable IEA peak oil demand forecast assumptions. #OOTT."* Al Ghais didn't go into details on the assumptions behind the IEA oil forecast for peak oil by 2029. Rather he gave more of a big picture warning such as "*This narrative was repeated only yesterday when the IEA published its Oil2024 report in which it once again stated that oil demand would peak before 2030. It is a dangerous commentary, especially for consumer, and will only lead to energy volatility on a potentially unprecedented scale."* Al Ghais also reminded of a huge fundamental – non-OECD countries energy future isn't about net zero etc but its about being able to turn on lights, cook on a clean stove etc. "*This is an unrealistic scenario, one that would negatively impact economies across the world. It is simply a continuation of the IEA's anti-oil narrative. Given the real trends we see today, we not see peak oil demand by the end of the decade."* And "*we do not foresee a peak in oil demand in our long-term forecast*." There is much more in the Al Ghais piece. Our Supplemental Documents package includes the OPEC Secretary General piece.

Oil: Houthis keep attacking and hitting merchant ships and US navy

Houthis keep attacking ships

We are not seeing any change to the market responding to Houthis drone/missile attacks against merchant and US navy ships with a no real market impact response. It doesn't matter if the Houthis hit multiple merchant ships or sink merchant ships as they did this week or launch missiles at US and/or UK navy ships. This week, the Houthis also had their first drone boat hit a merchant ship. On Wednesday, UKMTO reported a a merchant ship was hit by both an aerial drone and a drone ship. No surprise with the multiple merchant vessels hit by the Houithis, the US and UK had multiple attacks on Houthis radars and drone launchers.

Oil: US Navy has spent ~$1b defending against Houthis in Red Sea

Houthis tie down US Navy

Who would have ever predicted that a group as small as the Houthis could tie up the amount of US and UK navy forces. But they have. And on Wednesday, the WSJ report "*How an Iranian-Backed Militia Ties Down U.S. Naval Forces in the Red Sea. Yemen's Houthis have*

launched hundreds of attacks, and American military officials see no end in sight" [LINK] reminded of how this small group has cost the US Navy about $1 billion to defend in the Red Sea. The WSJ also reminded "*at least 77 cargo ships have been hit, and one British-owned ship carrying 20,000 tons of fertilizer aboard was sunk." "No warships are known to have been hit in the more than 80 attempted attacks, but there have been some close calls, underscoring the perils for the U.S. and allies that have sent ships to the area the longer the conflict continues."* And most of all "*The Navy says it has spent about $1 billion on munitions used in defending the Red Sea, conducting more than 450 strikes and intercepting more than 200 drones and missiles since November when the attacks began*." There was slso a good reminder of the short time frame to depend if it's a ballistic missile. The WSJ wrote "*Then came the ballistic missile. "These things are telephone pole-sized, you get three minutes of flight time, you detect it for 45 seconds, you get like 10 seconds to determine whether you're going to shoot at it or not," said Capt. David Wroe of U.S. carrier strike group in the Red Sea."* Our Supplemental Documents package includes the WSJ report.

Oil: Libya oil production continues stable, now at 1.258 mmb/d

Libya oil production 1.258 mmb/d

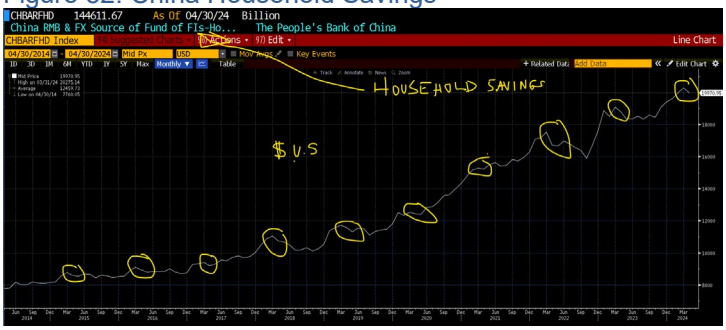
Last Sunday night, we tweeted [LINK] "*1st official Libya oil production we have seen in some time. But 1.251 mmb/d is right in line with the March updates so looks like steady production over past two months. #OOTT."* It was the first Libya National Oil Corporation oil production update we have seen in about two months and it was right in line with the March production updates. Since then, the NOC has posted two more production updates with the latest, June 11, estimated Libya oil production at 1.258 mmb/d.

Oil: Chinese household savings dip down in April as happens every year

Chinese household savings

One of the biggest reasons for the weak China recovery is that consumers have been on the sidelines and therefore keep adding to savings instead of spending. The increasing savings fits with the commentary that Chinese consumers are not yet confident in the recovery to start to spend more. On Monday, we tweeted [LINK] "*As expected, China household savings see normal seasonal dip into savings in Apr/May linked to May Day holidays. Household savings continue at high rates compared to pre-Covid. Still waiting for Chinese consumer being convinced to spend more. Thx @business #OOTT*". China's household savings at the end of April were US $20.0T, down MoM from $20.3T at the end of March. We had been expecting a dip down in savings in April, which is consistent with what has been seen every year. Our May 12, 2024 Energy Tidbits memo noted that Chinese savings dip down every April/May. Here is what we wrote in that memo "*On Monday, we tweeted [LINK] "Chinese consumer still sitting on the sideline and not convinced to start spending. Household savings continue at high rates compared to pre-Covid. Should see normal seasonal dip into savings in Apr/May linked to May Day holidays. Thx @business #OOTT*". Keep in mind that every dollar that stays in savings is dollar not being spent in the economy and not contributing to company earnings, which fuels wages, taxes, etc. So while household savings are at record highs, Chinese consumers are holding back, which would add to the recovery once they come off the sidelines. Now with April 2024's data out, we can see that the April actual supports the normal seasonal dip into savings. Our Monday tweet included the below graph that notes every April/May normally sees a seasonal dip in savings.

Figure 52: China Household Savings



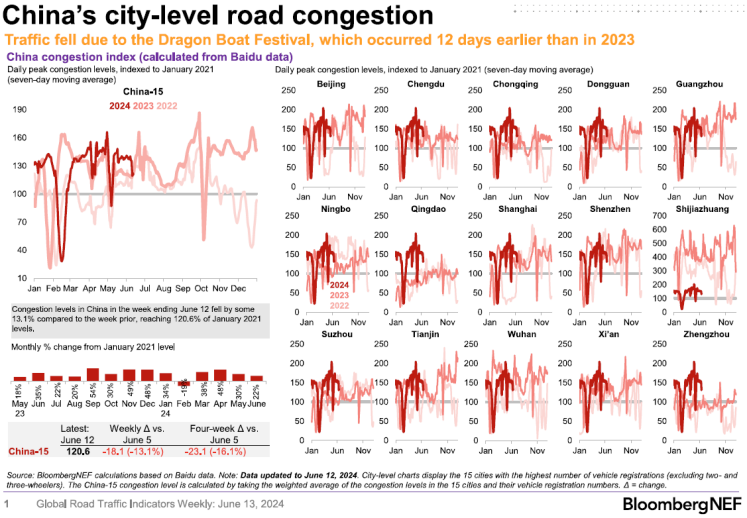
Source: Bloomberg

Oil: Baidu China city-level road congestion fell due to Dragon Boat Festival

China city-level traffic congestion

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly June 13 report, which includes the Baidu city-level road congestion for the week ended June 12. BloombergNEF's report was titled "*Traffic fell due to the Dragon Boat Festival, which occurred 12 days earlier than in 2023".* Baidu city-level road congestion was down by -13.1% WoW to 120.6% of Jan 2021 levels. But the positive remains that traffic in June so far is up 3% YoY. Below are the BloombergNEF key graphs.

