Energy Tidbits

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Vortexa: 3rd Consecutive Week of Very Low Oil in Floating Storage, Lowest Since Covid

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. Our 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 our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector. Our target is to write on 48 to 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. Vortexa crude oil in floating storage estimated at Oct 20 is the lowest since Covid and 3rd consecutive week of very low oil in floating storage. [click here]
2. Biden approves general license for oil and gas in Venezuela with only a 6-month term, should add some low hanging fruit for oil production but not drive big new drilling program. [click here]
3. As of our 7am MT news cut off, still not clear if/when Hezbollah opens a northern front vs Israel and, if so, what happens from there re Iran. [click here]
4. IEA's new electricity report reminds most of grid spending for developed countries is grid upgrade and replacement rather than expansion ie. renewables add to grid requirements. [click here]
5. CNBC survey reminds that #1 worry for Americans by far is Cost of Living ie. how much things cost. [click here]
6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

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Natural Gas: +97 bcf build in US gas storage; now +300 bcf YoY surplus

US gas storage +300 bcf YoY surplus

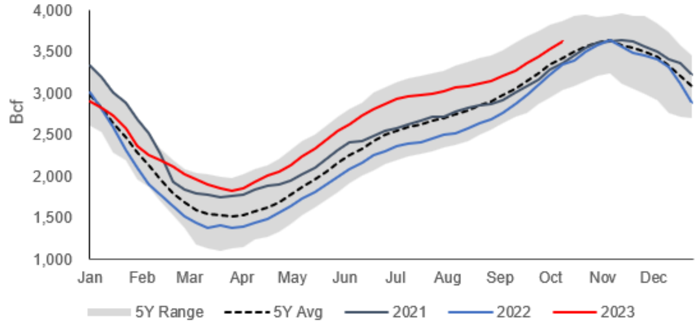
For the week of October 13, the EIA reported a +97 bcf build (above expectations of a +82 bcf build), and a YoY decrease compared to the +111 bcf build reported for the week of October 13, 2022. Total storage is now 3.626 tcf, representing a surplus of +300 bcf YoY compared to a surplus of +316 bcf last week. Total storage is +175 bcf above the 5-year average, down from the +185 bcf surplus last week. Below is the EIA's storage table from its Weekly Natural Gas Storage report [LINK].

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons			
					Year ago (10/13/22)		5-year average (2018-22)	
Region	10/13/23	10/06/23	net change	implied flow	Bcf	% change	Bcf	% change
East	896	874	22	22	808	10.9	855	4.8
Midwest	1,050	1,021	29	29	982	6.9	1,012	3.8
Mountain	248	244	4	4	194	27.8	206	20.4
Pacific	280	278	2	2	249	12.4	277	1.1
South Central	1,152	1,112	40	40	1,093	5.4	1,101	4.6
Salt	285	267	18	18	268	6.3	273	4.4
Nonsalt	868	845	23	23	825	5.2	827	5.0
Total	**3,626**	**3,529**	**97**	**97**	**3,326**	**9.0**	**3,451**	**5.1**

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



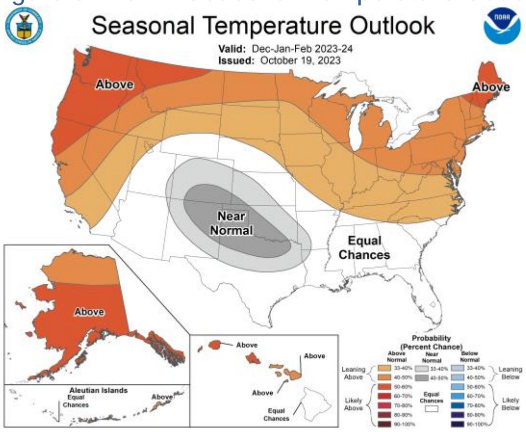
Source: EIA, SAF

Natural Gas: NOAA forecasts warmer than normal winter with El Nino

Warmer than normal winter

On Thursday, we tweeted [LINK] "*No surprise, @NOAA winter outlook DJF is for warmer than normal temps with El Nino. Reminder 👇10/14 tweet, also expect a warm start to Nov. A warm start to winter should keep a lid on #NatGas until there is some visibility for colder weather. #OOTT.*" On Thursday, NOAA posted its "*U.S. Winter Outlook: Wetter South, warmer North*". [LINK]. NOAA writes "*This year, El Nino is in place heading into winter for the first time in four years, driving the outlook for warmer-than-average temperatures for the northern tier of the continental United States, according to NOAA's U.S. Winter Outlook released today by the Climate Prediction Center — a division of the National Weather Service.*" And " *Warmer-than-average temperatures are favored across the northern tier of the U.S. and much of the Far West. The greatest odds for warmer-than-average conditions are in Alaska, the Pacific Northwest and northern New England. Near-normal seasonal mean* *temperatures are most likely for a region from the south-central Rockies to the southern Plains. Remaining areas fall into the category of equal chances for below-, near-, or above-average seasonal mean temperatures."* Our Supplemental Documents package includes the NOAA outlook.

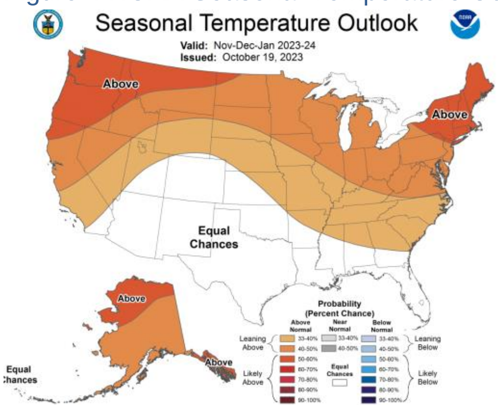
Figure 3: NOAA Seasonal Temperature Outlook Dec/Jan/Feb



Source: NOAA

NOAA also forecasts for a warmer than normal NDJ start to winter
On Thursday, NOAA also posted its updated temperature probability outlook for Nov/Dec/Jan. We tweeted [LINK] "*Also @NOAA updated start to winter temperature probability calls for warmer than normal start to winter in Nov/Dec/Jan. Should keep a lid on #NatGas until there is some cold weather. #OOTT #NatGas."* NOAA calls for a warmer than normal start to winter in the Nov/Dec/Jan period.