Figure 53: China city-level road congestion for the week ended June 12



Source: Bloomberg

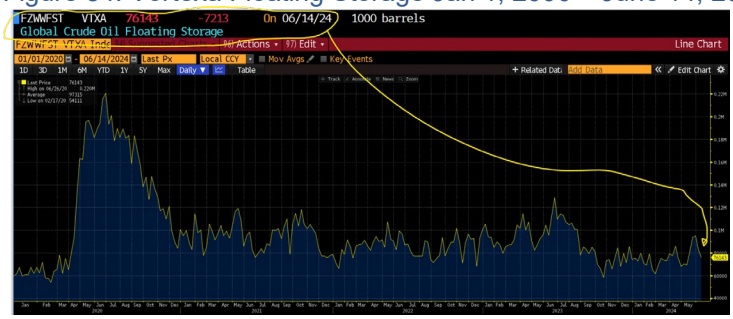
Oil: Vortexa crude oil floating storage est 76.14 mmb at June 14, -7.22 mmb WoW

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 June 8 at 9am MT. (i) Yesterday, we tweeted [LINK] "*Vortexa oil*

floating storage est 76.14 mmb at Jun 14. BUT negative with last 7 wks average, incl Jun 14, is now up to 81.28 mmb as prior 3 wks revised up incl big +13.08 mmb revision to Jun 7. Thx @vortexa @business #OOTT." (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for June 14 at 76.14 mmb, which is -7.22 mmb WoW vs revised up big June 7 of 83.36 mmb. Note June 7 was revised +13.08 mmb to 83.36 mmb vs 70.28 mmb originally posted at 9am MT on June 8. (iii) Revisions. The three prior weeks were revised up including a big upward revision to June 7. Here are the revisions for the past seven weeks compared to the estimates originally posted on Bloomberg at 9am MT on June 8. June 7 revised +13.08 mmb. May 31 revised +3.48 mmb. May 24 revised +6.08 mmb. May 17 revised -3.16 mmb. May 10 revised +1.4 mmb. May 3 revised -1.16 mmb. Apr 26 revised -2.58 mmb. (iv) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the prior seven weeks is 81.28 mmb vs last week's then prior seven-week average of 77.62 mmb. (v) 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. (vi) Note the below graph goes back to Jan 1, 2020 to show the run up to Covid and then how Covid started to impact Covid in March/April 2020. (vii) June 14 estimate of 76.14 mmb is -52.54 mmb vs the last year peak June 23, 2023 high of 128.68 mmb. Recall Saudi Arabia stepped in on July 1, 2023 for additional cuts. (vii) June 14 estimate of 76.14 mmb is -36.79 mmb YoY vs June 16, 2023 of 112.93 mmb. (ix) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT June 15, June 8, and June 1.

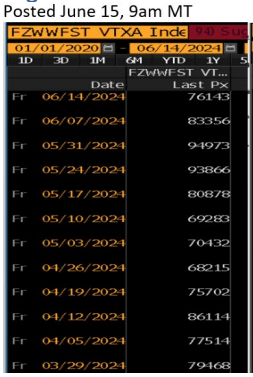
Figure 54: Vortexa Floating Storage Jan 1, 2000 – June 14, 2024, posted June 15 at 9am MT



Source: Bloomberg, Vortexa

Figure 55: Vortexa Estimates Posted 9am MT on June 15, June 8, and June 1

Posted June 15, 9am MT



Date	Last Px
Fr 06/14/2024	76143
Fr 06/07/2024	83356
Fr 05/31/2024	94973
Fr 05/24/2024	93866
Fr 05/17/2024	80878
Fr 05/10/2024	69283
Fr 05/03/2024	70432
Fr 04/26/2024	68215
Fr 04/19/2024	75702
Fr 04/12/2024	86114
Fr 04/05/2024	77514
Fr 03/29/2024	79468

June 8, 9am MT

Date	Last Px
Fr 06/07/2024	70277
Fr 05/31/2024	91486
Fr 05/24/2024	87792
Fr 05/17/2024	84044
Fr 05/10/2024	67343
Fr 05/03/2024	71592
Fr 04/26/2024	70800
Fr 04/19/2024	78417
Fr 04/12/2024	87107
Fr 04/05/2024	78203
Fr 03/29/2024	81421
Fr 03/22/2024	72746

June 1, 9am MT

Date	Last Px
Fr 05/31/2024	78472
Fr 05/24/2024	79803
Fr 05/17/2024	82623
Fr 05/10/2024	63525
Fr 05/03/2024	68627
Fr 04/26/2024	70186
Fr 04/19/2024	77076
Fr 04/12/2024	85718
Fr 04/05/2024	77147
Fr 03/29/2024	81318
Fr 03/22/2024	72192
Fr 03/15/2024	74357

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Vortexa floating storage by region

Bloomberg also posts the Vortexa crude oil floating storage in key regions, but not all regions of the world. The regions covered are Asia, North Sea, Europe, Middle East, West Africa and US Gulf Coast. We then back into the "Other" or rest of world. (i) As noted above, last week's June 7, in total, was significantly revised +13.08 mmb with the key revisions being Other revised +4.03 mmb, Asia revised +3.60 mmb, and US Gulf Coast revised +2.66 mmb.(ii) Total floating storage was -7.22 mmb WoW vs the revised up June 7. The major WoW changes were Other -5.22 mmb WoW, Middle East -4.36 mmb WoW and North Sea +2.22 mmb WoW. (iii) June 14 estimate of 76.14 mmb is -52.54 mmb vs the last year June 23, 2023 high of 128.68 mmb. Recall Saudi Arabia started its voluntary 1 mmb/d production cuts on July 1, 2023. The major changes by region vs the last year June 23, 2023 peak are Asia -40.551 mmb, Other -27.28 mmb and Europe +5.11 mmb. (v) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for June 7 that was posted on Bloomberg at 9am MT on June 8.

Figure 56: Vortexa crude oil floating by region

				Original Posted	Recent Peak	
Region	Jun 14/24	Jun 7/24	WoW	Jun 7/24	Jun 23/23	Jun 14 vs Jun 23
Asia	32.21	32.65	-0.44	29.05	72.76	-40.55
North Sea	5.73	3.51	2.22	3.51	5.42	0.31
Europe	11.32	9.18	2.14	9.09	6.21	5.11
Middle East	11.11	15.47	-4.36	13.52	6.76	4.35
West Africa	9.30	10.63	-1.33	9.88	7.62	1.68
US Gulf Coast	4.84	5.07	-0.23	2.41	1.00	3.84
Other	1.63	6.85	-5.22	2.82	28.91	-27.28
Global Total	76.14	83.36	-7.22	70.28	128.68	-52.54
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Jun 15						

Source: Bloomberg, Vortexa

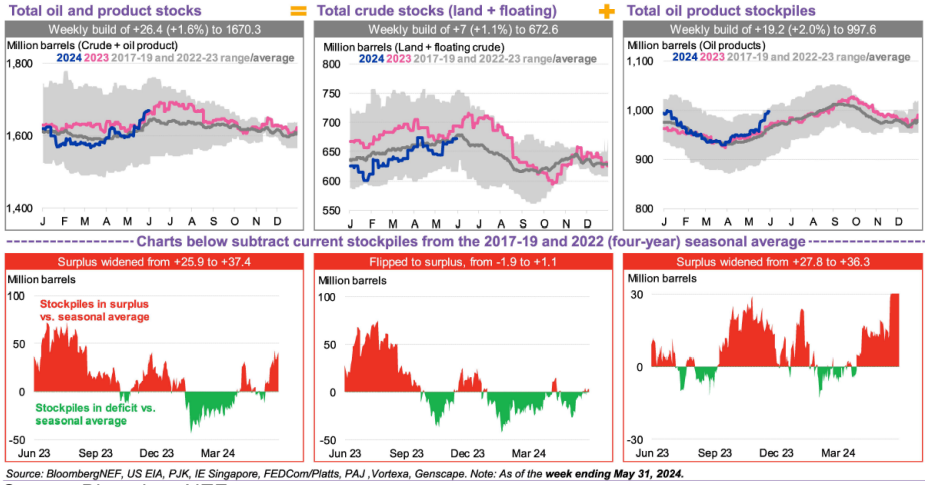
Oil: BNEF, global oil and product stocks surplus widens to +37.4 mmb from +25.9 mmb

Global oil and products stocks

On Tuesday, BloombergNEF posted its "*Oil Price Indicators*" weekly, which provides good charts depicting near-term global oil demand and supply indicators. (i) Note BloombergNEF uses different periods to determine the surplus/deficit, sometimes using a four-year average for 2017-2019 + 2022-2023, and other times using a five-year average 2017-2019 + 2022-