Figure 4 NOAA Seasonal Temperature Outlook Nov/Dec/Jan



Source: NOAA

Shale/tight gas production

Natural Gas: EIA, US shale/tight natural gas back below 99 bf/d for 1st time since April
US natural gas production is still up strong YoY with the US shale/tight natural gas plays up almost 3 bcf/d YoY. However, it's only one month, but Nov is forecast below 99 bcf/d after six months over 99 bcf/d. (i) On Monday, the EIA released its monthly Drilling Productivity Report for October 2023 [LINK], which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case October) and the next month (in this case November). (ii) The EIA forecasts US shale/tight natural gas for November at 98.808 bcf/d, which is down slightly from 99.259 bcf/d in October. This is the first month below 99 bcf/d since April. (iii) Permian has been just above 24 bcf/d for the last four months with, August at 24.03 bcf/d, September at 24.07 bcf/d, October at 24.09 bcf/d and now November at 24.10 bcf/d. (iv) Haynesville has been faily flat for the last four months at just under 17 bcf/d. (vii) Remember US shale/tight gas is ~90% of total US natural gas production. So, whatever the trends are for shale/tight gas are the trends for US natural gas in total. Below is our running table showing the EIA DPR data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes the EIA DPR.

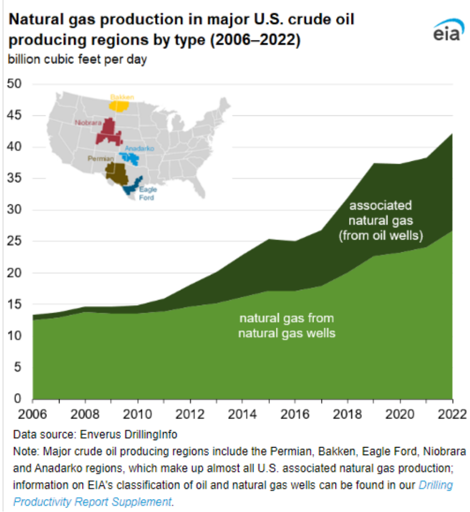
Figure 5: EIA Major Shale/Tight Natural Gas Production

mmcf/d	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Nov YoY	Nov YoY%	Nov MoM	Nov MoM%
Anadarko	6,850	6,606	6,668	6,904	6,886	6,872	6,801	6,893	6,827	6,763	6,694	6,617	6,535	-315	-5%	-82	-1%
Appalachia	35,034	34,555	35,538	34,982	35,770	35,450	35,736	35,842	35,880	35,852	35,831	35,699	35,505	471	1%	-194	-1%
Bakken	3,088	2,686	2,896	3,088	3,103	3,164	3,203	3,293	3,334	3,346	3,370	3,392	3,411	323	10%	19	1%
Eagle Ford	7,105	7,137	7,193	7,327	7,761	7,655	7,686	7,728	7,770	7,722	7,664	7,594	7,520	415	6%	-74	-1%
Haynesville	16,458	16,276	16,428	16,845	16,762	16,999	17,126	17,089	17,023	16,955	16,835	16,712	16,562	104	1%	-150	-1%
Niobrara	5,215	4,925	4,991	4,901	5,039	5,132	5,160	5,143	5,119	5,130	5,142	5,159	5,173	-41	-1%	14	0%
Permian	22,079	21,905	22,371	22,349	23,432	23,546	23,805	23,740	23,993	24,031	24,067	24,086	24,102	2,023	9%	16	0%
Total	95,830	94,089	96,084	96,397	98,752	98,818	99,517	99,727	99,945	99,799	99,603	99,259	98,808	2,978	3%	-451	0%

Source: EIA, SAF

EIA: natural gas from natural gas wells vs associated natural gas from oil wells
Yesterday, we tweeted [LINK] "*Who doesn't love a good graph. @EIA reminds associated natural gas from oil wells is now almost half of US natural gas production from shale/tight wells. EIA DPR est for Nov has associated natural gas at 46.741 bcfd, or 47.3% of total shale/tight of 98.808 bcfd. #OOTT #NatGas.*" The EIA tweeted the below graph based on the its monthly Drilling Production Report for October 2023. Our tweet just included the math for the above table that shows the associated natural gas from oil wells (Anadarko, Bakken, Eagle Ford, Niobrara and Permian) was estimated at 46.741 bcf/d out of total US tighjt/shale natural gas estimate of 98.808%, or 47.3% of the total.

Figure 6 EIA natural gas splitting out associated natural gas from oil wells



Source: EIA

US August LNG exports

Natural Gas: US LNG exports up +1.1% MoM to 11.4 bcf/d in August; up +17.7% YoY
On Tuesday, the Department of Energy (DOE) posted its US LNG exports estimates for August 2023 [LINK]. This is a reminder that the US LNG export data is available about two weeks prior to the more commonly referenced US LNG exports from the EIA's Natural Gas Monthly. The EIA is a group under the Department of Energy. The data for LNG exports is either identical or just a rounding issue. On Tuesday, we tweeted [LINK] "*US #LNG exports Aug/23 11.4 bcfd, +1.1% MoM, +17.7% YoY. Freeport LNG was out in Aug/22. Aug/23 top 5 export mkts: Dutch, Korea, France, Japan, Italy. Aug/22: Dutch, Korea, France, Spain, UK. This DOE LNG data is posted 2 wks before same data in @EIAgov #NatGas Monthly #OOTT"* US LNG exports were up marginally MoM to 11.4 bcf/d in August from 11.3 bcf/d in July. US LNG exports are now averaging 11.5 bcf/d per month YTD for 2023, which is +0.6 bcf/d compared to the same period in 2022. The DOE did not comment on the MoM or YoY increases. Our Supplemental Documents package includes excerpts from the DOE LNG Monthly.

Figure 7: US Monthly LNG Exports

US LNG Exports (bcf/d)	2016	2017	2018	2019	2020	2021	2022	2023
Jan	0.0	1.7	2.3	4.1	8.1	9.8	11.4	10.9
Feb	0.1	1.9	2.6	3.7	8.1	7.4	11.3	11.7
March	0.3	1.4	3.0	4.2	7.9	10.4	11.7	11.8
Apr	0.3	1.7	2.9	4.2	7.0	10.2	11.0	12.5
May	0.3	2.0	3.1	4.7	5.9	10.2	11.3	11.8
June	0.5	1.7	2.5	4.7	3.6	9.0	10.0	10.9
July	0.5	1.7	3.2	5.1	3.1	9.7	9.7	11.3
Aug	0.9	1.5	3.0	4.5	3.6	9.6	9.7	11.4
Sept	0.6	1.8	2.7	5.3	5.0	9.5	9.8	
Oct	0.1	2.6	2.9	5.7	7.2	9.6	10.0	
Nov	1.1	2.7	3.6	6.4	9.4	10.2	10.1	
Dec	1.3	2.7	4.0	7.1	9.8	11.1	11.0	
Average	0.5	1.9	3.0	5.0	6.6	9.7	10.6	11.5
Source: EIA, DOE								

Source: EIA, DOE

Figure 8: US LNG Exports August 2023 vs August 2022

Summary

Overview of Activity for August 2023

- **Top five countries of destination, representing 48.9%of total U.S. LNG exports in August 2023**
  - Netherlands (57.4 Bcf), South Korea (34.9 Bcf), France (34.3 Bcf), Japan (24.2 Bcf), and Italy (21.5 Bcf)
- **353.0 Bcf of exports in August 2023**
  - 1.1% increase from July 2023
  - 17.7% more than August 2022
- **114 cargos shipped in August 2023**
  - Sabine Pass (35), Cameron (27), Freeport (25), Corpus Christi (18), Cove Point (7), and Elba (2)
  - 116 cargos in July 2023
  - 99 cargos in August 2022

Summary

Overview of Activity for August 2022

- **Top five countries of destination, representing 55.9% of total U.S. LNG exports in August 2022**
  - Netherlands (50.4 Bcf), South Korea (36.0 Bcf), France (33.9 Bcf), Spain (26.1 Bcf), and United Kingdom (21.3 Bcf)
- **299.9 Bcf of exports in August 2022**
  - 0.1% decrease from July 2022
  - 0.7% more than August 2021
- **98 cargos shipped in August 2022**
  - Sabine Pass (40), Cameron (29), Corpus Christi (19), Cove Point (7), Elba (3), and Freeport (0)
  - 100 cargos in July 2022
  - 98 cargos in August 2021

Source: DOE

Natural Gas: Mitsui, LNG supply short as energy transition to take several decades

Mitsui says transition to take several decades

Our several year view on the energy transition hasn't changed – it's happening, but will take way longer, cost way more and be a bumpy/rocky road. And because clean energy isn't replacing fossil fuels in the expected pace, it means oil and natural gas will be needed for way longer and be stronger thru the 2020s. On Monday evening, we were watching Bloomberg Daybreak Asia and they played an interview with Mitsui President Hori. We had just seen the Bloomberg report headlines on the interview, but the Daybreak Asia version on Monday night didn't have the full clip. We tweeted [LINK] *"#LNG supply short looking ahead. "Announced projects in the world still won't make up for the supply needed when considering the #EnergyTransition that will take several decades" Mitsui President Hori. Thx @shoko_oda Grace Huang #OOTT #NatGas."* Hori made the simple link – the energy transition will take several decades (a very long time) on one side, and then one a realization that LNG supply won't be enough for the energy transition. Bloomberg wrote "*Global demand for liquefied natural gas is likely to prove stronger than expected and the current pipeline of projects won't be enough to keep up, according to one of Japan's top traders of the fuel. "Announced projects in the world still won't make up for the supply needed when considering the energy transition that will take several decades," said Kenichi Hori, president* *of Japanese trading house Mitsui & Co., in an interview in Tokyo last week."* Our Supplemental Documents package includes the Bloomberg report.

Energy diversity of LNG supply is important for Mitsui

Hori didn't address the current Israel/Hamas war and potential risk if the war escalates to involve Iran. No one knows what will happen in the Israel/Hamas war and how it will end. But we have to believe there will be looking at increasing risk to Qatar LNG shipments in the future as Qatar LNG has to go via the Strait of Hormuz. Bloomberg wrote '*Ensuring diversity of supply sources is likely to prove crucial for energy security in Japan, according to Hori. "We have projects in the US, Middle East and Africa," he said. When asked about whether Mitsui is interested in signing a contract with Qatar, which has been seeking buyers from its huge output expansion, Hori said the Middle Eastern nation is an "important source of LNG" as Japan pursues further diversification."*

Natural Gas: Shell and QatarEnergy sign 27-year LNG deal for 0.46 bcf/d

Long-term LNG deal

On Wednesday, Shell announced they signed two long-term 27-year LNG supply deals with Qatar Energy [LINK] to supply the LNG to the Netherlands. The deal is set to begin in 2026, with Shell purchasing ~0.46 bcf/d. It's a 27-year deal and the term of the SPA extends through 2053. Shell Minister of State for Energy Affairs and CEO of QatarEnergy, His Excellency Mr. Saad Sherida Al-Kaabi, said "*We are delighted to sign these two long-term LNG sale and purchase agreements with Shell that will further enhance our decades-long relationship and strategic partnership in Qatar and around the world. There is no doubt that the contracted LNG volumes underscore the vital role natural gas plays in the energy transition and in supporting energy security of customers across the globe".* Our Supplement document package contains the QatarEnergy news release.

There have been 18.21 bcf/d of long-term LNG supply deals since July 1, 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 18.21 bcf/d of long-term LNG deals since July 1, 2021. 61% 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 65% 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. Our Supplemental Documents package includes our July 14, 2021 blog.

Figure 9: Long-Term LNG Buyer Deals Since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country	Volume	Duration	Start	End
			Buyer / Seller	(bcf/d)	Years		
Asian LNG Deals							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipec	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan/US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan/Oman	0.11	10.0	2025	2035
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.
Mar 6, 2023	Gunvor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042
Apr 28, 2023	JERA	Venture Global LNG	Japan/US	0.13	20.0	n.a.	n.a.
May 16, 2023	KOSPO	Cheniere	Korea/US	0.05	19.0	2027	2046
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh/Qatar	0.24	15.0	2026	2031
Jun 21, 2023	Petro Bangle	Oman	Bangledesh/Oman	0.20	10.0	2026	2036
Jun 21, 2023	CNPC	QatarEnergy	China/Quatar	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.
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				**11.02**			
Non-Asian LNG Deals							
Jul 28, 2021	PGNiG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNiG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU//US	0.13	20.0	2027	2047
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046
Apr 24, 2023	Hartree Partners LP	Delfin Midstream	US / US	0.08	20.0	n.a.	n.a.
Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042
Jun 22, 2023	SEFE	Venture Global LNG	EU//US	0.30	20.0	2026	2046
Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036
Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040
Jul 28, 2023	OMV	BP	Austira/UK	0.13	10.0	2026	2036
Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045
Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043
Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035
Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053
Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qatar	0.46	27.0	2026	2053
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21				**7.19**			
Total New Long Term LNG Contracts since Jul/21				**18.21**			