2023. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products widened from a surplus of +25.9 mmb for the week ending May 24 to a surplus of +37.4 mmb for the week ended May 31. (iii) Total crude inventories (incl. floating) increased +1.1% WoW to 672.6 mmb, while the stockpile flipped from a deficit of -1.9 mmb to a surplus of +1.1 mmb. (iv) Land crude oil inventories increased +0.6% WoW to 578.8 mmb, widening their deficit from -20.2 mmb to -20.7 mmb against the five-year average (2017-2019 + 2022-23). (v) The gas, oil, and middle distillate stocks grew +3.0% WoW to 164 mmb, flipping to a +2.8 mmb surplus against the four-year average from a deficit of -0.1 mmb. Jet fuel consumption by international departures in the week to June 17 is set to increase by +63,400 b/d WoW, while consumption by domestic passenger departures is forecast to increase by +51,600 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 57: Aggregate Global Oil and Product Stockpiles



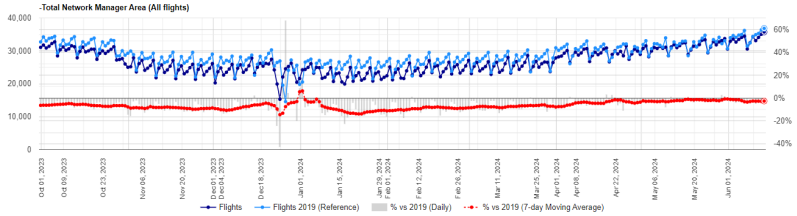
Source: BloombergNEF

Europe airports daily traffic

Oil: Europe airports daily traffic 7-day average is -2.6% below pre-Covid levels

Yesterday, we tweeted [LINK] "*Daily Europe air traffic -2.6% below pre-Covid. 7-day average as of: Jun 13: -2.6% below pre-Covid. Jun 6: -3.2%. May 30: -0.8%. May 23: -1.9%. May 16: -1.2%. May 9: -3.2%. May 2: -2.9%. Apr 25: -3.2%. Apr 22: -1.5%. Apr 18: -3.2%. Apr 11: -3.7%. Apr 4: -6.2%. Thx @eurocontrol #OOTT".* Other than over Christmas, European daily traffic at airports has been below pre-Covid. The 7-day average has got close a few times including two weeks ago at only 0.8% below pre-Covid as of May 30, but the 7-day average being 2.6% below pre-Cvid as of June 13, which followed 3.2% below pre-Covid as of June 6. Eurocontrol updates this data daily and it is found at [LINK].

Figure 58: Europe Air Traffic: Daily Traffic Variation to end of June 13



Source: Eurocontrol

Above-average hurricane activity

Oil & Natural Gas: Klotzbach hurricane forecast "will be extremely active"

On Tuesday, Phil Klotzbach and his team at Colorado State University posted their updated forecast for the 2024 Atlantic hurricane season [LINK]. They moved to an even higher level of hurricane activity and the new forecast points to an extremely active hurricane season. They estimate there will be 23 named storms this season, with 11 having the potential to become a hurricane. The forecast commented "*Given the combined hurricane-favorable signals of an extremely warm Atlantic and the absence of El Niño, the forecast team has higher-than-normal confidence in this outlook that the 2024 Atlantic hurricane season will be very active. This is the highest predicted number of hurricanes that CSU has ever issued in a June outlook. The prior high was for 10 hurricanes in 2010 (when 12 were observed) and in 2022 (when eight were observed). June forecasts have been issued by CSU since 1984."* Our Supplemental Documents package includes excerpts from the updated June 11 Klotzbach forecast.

Figure 59: Klotzbach updated 2024 Atlantic Hurricane Forecast

Forecast Parameter and 1991–2020 Average (in parentheses)	Statistical Forecast	Final Forecast
Named Storms (NS) (14.4)	20.1	23
Named Storm Days (NSD) (69.4)	98.1	115
Hurricanes (H) (7.2)	10.2	11
Hurricane Days (HD) (27.0)	42.6	45
Major Hurricanes (MH) (3.2)	5.0	5
Major Hurricane Days (MHD) (7.4)	13.0	13
Accumulated Cyclone Energy (ACE) (123)	191	210
Net Tropical Cyclone Activity (NTC) (135%)	205	220

Source: Colorado State University

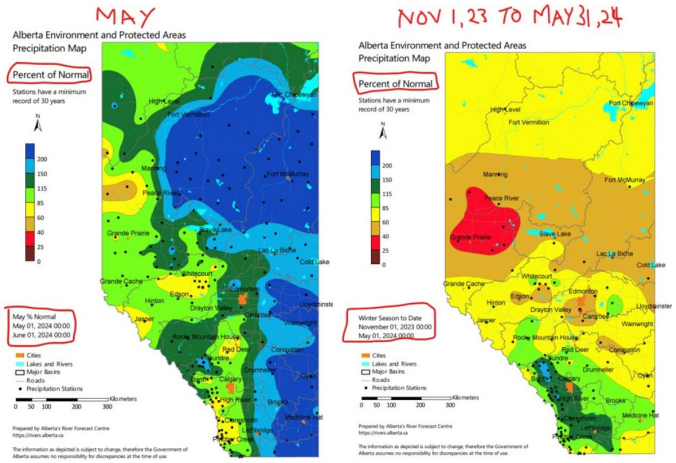
Still high wildfire risk despite a wet May

Oil & Natural Gas: Still high wildfire risk in Alberta despite a wet May

The early wildfires in Alberta were held under control in late May because it was very rainy especially in all of eastern Alberta including around Fort McMurray. But even with the wet May, its been extremely low precipitation since Nov 1 in almost all of Alberta. On Monday, we tweeted [LINK] "*Still high risk for Alberta wildfire season. It was wet in May with above normal precipitation in almost all of Alberta and really wet in all of eastern Alberta BUT, even still, precipitation since Nov 1 is still way below normal. #OOTT."* Our tweet included the below Alberta % of normal precipitation maps for May and for Nov 1, 2023 thru May 31, 2024. May was wet everywhere but especially in the eastern half of Alberta including around Fort McMurray. But even with the wet May, almost all of Alberta, is well below normal precipitation for Nov 1 thru May 31. And even in Fort McMurray that was over 200% of

normal precipitation in May is still only about 50% of normal precipitation for the Nov 1, 2023 thru May 31, 2024 period. So there is still high wildfire risk in Alberta.

Figure 60: % of Normal Precipitation for May and for Nov 1, 2023 thru May 31, 2024



Source: Alberta's River Forecast Centre

Electricity: Huntsman, is an electricity supply gap inevitable with data center growth?

Electricity supply gap coming?

Here is an item from last week's (June 9, 2024) Energy Tidbits memo. "*It's pretty amazing how AI and data center electricity needs has gone from a non-event to the largest variable to electricity consumption over the coming years. Our Energy Tidbits memos have been highlighting that the major issue is that this AI data centers growth in electricity consumption is happening right away. This is our concern – we are in a calm before the storm where data centers electricity consumption is being met but can the rapid large growth in electricity consumption be met on a timely basis with increased electricity generation? On Friday, we tweeted [LINK] "Electricity Gap is coming! "a new data center takes a little over a yr to build, it takes 10 yrs to permit these new #NatGas burning power plants. It takes even longer for Wind & Solar. So that's a disconnect we have" Huntsman CEO. Higher power costs ahead! #OOTT @SquawkCNBC." Huntsman CEO Peter Huntsman was on CNBC Squawk Box on Thursday morning. There is an electricity gap coming and it is coming faster than expected because there is no way new supply can keep up with projected electricity growth coming from data centers. This was a great reminder from Huntsman. The other part that Huntsman didn't specifically address is the big problem is transmission approval, which is even harder than getting approvals for new natural gas plants and for solar/wind projects. Our tweet included an mobile clip, where Huntsman said "… AI coming on, we're building data centers, a new data center takes a little over a year to build. It takes 10 years to permit these new gas burning power plants . it takes even longer for wind and solar. So that's the disconnect we have." It was a great point by Huntsman, data centers are being ramped up quickly but approvals take way longer to get new natural gas power generation and even more for wind and solar power generation. We also note how an even longer timeline is power transmissions lines."*

Energy Transition: How much will new European Parliament back off on climate

Left loses in EU elections

Last Sunday night, we tweeted [LINK] "*Looks like Greens and Renew Europe are biggest losers in European Parliament provisional results as of 01:37 GMT June 10. #OOTT."* Ethe left was the big loser in the European Parliament election. And the far right was a big winner in particular in Fance and Germany. European Commission President Ursula Von der Leyen should still be able to build her coalition to retain a majority but it the report s are that it will have to a shift to the right centre. The new European Parliament's first session will be on July 16-19. It's still too early to tell exactly wha the new Parliament will do but the expectation is that it will have to soften their climate ambitions.