Source: SAF

No strike at Chevron LNG

Natural Gas: Chevron & union finally agree at Chevron Gorgon & Wheatstone LNG

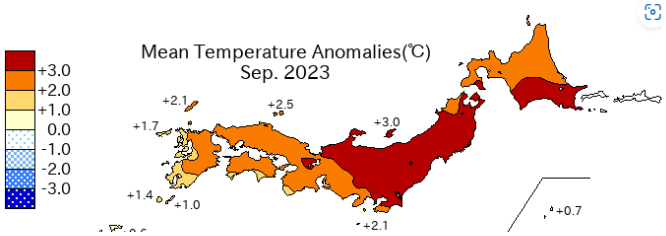
On Tuesday, we tweeted [LINK] *"Union suspends any strike action at Chevron 2.1 bcf/d Gorgon LNG and 1.2 bcf/d Wheatstone LNG while members review proposed labor deal. Offshore Alliance says members voted 94% in support of in-principle agreement. #OOTT #LNG #NatGas."* We had said in our prior two memos that we found it hard to believe Chevron was gong to let a strike happen when they an the union had agreed to accept the Fair Work Commission terms to end the strike but had been unable to paper the deal. Last week's (Oct 15, 2023) Energy Tidbits memo highlighted the Offshore Alliance Oct 15 Facebook posting that the union voted to go back to strike action on Oct 19. It took until Tuesday but the union said it was done. Gorgon is 2.1 bcf/d and Wheatstone is 1.2 bcf/d.

A very hot Sept in Japan

Natural Gas: Hottest Sept in Japan since 1898

No one should have been surprised by the Japan Meteorological Agency's recap of Sept 2023 temperatures that it was very, very hot. The JMA posted its climate report over Japan for Sept [LINK]. It included the below map and the JMA said *"Monthly mean temperatures were significantly above normal nationwide with the highest September records since 1946 in eastern/western Japan, as the whole country was covered by warm-air throughout the month, and affected by warm-air advection from the south in the middle of the month. The monthly anomaly of the average temperature over Japan was +2.66 ℃ (the warmest for September since 1898)."*

Figure 10: JMA Mean Temperature Anomalies Sept 2023

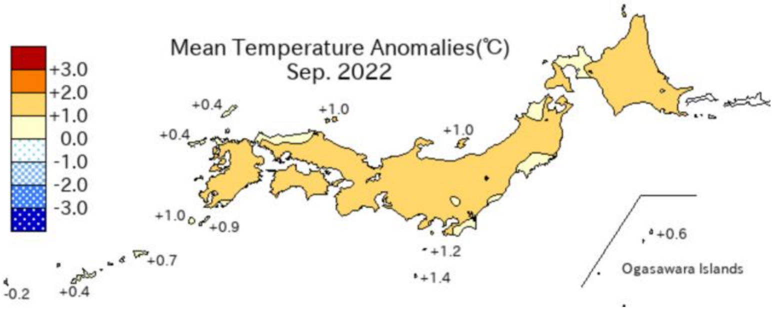


Source: Japan Meteorological Agency

Year ago, Sept 2022 had above average temperatures in Japan

Here is what we wrote in our Oct 16, 2022 Energy Tidbits. "*The Japan Meteorological Agency recap of Sept temperatures in Japan were that there were above normal temperatures for all of Japan, which continued a hot Jun/Jul/Aug providing a strong period of weather related electricity consumption ie. hot enough to justify air conditioning. Although as we have been highlighting, sky-high LNG prices have put Japan to try to maximize other electricity sources like coal and petroleum products. On Friday, the Japan Meteorological Agency posted its recap of Sept weather [LINK] and their mean temperature anomalies map (below) show it was warmer than normal across Japan. Their recap noted "Monthly mean temperatures were above normal from northern to western Japan, because warm-air covered the regions".*

Figure 11: Japan Mean Temperature Anomalies Sept 2022



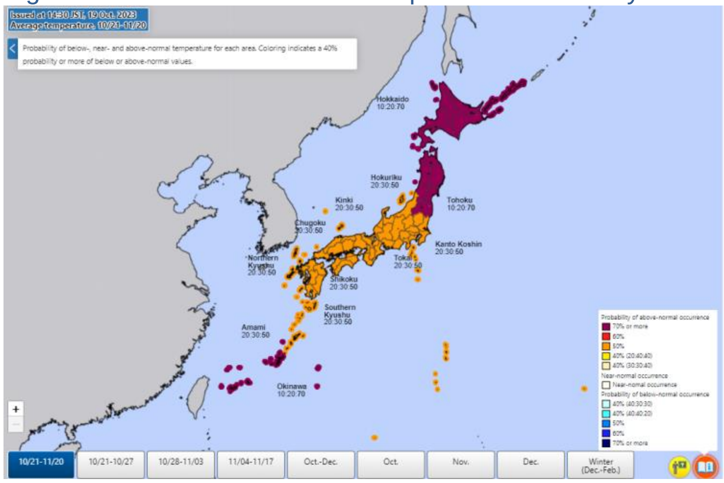
Source: Japan Meteorological Agency

Natural Gas: Forecast above normal temperatures through mid November

It looks like the warm weather so far this fall will continue through to mid November. Every Thursday, the Japan Meteorological Agency updates its 30-day outlook [LINK]. The October 19 update calls for a much warmer than normal November which means, for Tokyo in the first half of November, daily highs around 20C and nighttime lows of around 12C. This shouldn't generate much natural gas demand for air conditioning. Rather it's what we call "leave the windows open" weather. Below is the JMA's 30-day temperature probability forecast for Oct 21 – Nov 20.