Figure 61: European Parliament Provisional Results as of 01:37 GMT June 10

	European Parliament				
	Provisional Results	Percentage	Current	Percentage	Change
The Left	36	5.0%	37	5.2%	-1
Socialists and Democrats	139	19.3%	139	19.7%	0
Greens/European Free Alliance	52	7.2%	72	10.2%	-20
Renew Europe	80	11.1%	102	14.5%	-22
Christian Democrats	184	25.6%	176	25.0%	8
Conservatives and Reformists	73	10.1%	69	9.8%	4
Identify and Democracy	58	8.1%	49	7.0%	9
Non-attached Members + Others	98	13.6%	61	8.7%	37
Total	720	100.0%	705	100.0%	15

Source: European Parliament, Wikipedia

Energy Transition: IEA used to say its "*core mandate has always been energy security*

IEA's changing core mandate

The key reason why we feel we have to read the fine print in the IEA's work is that they have changed over the last five years on moving away from their, prior to 2020, core mandate for energy security to shaping their messaging and "research" to provide ammunition for western leaders to put in policies to implement Paris accord. That was clearly stated by France President Macron on Feb 19, 2024. So when we read reports, we also look for what's missing. Earlier in the memo, we noted the IEA's Oil 2024, which is their analysis and forecast for the next five years. The last time they included a foreward by Executive Director Birol was in their Oil 2019 report that highlighted their core mandate was energy security. That is no longer included. Here is the last paragraph of his 2019 foreward "*The IEA's core mandate has always been energy security. Our mission has expanded over the years and the definition of energy security has also evolved beyond oil to include natural gas and electricity. But oil market analysis remains a central focus of the IEA, which we demonstrate through our vigilent analysis of market developments and their consequences. We hope this report contributes to a better understanding of the sector and helps develop policies supporting the longer term transition to a more secure but also a more sustainable energy future."*

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

France President Macron was the one who clearly stated IEA had moved its priority to being "*our armed wing of implementing'* Paris agreement. Our Feb 25, 2024 Energy Tidbits memo was titled "*Macron Hurts IEA Analysis Credibility "The IEA has become, so to speak, our armed wing of implementing the Paris agreement*". Here is what we wrote in that memo "*We were shocked by France President Macron's comment on the IEA. On Monday, we tweeted [LINK] "The IEA has become, so to speak, our armed wing of implementing the Paris agreement" Macron. The IEA has*

no guns, is Macron saying analysis/fcasts are their weapons to implement Paris as opposed to analyzing energy! Saudi Energy Minister Abdulaziz will say I told you so! #OOTT." Macron made the keynote speech at the IEA Ministerial Meeting in Paris that also celebrated the IEA's 50th anniversary. We were surprised that Macron made such a direct comment that made it clear the IEA's focus is on implementing the Paris Agreement on behalf of the western governments that fund the IEA. This was not an accident, rather it looked like a prepared speech Macron read from a teleprompter. So, for some reason, Macron wanted the world to know the IEA is there to the "armed wing" for their western country funders to implement the Paris agreement. And not an agency that provides analysis for their western governments to make the right policy decisions. But, if we take Macron at his words, the IEA's analysis is there to support policy or provide the impetus for their western government funders to make policy to support the conclusions of the analysis. And to provide the western governments with the rationale for why they make policies for Paris Agreement. It was a major ht to the IEA credibility and we just don't understand why Macron did it unless he wanted to hurt the IEA's credibility. Here is the transcript we made of Macron's comments that was attached to our tweet. Note that we made the transcript from the IEA's posting of Macron's speech. The IEA just didn't includes the full Macron quote. At 0;52 min mark, Macron "We are also very proud that since its creation, the Agency has been able to profoundly shift its mandate. From an agency dedicated to managing strategic oil reserves, it has now become a global hub for debate, collective action to meet the challenge of the energy transition. The IEA has become, so to speak, our armed wing of implementing the Paris agreement, given that energy accounts for more than 75% of global greenhouse gas emissions."

01/11/24: Former IEA Neil Atkinson says the IEA is "talking their political book"

Here is what we wrote in our Jan 14, 2024 Energy Tidbits memo on what one of their former senior executives said about the IEA being political. "*Everyone assumes OPEC's forecasts are politically driven, in particularly driven by Saudi Arabia. But most still don't automatically assume that for the IEA. One of the biggest negatives for oil markets is how the IEA has shifted over the past decade to being viewed as having their analysis and views being shaped by what their bosses (western developed countries) want the answer to be to fit their political priorities. The IEA was THE oil analysis shop but, unfortunately, that is no longer the case. Our big concern on the IEA's forecast and analysis answers being driven to give the answer their bosses want to see is that their bosses, the western government leaders, then turn around to use theis analysis to confirm their policies are correct. This view of the IEA's increasing political approach is not just from people outside but from some of the former senior people like Neil Atkinson, the former head of the IEA's Oil Markets Division. Atkinson is a well-respected oil commentator. On Thursday, we tweeted [LINK] ""neither agency I think is really helping us understand markets properly because I think they are talking their political book" re IEA and OPEC oil demand forecasts says @NeilAtkinson58, former Head Oil Markets Division at IEA. 2024 #Oil demand fcasts: @IEA +1.1 mmbd YoY. OPEC +2.2 mmb/d YoY. #OOTT." Atkinson spoke on the Gulf Intelligence Global Energy Outlook Forum 2024 on Jan 10, 2024. Atkinson was speaking on the big variance in the IEA vs OPEC forecast for oil demand growth in 2024 and that both group's forecasts were speaking to the political*

book. He didn't leave the IEA on bad terms and still speaks to former colleagues. It's a reminder from a former IEA senior player that the IEA's forecast are politically driven. Our tweet included the transcript we made of Atkinson's comments. At 10:55 min mark, Atkinson "…On [oil] demand, I find, for example, OPEC's outlook, not just for 2024 but for further into the medium term, to be almost incredible. And I think that they are talking their book. And I think that also applies to my former colleagues at the International Energy Agency. And neither agency I think is really helping us understand markets properly because I think they are talking their political book. My own instincts as far as oil demand in 24 is concerned is that we are likely to see round about a million barrels a day but, if it is to be different than that, it is more likely to the upside than the downside because demand has tended to surprise. Perhaps I was affected by my years at the IEA but demand has tended to surprise to the upside rather than the downside in recent years. So I think we have underlying solid demand growth in 2024 and indeed will be the same in 25."

End of an era – the IEA used to be the most important view on energy

Here is an item from our May 31, 2023 Energy Tidbits memo. "*After hearing Neil Atkinson's above comments, it feels like the final confirmation of what we have been noting – it's the end of an era where the IEA's view on oil markets was considered the go-to view on oil. And readers weren't wondering if there was indirect political pressure to message a certain way, including in their forecasts. I was an E&P executive in the 80s/90s but the IEA wasn't part of everyday E&P thoughts. But when I joined he sellside in the late 90s for energy research and later energy investment banking, I very quickly realized the critical role the IEA played for the analysis and interpretation of oil markets as their focus wasn't on selling a message or theme, but giving data and analysis focused on what was important to the world - energy security. Don't forget the IEA was formed after the 1973/74 Arab Oil Embargo to provide critical analysis for the US and other oil consuming countries. The IEA was the bible and Robert Priddle (IEA Executive Director 1994-2002) was the Charles Schwab of oil markets – when he talked, people listened. Partly it was the world, where we didn't have twitter and media and he didn't have to, or chose not to, weigh in publicly on everything, everyday to put a pro this or pro that spin. So markets listened because they didn't have to look at Priddle and the IEA's message because their focus and mandate was clear. Atkinson's comments make me feel it is the end of an era."*

Energy Transition: Engie, US needs NatGas power to try to hold back power prices

US needs natural gas power

We saw another good reminder on why we like to look at details/assumptions and not just take the messaging from a summary or press release. In this case it was Engie on the Friday release of their report "*The Future of Energy: 2024 Business Energy census Report*". [LINK]. Engie "*teamed up with Energy Research Consulting Group [ERCG], allowing us to measure changes in trends, add new variables, and paint a clearer picture of the changing energy landscape*." This is a US focused report. (i) It's not like how we have to read the IEA assumptions to see what the message isn't telling everyone, rather in this case, it was that the Engie press release didn't give the same message urgency as the actual Engie report. It seems that Engie, who describes itself as *"itself as a global leader in the Net Zero energy transition",* chose to write its press release without highlighting the clear message in its

Executive Summary of the report. (ii) On Friday, we tweeted [LINK] "*US needs more #NatGas power if it it doesn't want to let electricity prices get out of control. Can't help read the Engie report w/o it's not #NatGas that will drive higher and more volatile power prices! Report: "We have observed a few mega trends that foreshadow increased volatility and uncertainty. With natural gas forwards sitting at record lows and summer power prices trending higher in many markets, the historic connection between power and gas prices is broken. The abundance of wind and solar generation capacity in ERCOT is currently meeting the surge in consumption from various sources. However, the slightest change in generation forecasts or actual C&I demand can send the market into uncertainty and scarcity price levels. The resulting supply and demand balance changes can lead to forward market uncertainty..... show that 57% of the sample expect annual power price volatility to be somewhat higher to much higher. The same price volatility prediction for natural gas is 35%." Didn't get that feeling from the press release! #OOTT."* (iii) Engie press release highlighted "*Trend One – Shifting Strategic Perspectives – 57% of respondents, up from 43%, in the previous year, believe that the strategic importance of energy has grown to reach a point of equilibrium. This change aligns with the stabilization of energy prices and growing confidence in the effectiveness of existing energy strategies. Trend Two – Forecast of Rising Prices and Volatility – 40% of respondents expect power and natural gas prices and volatility to increase, suggesting a need for more robust risk management strategies."* (iv) As you can see from the release, it didn't highlight the points from the opening warning in the Executive Summary in the report that we put in our tweet. There is nothing in the press release that points to the problem being wind and solar being the reason for higher costs and view that there will be increased volatility in prices. The press release didn't even mention how "*the historic connection between power and gas prices is broken*" as natural gas forwards are at record lows but summer power prices are trending high in many markets. (v) Sonds like confession time is coming that wind and solar do NOT lead to cheaper electricity prices. The report says "*There could be a shift in how customers justify sustainability projects, moving from cost-saving measures to long-term goals*". For so long, the messaging from climate change side is how wind and solar is the cheapest form of electricity and Engie is saying there will have to a messaging away from saving cost by switching to the long-term goals for sustainable energy. (vi) The other indirect admission that green energy ends up with higher electricity costs is the acceptance of customers to pay a modest premium for green energy. Everyone can see that, it's like airlines adding in SAF because it's a small part of fuel. The question will be customers be prepared to pay a green premium that is forever embedded at creeping higher levels every year? Or will ultimately the end user say enough is enough. (vii) The Engie report reinforces the need for natural gas power generations. Our Supplemental Documents package includes the Engie release and the Engie report.

Engie warns slightest change in demand can send mkts to scarcity prices

We suspect the Engie report didn't get much attention as we saw no reporting of the stark warning on how the slightest change in demand could send markets into uncertainty and scarcity price levels. We highlight this since the biggest question or wildcard for energy is the rapidly rising demand for electricity from AI/data centers and this really wasn't in forecasts a year ago. And we have to believe this factor represents more than the slightest change in demand. Engie wrote "*However, the slightest change in generation forecasts or actual C&I demand can send the market*

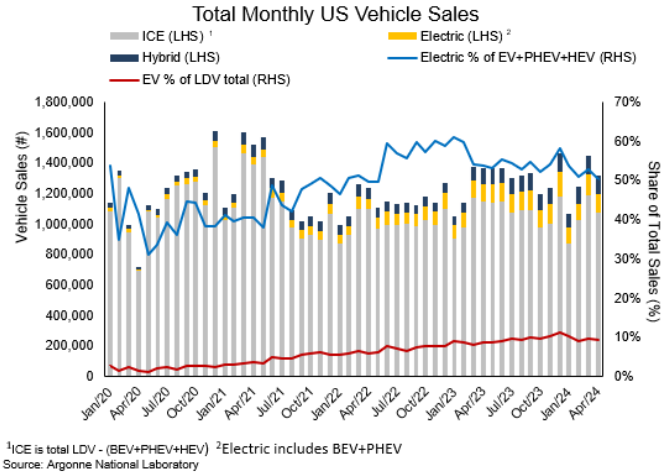
into uncertainty and scarcity price levels. The resulting supply and demand balance changes can lead to forward market uncertainty."

Energy Transition: Hybrids keep taking market share from EVs in US car sale

US car sales up big MoM in May

Argonne National Laboratory posted its monthly US sales data for Light Duty Vehicles (LDVs) broken out into Battery Electric Vehicles (BEVs), Plug-in Electric Hybrids (PHEVs) and Hybrid Electric Vehicles (HEVs) for May, which then allows us to back into ICE sales. (i) On Monday, we tweeted [LINK] "*Hybrids keep taking share from EVs. HEV now 52.5% of EV + PHEV + HEV. Big +111.7k MoM increase in US car sales to 1.43 mm in May. BEV: +6.4% MoM, +3.0% YoY to 98,797, 6.9% share. PHEV: -5.6% MoM, +4.0% YoY to 26,124, 1.8% share. HEV: +16.2% MoM, +33.0% YoY to 138,118, 9.7% share. ICE: +8.2% MoM to 1,165,989, +2.4% YoY, 81.6% share Thx @argonne".* (ii). For EVs and hybrids, two recent trends have been the slowing growth rate in EVs and Hybrids taking more share from EVs. (iii). Hybrids are still showing the strongest growth and taking share from EVs. Hybrids are now 47.49% of total EV + PHEV + Hybrid, whereas it was ~60% in Jan 2023. (iv) In a good MoM sale for US cars, PHEV had the only MoM decline. Total US car sales in May were up +111,658 cars or +8.48% MoM to 1,429,028 total car sales in May vs 1,317,370 in April, after last month's largest MoM drop in US car sales since Covid. BEV: +5,968 or +6.4% MoM to 98,797 and 6.9% of total US. PHEV: -1,547 or -5.6% MoM to 26,124 and 1.8% of total US. HEV: +19,296 or +16.2% MoM to 138,118 and total 9.7% of total US. ICE: +87,941 or +8.2% MoM to 1,165,989 and 81.6% of total US. (v) It was a MoM increase in ICE but the reminder is ICE are still 82% of total US car sales. Our Supplemental Documents package includes the data from Argonne.

Figure 62: US total monthly hybrid and electric vehicle sales vs LDV total



Source: Argonne National Laboratory

Energy Transition: GM says reduced EV sales forecast is "*100% demand-driven*"

GM's lower EV sales is 100% demand driven

GM had a direct commentary this week on why it was lowering its EV sales expectations for 2024 – "*it's 100% demand driven*". On Tuesday, GM participated in a US sellside conference and the first question to Paul Jacobson (EVP and CFO) the operating conditions in seen so

far in Q2. We tweeted [LINK] "*It's 100% demand-driven" says GM CFO as to why they lowered EV% share of total autos and lowered EV sales guidance range to 200k to 250k (was 200k to 300k). Reinforces EV sales are less than was expected. ICE will be needed or preferred by customers for longer! #OOTT."* Jacobson's response was on how GM was lowering its outlook for EVs. Jacobson said "*I think most prognosticators were thinking that the EV market would be up to about 10% of total autos. We still see it trending kind of around that 8% level. As a result, we've talked before about 200,000 to 300,000 EVs this year. We're actually going to trim that to 200,000 to 250,000. So at the lower end of that, and I think it reflects the momentum that we have in the business."* No surprise, a later question came to Jacobson "*You just updated us at the beginning of this conversation that the goal for Ultium production this year will be 200,000 to 250,000 instead of like the 200,000 to 300,000 units that you had targeted before. Can you maybe tell us what drives this. Is it the demand side. Is it the supply side. Obviously, initially earlier, you had some issues with the production of the modules, the battery modules and how is that going right now. And I guess what's driving sort of like the change in outlook*." Jacobson replied "*So it's 100% demand-driven*."