Japan's 30-day temperature forecast

Figure 12: JMA Oct 21-Nov 3 Temperature Probability Forecast



Source: Japan Meteorological Agency

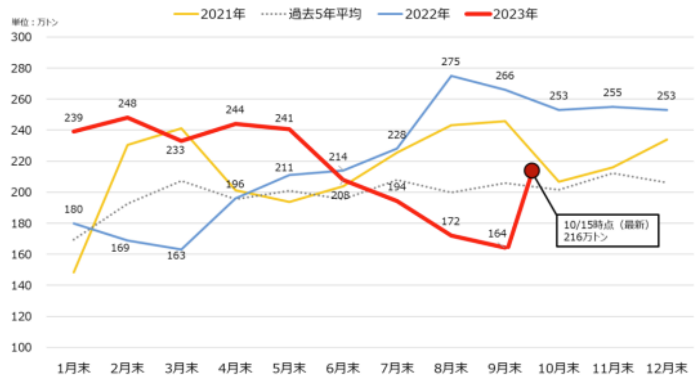
Natural Gas: Japan LNG stocks below 2022, above 5-year average levels, builds WoW

It was hot in Japan through September and we saw Japan was drawing on its LNG stock in Sept for power generation, which took LNG stocks below year ago and the 5-yr average. We have been expecting Japan to build back LNG stocks in Oct for the winter and that was the case this week with another large build, which is still below 2022 levels but now above the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK].

Japan LNG stocks up +15.5% WoW

LNG stocks on Oct 15 were 103.7 bcf and are up +15.5% WoW from Oct 15 of 89.8 bcf, and now above the 5-year average of 96.5 bcf. METI did not comment on the MoM increase. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 13: Japan LNG Stocks



Source: METI

Natural Gas: Japan LNG imports up small MoM to 8.84 bcf/d in September

Japan LNG imports up MoM

Japan's LNG imports in 2023 have been below normal levels with the warm winter 2022/23 that meant Japan ended the winter with high LNG stocks, which continued thru most ot the summer. And LNG imports remained well below 2022 levels through the summer. But LNG stocks fell below 5-year average levels and so there was a small increase in LNG mports in Oct. On Thursday, Japan's Ministry of Finance posted its import data for September [LINK] and pointed to a YoY increase in LNG imports. The MOF reported Japan's September LNG imports were 8.84 bcf/d, which is up +0.7% MoM from 8.78 bcf/d in August, and up +3.8% YoY from 8.52 bcf/d in September 2022. September's imports of 8.84 bcf/d show some recovery from the recent low in May of 7.14 bcf/d. Japan's thermal coal imports in September were down -8.7% YoY, compared to -31.5% YoY in August. Petroleum products imports were down -1.3% YoY. Below is our table that tracks Japan LNG import data.

Figure 14: Japan Monthly LNG Imports

bcf/d	2014	2015	2016	2017	2018	2019	2020	2021	2022	22/21	2023	23/22
Jan	12.66	13.06	11.22	12.85	12.79	11.69	11.63	12.48	10.51	-15.8%	10.56	0.5%
Feb	12.88	13.26	12.30	13.36	14.23	12.61	10.99	13.84	12.19	-11.9%	10.98	-9.9%
Mar	12.46	12.60	12.62	12.61	12.28	11.30	11.16	11.04	10.07	-8.7%	8.86	-12.0%
Apr	11.54	10.56	10.21	10.52	8.97	9.00	8.31	7.96	8.92	12.0%	7.25	-18.7%
May	10.06	8.91	8.55	9.66	9.92	8.62	7.09	7.67	8.92	16.3%	7.14	-19.9%
June	10.91	10.61	10.02	9.90	8.88	8.32	8.42	9.13	9.29	1.7%	7.25	-22.0%
July	12.14	10.77	10.19	10.19	10.55	10.56	9.35	9.58	9.54	-0.4%	7.88	-17.4%
Aug	10.92	10.93	11.96	11.24	11.73	9.45	9.04	9.75	9.71	-0.4%	8.78	-9.6%
Sept	11.64	11.06	10.67	9.31	10.04	10.30	10.41	8.66	8.52	-1.6%	8.84	3.8%
Oct	10.75	9.38	9.73	9.50	10.12	9.75	9.20	7.17	7.88	9.9%		
Nov	11.00	10.71	12.07	10.26	10.15	10.03	9.63	9.38	8.88	-5.4%		
Dec	12.79	12.51	11.69	12.31	11.23	10.54	11.96	10.89	9.39	-13.8%		

Source: Japan Ministry of Finance, SAF

Natural Gas: China says "ensure that the gas storage is full in winter"

China says ensure gas storage is full

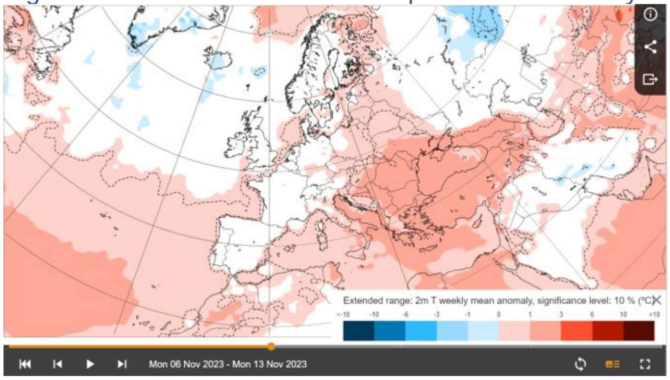
On Wednesday, we tweeted [LINK] "*China ".. in the face of the complex international geopolitical environment and energy situation ...."ensure that the #NatGas storage is full in winter". This was Oct 10 meet. See 👇10/15/23 tweet, absent supply interruption, biggest factor for gas is how cold is it. #OOTT."* On Tuesday, China's National Energy Administration reported on its Oct 10 meeting, which was only three days after the initial Hamas attack on Israel. And China highlighted its concern that geopolitics and energy mean that China should ensure natural gas storage is full this winter. They didn't caveat it with a depending on weather, it was just ensure storage is full this winter. The NEA wrote "*The meeting pointed out that since the last heating season, in the face of the complex international geopolitical environment and energy situation, the construction of China's natural gas production, supply, storage and marketing system has been coordinated and strengthened, the central and local enterprises have coordinated with each other, and the industry has taken the initiative to basically achieve the coordinated and stable development of natural gas. The national natural gas consumption showed a recovery growth trend, and the natural gas supply and demand situation was generally stable throughout the year and heating season. The meeting required that central oil and gas enterprises should continue to take the lead in ensuring supply and price stability, adhere to the domestic all-out efforts to increase reserves and production, ensure that the gas storage is full in winter, and the "national network" operates safely and stably, and do everything possible to ensure the stable supply of natural gas during the heating season."* Our tweet noted the reminder that, absent a supply interruption, the key factor for natural gas every year is how cold is the winter. Our Supplemental Documents package includes the NEA release.