Energy Transition: New Zealand backs off charging farmers on methane emissions

New Zealand on agriculture emissions

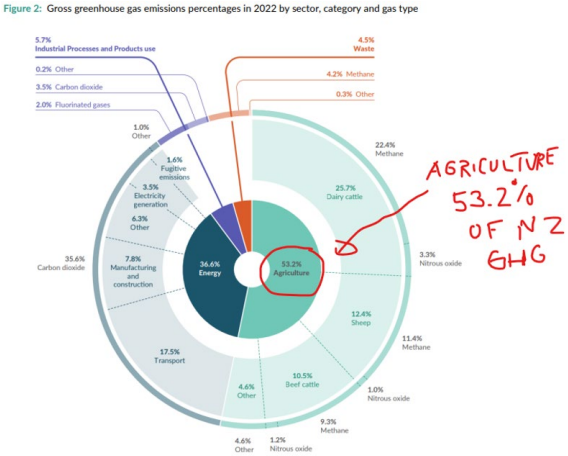
There was another significant example of New Zealand pulling back from climate change initiatives that will cause damage to the economy. This time on methane emissions from agriculture and cow burps, etc. Instead of charging them a methane tax or charge starting in late 2025, New Zealand is deferring that until after 2030. (i) On Tuesday, we tweeted [LINK] "*Another Reality Check! NZ takes "agriculture, animal processors & fertiliser co's" from being hit by charged regulated price of methane until >2030. NZ committed to #ClimateChange obligations "without shutting down Kiwi farms" & sending jobs/production overseas to less carbon-efficient countries to produce food. Refreshing approach, get industry to help get solutions. NZ "time for a fresh start on how we engage with farmers & processors to work on biogenic methane" "NZ to "engage directly" with industry for solutions to "future-proof our export growth ...". Follows 06/09 NZ's desire to attract #Oil #NatGas investment to return. #OOTT."* (ii) Earlier Tuesday, New Zealand announced it was taking "*agriculture, animal processors and fertiliser companies*" from the New Zealand Emissions Trading Scheme. This was a campaign promise by Prime Minister Luxon. Basically, it takes these out of the ETS, which where New Zealand is to put a regulated price on methane, CO2 and NO emissions starting late 2025. Luxon promised they would be excluded until at least 2030. (iii) The release says clearly it's so not to hurt these groups or their exports. New Zealand says "*Agriculture Minister Todd McClay says New Zealand farmers are some of the world's most carbon-efficient food producers. "The Government is committed to meeting our climate change obligations without shutting down Kiwi farms. It doesn't make sense to send jobs and production overseas, while less carbon-efficient countries produce the food the world needs. "That is why we are focused on finding practical tools and technology for our farmers to reduce their emissions in a way that won't reduce production or exports." And "This Government will future-proof our export growth to ensure the success of dairy and sheep and beef farmers who produce high quality protein, which is sought after by customers all over the world," Mr Patterson says*." (iv) What was interesting is the refreshing approach New Zealand will take to deal with methane emissions from agriculture. Instead of what happens in Canada or the US or other western countries where the govt says here is what you have to do on emissions, New Zealand is actually moving to an approach that Exxon CEO Woods always says – get industry involved so you can find the solutions that work. New Zealand wrote ""*It's*

time for a fresh start on how we engage with farmers and processors to work on biogenic methane." To do this, the Government will engage directly with levy bodies and sector organisations that represent the pastoral sector - DairyNZ, Beef + Lamb New Zealand, Deer Industry New Zealand, Federated Farmers, Dairy Companies Association of New Zealand, and the Meat Industry Association." Our Supplemental Documents package includes the New Zealand release.

Agriculture is 53.2% of New Zealand gross greenhouse gas emissions

On Tuesday, we also tweeted [LINK] "*It's a big give for NZ to back off on emissions from agriculture. Agriculture is 53.2% of New Zealand gross greenhouse gas emissions. 👇is NZ"s latest Apr 2024 greenhouse gas inventory snapshot for 2022. #OOTT."* New Zealand backing off emissions for the agriculture sector is a big hit to any plans they may have on reducing emissions. In April, New Zealand posted its "*New Zealand's Greenhouse Gas Inventory: Snapshot*" [LINK], which included the below chart that we attached to our tweet and split NZ gross GHG by sector. Agriculture is 53.2% of total New Zealand gross GHG in 2022. Our Supplemental Documents package includes excerpts from the snapshot.

Figure 63: New Zealand gross greenhouse gas emissions



Source: Google Maps

06/09/24: New Zealand, natural gas is needed to keep the lights on

New Zealand backing off the of the methane charges on agriculture is in line with the government's not sacrigicing the economy and coost of living for climate change. Last week's (June 9, 2024) Energy Tidbits memo highlighted New Zealand admitted the need for more natural gas to keep the lights on and economy running. Here is what we wrote last week. "*New Zealand continues under its Feb 8, 2023 major shift to prioritize energy security and cost of living and not the energy transition away from oil and natural gas. (i) Earlier this morning, we tweeted [LINK] "Big Reality Check! "Natural gas is critical to keeping our lights on and our economy running, especially during peak electricity demand and when generation dips because of more intermittent sources like wind, solar and hydro" NZ @mangonui08. NZ reverses ban*

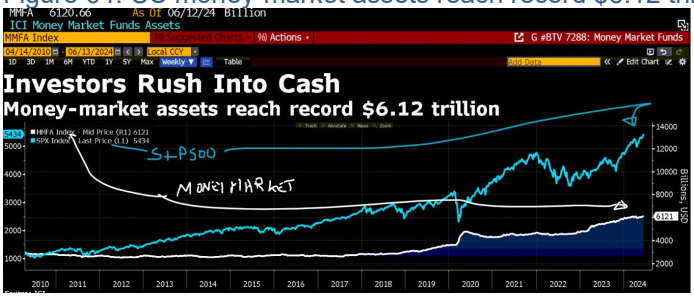
on #Oil #NatGas exploration to try halt production decline. Big admission that banning exploration "also shrank investment in further development of know gas fields which sustain our current levels of use" Note NZ recognizes need to do more than removing ban, need "further changes" to "attract investment in exploration AND production". #NatGas was ~15% of energy use mix in 2022. #OOTT." (ii) Earlier this morning New Zealand issued the release announcing the removal of the ban on oil and gas exploration. Our tweet included the key quotes on how natural gas is critical to keep the lights. (iii) There was an important admission from New Zealand when they realize that banning exploration also meant that oil and gas companies would cut back on development and other oi and gas investment. It really shows the reality of politicians who thought in New Zealand, and think elsewhere, that if they only ban new exploration, it won't impact any other oil and gas spending on near field development and other oil and gas investment. Reality is that if oil and gas companies don't see potential to explore and add new fields, they are going to look carefully at all other capex. New Zealand admitted this. (iv) The other significant admission from New Zealand is that they recognize they need to do more than reverse the ban is they are convince oil and gas companies they are serious about setting up an investment environment for oil and gas companies. (v) What is also significant is that New Zealand has cut natural gas consumption from 0.48 bcf/d in 2017 (the ban went on in 2018) to ~0.35 bcf/d and natural gas is only ~15% of the energy fuel supply mix. But they can't get rid of natural gas, and actually need more. This is a big reality check on the need for natural gas. (vi) This is under Prime Minister Christopher Luxon (The National Party), who won the most seats but not a majority in the Oct 14, 2023 election and assumed office on Nov 27, 2023. Our Supplemental Documents package includes the New Zealand release."