Natural Gas: Still looking wamer than normal temps in mid Nov for Europe

Europe mid Nov forecast

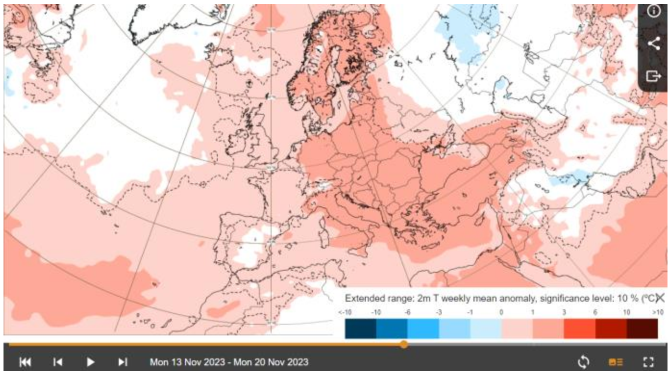
Our concern for near-term natural gas and LNG prices is that it's been months of above normal temperatures and that there will be a holdback until markets start to see a move to normal temperatures. As seen with winter 2022/23, when it starts warm, it's hard to catch up. For terminology, much of Europe uses Oct 1 as the start of winter natural gas season. We tend to focus more on Nov as to when we might expect to see the start of weather driven natural gas demand. The ECMWF provides daily short- term forecasts. ECMWF is European Centre for Medium Range Forecasts. Yesterday's ECMWF's near term forecast calls for mostly warmer than normal temperatures in more of Europe for the mid Nov.

Figure 15: ECMWF Nov 6-13 Temperature Probability Forecast



Source: ECMWF

Figure 16: ECMWF Nov 13-20 Temperature Probability Forecast



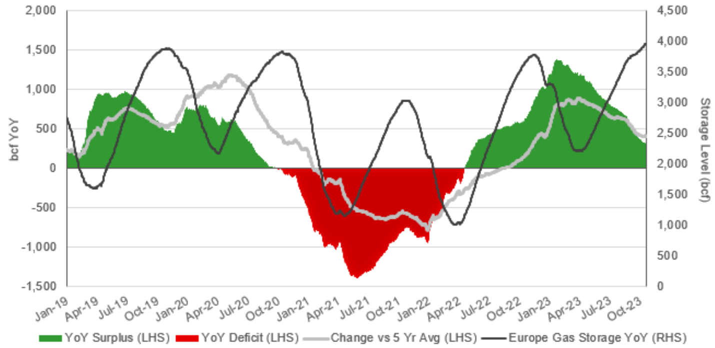
Source: ECMWF

Natural Gas: Europe storage over 98% full so entered winter close to full

Europe gas storage

Please note that Europe generally refers to the start of winter natural gas withdraw season as starting Oct 1, whereas North America refers to the start of winter natural gas season as starting Nov 1. Europe storage stayed above the 98% full level this week so they entered winter at close to full levels. This week, Europe storage increased by +0.69% WoW to 98.18% on Oct 19. Storage is now +5.29% greater than last year's levels of 92.89% and is +8.48% above the 5-year average of 89.70%. The current storage is within the 5-year range, albeit at the top end of the range. Below is our graph of Europe Gas Storage Level.

Figure 17: European Gas Storage Level



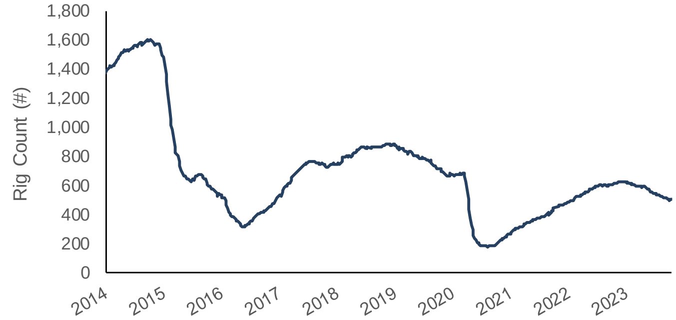
Source: Bloomberg, SAF

Oil: US oil rigs +1 WoW at 502 rigs, US gas rigs +1 WoW to 118 rigs

US oil rigs up WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Total US oil rigs were up +1 WoW at 502 total rigs and are down -110 rigs YoY for the week of October 20. This is up +21 rigs from the 2022 low of 481 rigs in January. (ii) On a per basin basis, there were a few changes in the major US basins for the week of October 20. The Permian was up +1 rig WoW to 305 rigs, Granite Walsh was up +1 rig WoW at 5 rigs, Cana Woodford was down -1 rig WoW at 15 rigs, and Eagle Ford was down -1 rig WoW at 46 rigs. Williston, Ardmore Woodford, Mississippian, and DJ Niobrara were flat WoW at 33, 2, 1 and 14 rigs respectively. Others were up +1 rig WoW at 80 oil rigs. (iii) The Permian is near its lowest level since March 18, 2022, and is down -52 rigs from its recent high of 357 rigs on April 28, 2023. (iv) Gas rigs were up +1 rig WoW to a total of 118 rigs and have now decreased -39 rigs YoY. On a per basin basis, Haynesville was up +3 rigs WoW at 40. Others were down -2 rigs WoW at a total of 28 rigs. Below is our graph of total US oil rigs.

Figure 18: Baker Hughes Total US Oil Rigs



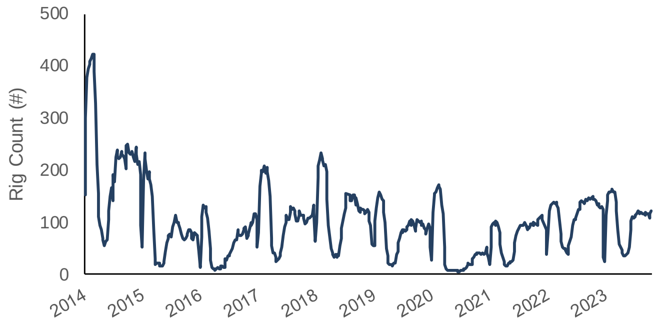
Source: Baker Hughes, SAF

Oil: Total Cdn rigs +6 WoW at 198 total rigs

Cdn total rigs up WoW

For the week of October 20, total Cdn rigs were +6 rigs WoW at 198 rigs. BC was -1 rig WoW at a total of 19 rigs and Alberta was up +3 rigs to a total 141 rigs. We expect to see modest increases going forward with the wildfires slowly decreasing. Saskatchewan was up +2 rigs for a total of 33 rigs, Manitoba was up +1 rig WoW for a total of 4 rigs while Newfoundland was flat WoW at 1 offshore rig. Cdn oil rigs were up +5 rigs WoW to 121 rigs, Cdn gas rigs increased +1 rigs to 77 rigs, and Cdn offshore rigs were flat at 1 rig. Cdn oil rigs are down -23 rigs YoY, while gas rigs are up +11 rigs YoY. Below is our graph of total Cdn oil rigs.

Figure 19: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

US oil production flat WoW

Oil: US weekly oil production estimates flat WoW at 13.200 mmb/d

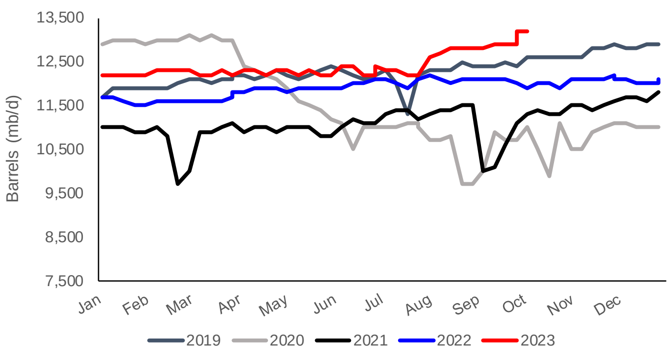
Last week there was a second big adjustment to the EIA's weekly oil production estimates. The first was in Aug, when our Aug 13, 2023 Energy Tidbits memo highlighted the EIA increased their weekly US oil production estimates by +0.4 mmb/d. Last week's (Oct 15, 2023) Energy Tidbits memo highlighted the EIA's second big, another +0.4 mmb/d, adjustment to the weekly production estimates. Last week, the EIA wrote *"Crude Oil Production Re-benchmarking Notice: When we release the Short Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude 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 increased estimated volumes by 370,000 barrels per day, which is about 2.8% of this week's estimated production total*." This week, the EIA's production estimates were flat WoW at 13.200 mmb/d for the week ended October 13 [LINK]. Alaska was down slightly at 0.417 mmb/d. Below is a table of the EIA's weekly oil production estimates.

Figure 20: EIA's Estimated Weekly US Field Oil Production

	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
2022-Jan	01/07	11,700	01/14	11,700	01/21	11,600	01/28	11,500		
2022-Feb	02/04	11,600	02/11	11,600	02/18	11,600	02/25	11,600		
2022-Mar	03/04	11,600	03/11	11,600	03/18	11,600	03/25	11,700		
2022-Apr	04/01	11,800	04/08	11,800	04/15	11,900	04/22	11,900	04/29	11,900
2022-May	05/06	11,800	05/13	11,900	05/20	11,900	05/27	11,900		
2022-Jun	06/03	11,900	06/10	12,000	06/17	12,000	06/24	12,100		
2022-Jul	07/01	12,100	07/08	12,000	07/15	11,900	07/22	12,100	07/29	12,100
2022-Aug	08/05	12,200	08/12	12,100	08/19	12,000	08/26	12,100		
2022-Sep	09/02	12,100	09/09	12,100	09/16	12,100	09/23	12,000	09/30	12,000
2022-Oct	10/07	11,900	10/14	12,000	10/21	12,000	10/28	11,900		
2022-Nov	11/04	12,100	11/11	12,100	11/18	12,100	11/25	12,100		
2022-Dec	12/02	12,200	12/09	12,100	12/16	12,100	12/23	12,000	12/30	12,100
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						

Source: EIA

Figure 21: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

Oil: US shale/tight oil production back below 9.6 mmb/d after 4 mths over 9.6 mmb/d

Shale/tight oil production

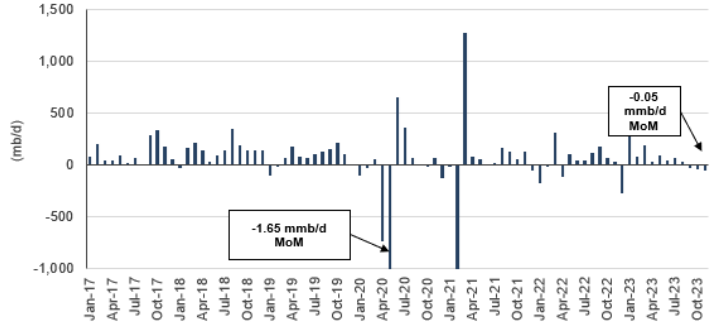
US shale/tight oil production moved back below 9.6 mmb/d after four months over 9.6 mmb/d. On Monday, the EIA released its monthly Drilling Productivity Report for October 2023 [LINK], which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case October) and the next month (in this case November). (ii) The EIA is forecasting a MoM production decrease in October of -45,875 b/d MoM to 9.603 mmb/d and a MoM decline of -50,404 b/d to 9.553 mmb/d in November. (iii) November is forecast back below 9.6 mmb/d after four months above 9.6 mmb/d. June was 9.587 mmb/d, July 9.655 mmb/d, August at 9.684 mmb/d, September at 9.649 mmb/d, October at 9.603 mmb/d and now November at 9.553 mmb/d. (iv) Permian shale/tight oil production has been flat above 5.9 mmb/d for the past seven months. April was 5.866 mmb/d, May 5.914 mmb/d, June 5.922 mmb/d, July 5.998 mmb/d, August 5.982 mmb/d, September at 5.961 mmb/d, October at 5.931 mmb/d and now November at 5.901 mmb/d. (v) US shale/tight oil production is +430,213 b/d YoY to 9.553 mmb/d in November 2023. The major change areas are Permian ~+235,000 b/d YoY, Bakken at ~+144,000 b/d YoY, and Eagle Ford at ~+22,000. (vi) 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 22: US Major Shale/Tight Oil Production