Capital Markets: $6.12 trillion parked in US money market funds

Record $6.12T in money market assets

One of the amazing aspects of the great run in US stocks in 2024 has been that it has happened in the face of consistent increase of institutional and retail investor capital into money market funds. Retail investors have been the big driver increasing cash to money market funds by $99 billion since Jan 31, 2024. Our tweet included the below Bloomberg graph on money market funds and we added the S&P 500 index performance. On Thursday, we tweeted [LINK] "*Reminder there is an increasing massive amount of cash in money market funds and, with current interest rates, for now, staying out of equities. @ICI Money market assts reach record $6.12 trillion reports @business Alexandra Harris & Carter Johnson. #OOTT."* Bloomberg's graph was of the Investment Company Institute report of "*Money Market Fund Analysis*" released on Thursday. [LINK] ICI also posts an excel of the data going back to Jan 31, 2024 data. Since Jan 31, 2024, money market funds have increased $119 billion from $6.002 trillion on Jan 31 to $6.121 trillion at June 12, 2024. Institutional cash in money market funds increased $21 billion from $3.651 trillion at Jan 31, 2024 to 3.672 trillion at June 12, 2024. Retail cash in money market funds increased $99 billion from $2.350 trillion at Jan 31, 2024 to $2.449 trillion at June 12, 2024. Note there is a rounding difference. Below is the Bloomberg graph. Our Supplemental Documents package includes the ICI excel for money market funds.

Figure 64: US money-market assets reach record $6.12 trillion



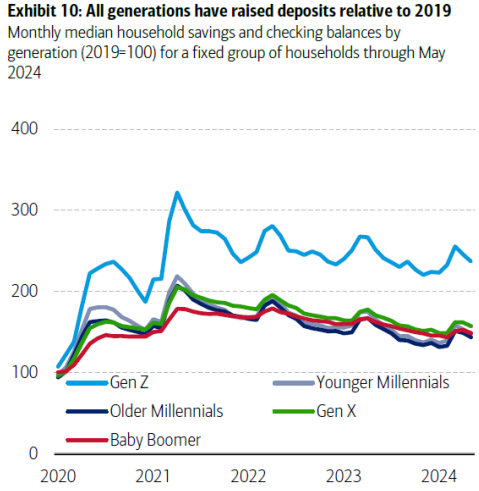
Source: Bloomberg

Capital Markets: Usual good insights from BofA consumer checkpoint report

BofA consumer insights

One of our favorite regular guests on CNBC Squawk Box is Bank of America Liz Everett Krisberg who comes on to give insights from the Bank of America Consumer Checkpoint. She provides insights on consumers from their tracking of 69 million consumers and small businesses transaction data. On Tuesday, we tweeted [LINK] "*Usual great consumer insight from @BankofAmerica Liz Everett Krisberg tracking of 69 million consumers/small business data. Must read report at [LINK]. Consumer ave checking/savings deposits 44% >2019 levels. Consumer spending soft but stable. Trading down trend. Signs of credit stress for younger consumers .#OOTT @BeckyQuick @SquawkCNBC.*" We were surprised by her comments that across all generations, average checking/savings account balances were at least 44% higher than pre-Covid levels. The other part she stressed wsas that they are seeing signs of stress in younger consumers. Our Supplemental Documents package includes the BofA Consumer Checkpoint.

Figure 65: All generations have raised deposits relative to 2019



Source: Bank of Ameria

Capital Markets: Q1 national balance sheet and financial flows for Canadians

Q1 National Balance sheet and flows for Canadians

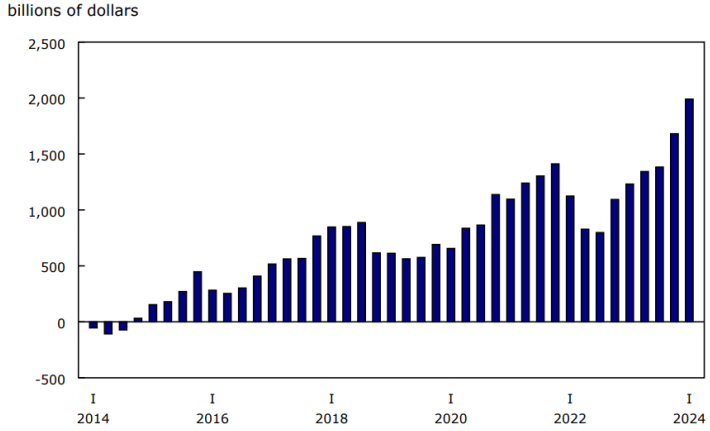
On Wednesday, Statistics Canada posted its quarterly financial data for Canadian households [LINK]. Statistics Canada reported "*Overall, households' total financial assets in the first quarter increased 3.6% (+$349.3 billion) to reach a record high ($10,022.2 billion) for the second consecutive quarter and the value of total non-financial assets grew 2.1% (+$207.6 billion). On the other hand, financial liabilities, composed primarily of mortgage and non-mortgage debt, increased $8.7 billion from the fourth quarter of 2023. This represented the slowest quarterly expansion (+0.3%) in household liabilities since the first quarter of 2023, as elevated interest rates continued to be a key consideration for households in the first quarter of 2024…….. Household mortgage borrowing activity slowed in the first quarter, continuing the trend of more subdued mortgage borrowing after the interest rate hikes that began in 2022. Despite high inflation and high interest rates, consumer sentiment, although weak, improved over the first quarter of 2024, with more consumers planning to buy a new home according to the Canadian Survey of Consumer Expectations."* The value of household residential real estate increased 2.6% in Q1 after consecutive quarterly declines in the second half of 2023. The report also detailed that the household savings rate increased to +6.9% for the quarter, the highest rate in 2 years.

Capital Markets: Canada's international investment position up in Q1 2024

Canada's Q1 International Investment position

On Wednesday, Statistics Canada posted its quarterly data for Canada's international investment position [LINK]. Statistics Canada reported "*Canada's net foreign asset position, the difference between its international financial assets and international liabilities, increased by $309.5 billion from the end of the fourth quarter of 2023 to reach $1,990.2 billion at the end of the first quarter of 2024. The growth mainly reflected the stronger performance of foreign stock markets relative to the Canadian stock market, which increased the value of Canada's international assets in equity instruments by more than its international liabilities."* The depreciation of the Canadian dollar by -2.4% against the US dollar and by -1.6% against the pound over the quarter also increased Canada's net foreign position.

Figure 66: Canada's net international investment position



Source: Statistics Canada

Capital Markets: Vancouver & Toronto make impossibly unaffordable housing cities

Vancouver & Toronto "impossibly unaffordable" housing

On Thursday, the Center for Demographics and Policy released its "*Demographia International Housing Affordability: 2024 Edition"* [LINK], which analyzed housing affordability in 94 major cities across 8 countries (Australia, Canada, China, Ireland, New Zealand, Singapore, UK and US) based on data from Q3/23. The ranking is based on price-to-income ratio ie. the multiples of house prices to income. The categories are Affordable (3.0 & under), Moderately Unaffordable (3.1 to 4.0), Seriously Unaffordable (4.1 to 5.0), Severely Unaffordable (5.1 to 8.9), and Impossibly Unaffordable (9.0 and over). Two Canadian cities made the Impossibly Unaffordable with Vancouver #1 and Toronto #10. We were a little surprised that Calgary was in Seriously Unaffordable whereas Ottawa and Montreal were in Severely Unaffordable. Edmonton was Moderately Unaffordable. Our Supplemental Documents package includes excerpts from the report.

Figure 67: Impossibly Unaffordable cities

Table 3, contd.
HOUSING MARKETS RANKED BY AFFORDABILITY: MOST AFFORDABLE TO LEAST AFFORDABLE
Median Multiple (Median House Price/Median Household Income): 2022: Third Quarter

Rank	Nation	Metropolitan Market	Median Multiple	Rank	Nation	Metropolitan Market	Median Multiple
35	U.S.	Dallas-Fort Worth, TX	4.5	83	N.Z.	Auckland	8.2
35	U.S.	San Antonio, TX	4.5	84	Canada	Toronto, ON	9.3
38	Canada	Calgary, AB	4.6	85	U.S.	San Diego, CA	9.5
39	U.K.	Derby & Derbyshire	4.7	86	Australia	Adelaide, SA	9.7
39	U.K.	Leeds	4.7	86	U.S.	San Francisco, CA	9.7
39	U.S.	Richmond, VA	4.7	88	Australia	Melbourne, VIC	9.8
42	Ireland	Dublin	4.8	89	U.S.	Honolulu, HI	10.5
42	U.K.	Hull & Humber	4.8	90	U.S.	Los Angeles, CA	10.9
42	U.S.	Jacksonville, FL	4.8	91	U.S.	San Jose, CA	11.9
45	U.S.	Austin, TX	4.9	92	Canada	Vancouver, BC	12.3
45	U.S.	Nashville, TN	4.9	93	Australia	Sydney, NSW	13.8
45	U.S.	Raleigh, NC	4.9	94	China	Hong Kong	16.7

Source: Demographia

Demographics: Does Macron think a low turnout helps him

Macron's election dates are Euro 2024 dates

France President Macron surprised markets with his reaction to the European Parliament election losses by calling an election. When we saw the call and the dates, we tweeted [LINK] "*Macron picks 1st round vote on June 30. Does he want low voter turnout of sports fans? #Euro2024: Round of 16 could be Jun 29, 30, Jul 1 or 2! Group stage vs Austria Jun 17. vs Dutch Jun 21. Vs Poland Jun 25. #LeTour 1st stage Jun 29 but starts in Italy. #OOTT."* Either Macron is one of the few that doesn't know the schedule for Euro 2024 or else he thinks more football fans support the other parties so he should schedule the election to have low voter turnout. Macron set the 1st round vote for June 30, which could be when France plays in the Round of 16. France is one of the favorites and it would be a major upset if they aren't playing in the round of 16.

Demographics: Calgary water restrictions to carry into Calgary Stampede

Calgary water restrictions

We don't' want to look silly and call it a water crisis considering the billions of people in the world that have to work to get a little bit of fresh water every day. Rather, Calgary has been under water restrictions since June 6 and is expected to continue to be so until at least July 5-19. A break in the main water pipeline for Calgary is still under repair. And the City of Calgary's update yesterday said it would be another 3 to 5 weeks before it back in services.

Yesterday, we tweeted [LINK] "*Calgary water restrictions now 3-5 weeks more. ie. no outdoor use, reduce inside use by 25%. Not a huge deal to people but concern is for local businesses. 3 wks is July 5, start of 10-day Calgary Stampede, biggest tourist/entertainment boost to local businesses every yr.*" Calgarians are restricted from any outdoor use of water and asked to conserve at least 25% of their indoor consumption. It hasn't been difficult and, if anything, will lead to behavioral change to use less water as a matter of course. So there should be some good come out of this for personal water consumption. But our concern is for local businesses where many are entering their busiest period of the year with Canada Day on July 1 and the big one, the Calgary Stampeded from July 5-14. This is the ram of tourists and entertainment spending and the Friday night news that it will take 3-5 weeks is a major blow to local businesses. We really hope its 3 weeks, which would coincide with the start of Stampede. But we can't imagine what it will be like if there are water restrictions and thousands of tourists in Calgary. Note that later yesterday morning, the city of Calgary announced [LINK] "*At 8 a.m, June 15, The City of Calgary declared a State of Local Emergency as it deals with a water feeder main break impacting the City's water supply. "The decision to declare a State of Local Emergency was not taken lightly, and it was done to ensure we are prepared for all eventualities in the drive to have this water feeder main restoration work done as quickly and safely as possible," said Calgary Mayor Jyoti Gondek. "I am grateful to the Government of Alberta for endorsing this approach and offering their support as we address this critical water situation*."

> **Calgary's Big Rock Brewery cut water consumption by 40% right away**
> No surprise, one of the top Calgary companies, Big Rock Brewery immediately jumped in to make a major cut to water consumption even knowing this should be a peak brewing time with Canada Day in two weeks and then followed 4 days later by the start of Calgary Stampede. On Thursday, we tweeted [LINK] "*Kudos to @BigRockBrewery who cut water consumption by 40% during Calgary water emergency. "if we selfishly said we gotta make beer for Canada Day ... and somebody's house burns down, we'd feel pretty bad as a company that we made a choice to put our commercial purpose before our com munity purpose". @BeeDeeGoddard. Thx Phoenix Phillips [LINK]."* Here is the full Brad Goddard, VP of Big Rock Brewery, quote "*We make beer. if we selfishly said we gotta make beer for Canada Day, we don't want to be late for Canada Day. And somebody's house burns down, we'd feel pretty bad as a company that we made a choice to put our commercial purpose before our community purpose*".

Demographics: Disney's Lanny Smoot "*because an idea, I think is fleeting…*"

Disney's Lanny Smoot on capturing ideas

We are sure we have all heard people see something and say they had thought of that idea before or an analyst say they had that call before. We have always been in the camp that an idea is only an idea if you do something with it other than just talking to yourself. The other item is that time is of the essence especially in the analyst world. This is a key concept, if you have an idea, take action before you forget it or before someone else does it. We were reminded of these concept when we saw the WSJ video report on Monday "*Behind the Scenes at Disney's R&D Lab With Its Top Imagineer*" [LINK]. The WSJ video report is about "*Lanny Smoot, Disney's most prolific inventor, is behind some of the company's most advanced tech, from lightsabers to "magic" floors. He gives a rare inside look at Disney's long-secretive R&D lab."* Smoot was the inventor of the Star Wars Lightsaber. In the video,

Smoot says "*This is my lab. I keep an inventory of the things that I need to do prototypes that come about quickly. Because an idea, I think is fleeting. If you don't capture it and don't bring it out of your mind into the physical world, you can sometimes lose it. And I want to be fast."*

Demographics: Japan's customs and manners for tourists

Japan's customs and manners

Last week's (June 9, 2024) Energy Tidbits memo highlighted how Japan continues to see record levels of tourists driven by the weak Yen. Japan has changed hugely in the last 50 years but there are still different customs/social practices. So whenever, we hear of friends traveling to Japan, we send them an excerpt from Japan's Immigration Services Agency's "*Guidebook on Living and Working: For foreign nationals who start living in Japan*". It gives the details on fundamentals like procedures for entry/residence. But also has a Chapter 12 "*Daily rules and customs*" that includes items like "coughing manners" ie. do not use your hands to cover your mouth, cough into your sleeve, reminder to wash your body before you get into a bathhouse or hot spring, talking on your phone on trains/buses is considered bad manners, etc. Our Supplemental Documents package includes the Chapter 12.

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

@Energy_Tidbits on Twitter

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

LinkedIn: Look for quick energy items from me on LinkedIn

Look for energy items on LinkedIn

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

Misc Facts and Figures.

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

Big Alberta floods hit Calgary 11 years ago on June 19, 2013

Some long term friends were in Calgary this week and asked if people were worried about flooding this year as they remembered many people who were flooded out in 2013. The good news is that there shouldn't be any flood risk this year. But it has been 11 years since the big Alberta floods that hit Calgary, High River and other areas on June 19, 2013. At that time, it was the costliest natural disaster in Canadian history at $5 billion, but ultimately dwarfed by the May 2016 Fort McMurray wildfires at $9 billion. One of the big flooding areas was along the Elbow River that flooded

out residential areas like Riverdale, Elbow Park, Rideau and Roxboro and also flooding Stampede Park. Many of the homes had 10 to 15 feet of water so enough to fill their basements and maybe five feet on their main floors. And not all the homes survived. In the bottom picture, the four circled houses across the Elbow River from each other were torn down and never rebuilt. There were a number of other houses torn down and never rebuilt. And the famous Elbow Park school kept some of its shell but was gutted and expanded. There is a great interactive map at the City of Calgary at [LINK] that shows the flooding impact.

Figure 68: Elbow Park, Rideau, Roxboro, Stampede Park flooding June 20, 2013

Source: City of Calgary

Figure 69: Elbow Park and Riverdale flooding June 20, 2013

Source: City of Calgary

Oilers win big last night, can they pull off NHL hockey first

Would have loved to be in Edmonton last night as the Edmonton Oilers thumped the Florida Panthers 8-1 in game 4 of the Stanley Cup Finals last night playing in Edmonton. It was an elimination game as the Panthers were up 3-0 going into game 4. Only 1 team in NHL history has been down 0-3 going into game 4 and come back

to win the Stanely Cup and that was the Toronto Maple Leafs in 1942. So the Oilers won game 4 at home. The history will be that there has never been a team down 0-3 in the Stanley Cup finals, then win game 4 at home and then go on the road for game 5. Every time that has happened, the they lost game 5 and the series was over. Game 5 is Tuesday in Florida.