Thousand b/d	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Nov YoY	Nov YoY%
Anadarko	404	382	392	405	417	422	426	422	420	419	418	415	412	7	2%
Appalachia	127	122	144	152	152	153	155	148	137	137	136	134	132	5	4%
Bakken	1,126	988	1,093	1,191	1,157	1,165	1,173	1,203	1,217	1,263	1,267	1,270	1,270	144	13%
Eagle Ford	1,102	1,070	1,105	1,134	1,181	1,156	1,178	1,185	1,189	1,174	1,157	1,138	1,119	17	2%
Haynesville	35	33	35	35	35	34	35	35	35	36	36	35	35	0	1%
Niobrara	662	605	624	612	638	654	667	671	658	672	675	680	684	22	3%
Permian	5,666	5,656	5,754	5,699	5,843	5,866	5,914	5,922	5,998	5,982	5,961	5,931	5,901	235	4%
Total	9,122	8,855	9,148	9,227	9,422	9,450	9,547	9,587	9,655	9,684	9,649	9,603	9,553	430	5%

Source: EIA, SAF

Figure 23: MoM Changes in US Major Shale/Tight Oil Production



Source: EIA, SAF

Oil: EIA DUC's down marginally MoM in September

DUCs down marginally in September

We have been warning that we see a key risk to how much US oil production can sustainably grow in 2023 and beyond, 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 biggest problem in the past with the EIA's Drilling Productivity Report [LINK] estimate of Drilled Uncompleted wells was that the data had been constantly revised and sometimes significantly. (i) The EIA estimates DUCs were down -54 MoM (-499 YoY) in September to 4,681 DUCs. Note that August's data (including the Permian) had a net downwards revision of -14 to 4,735. (ii) To put in perspective, there were 8,653 DUCs in the height of the Covid slowdown in August 2020, 5,690 DUCs in September 2021, 5,180 DUCs in September 2022 and now 4,681 DUCs in September 2023. (iii) It looks like DUCs have steadily decreased over the past five months with 4,999 DUCs in April, 4,937 DUCs in May, 4,850 DUCs in June, 4,783 DUCs in July, 4,735 DUCs in August, and now 4,681 in September. (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 DUCs declines are the Permian (-257 YoY), Eagle Ford (-240 YoY), and Bakken (-128 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 DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production.

Figure 24: Estimated Drilled Uncomplete Wells in 2023

Drilled Uncompleted	April	May	June	July	Aug	Sept	Sept YoY	YoY %	Sept MoM	MoM %
Anadarko	763	751	739	734	730	726	-28	-6%	-4	-1%
Appalachia	811	796	782	765	755	746	-57	-7%	-9	-1%
Bakken	543	528	490	472	458	444	-128	-20%	-14	-3%
Eagle Ford	496	476	450	428	419	412	-240	-37%	-7	-2%
Haynesville	693	709	718	725	732	737	79	15%	5	1%
Niobrara	841	847	830	807	792	777	132	32%	-15	-2%
Permian	852	830	841	852	849	839	-257	-25%	-10	-1%
Total	4,999	4,937	4,850	4,783	4,735	4,681	-499	-9%	-54	-1%

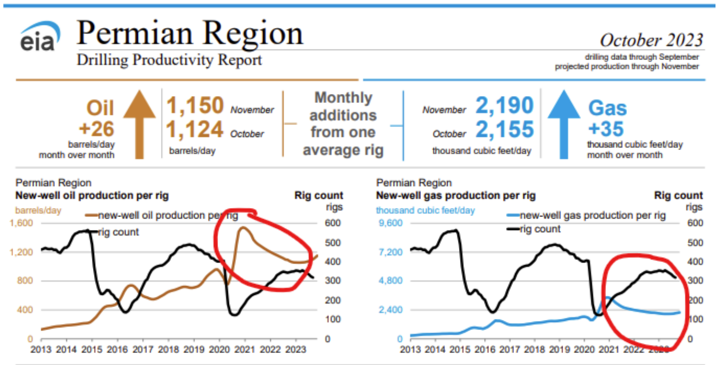
Source: EIA, SAF

Oil: Hard to see the math for sustained future Permian growth based on the DUCs

Permian DUCs

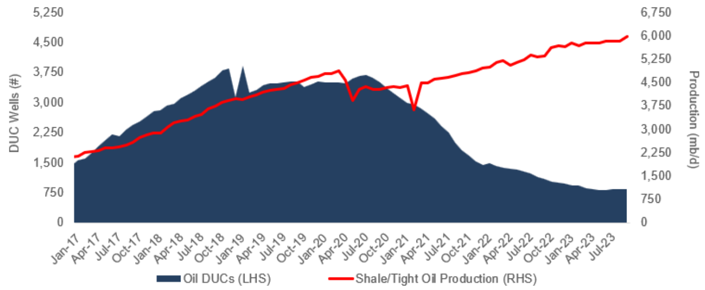
We have been focused on the level of Drilled Uncompleted Wells (DUCs) in the Permian from the EIA's monthly Drilling Productivity Report because the level of sustained Permian oil growth for the next few years is perhaps the biggest wildcard and variable to oil prices for the rest of the decade. It's not that we don't care what US shale/tight oil production is forecast in October or November, absent a big fall off the cliff, it isn't the key data point from the EIA's DPR. Our position is unchanged – we have trouble seeing how the math works for sustained Permian oil growth beyond 2023 based on the level of DUCs and oil rigs. Permian DUCs are at the roughly the same levels as Aug 2014. The EIA DPR Sept estimates Permian DUCs are 839 in September 2023. The peak for Permian DUCs was in the height of Covid at 3,690 DUCs in July 2020. The last time Permian DUCs were around that level was back in summer 2014 with 818 in July 2014 and 903 in August 2014. Yet Permian oil rigs are 305 at October 20, 2023, which is currently 57% of the Aug/Sept 2014 average of approx. 560 oil rigs. Yet the EIA DPR forecasts Permian oil production of 5.901 mmb/d in Nov 2023 is 3.5 times higher than 1.673 mmb/d in Aug/Sept 2014. There is no question fracking/completions are multiples better than 2014. But if we use the EIA August DPR new production added per rig as a guide (see below EIA excerpt), it's about three times higher than 2014 so a big jump as would be expected with fracking/completion improvments. But note that that has dropped by about a third in the past two years. That makes sense if you recall some recent producer comments that, in the move to survive in 2020 and 2021, they drilled their best wells. On the flip side, when you look ahead, more companies have drilled up most off, or a good chunk, of their Tier 1 lands and we have been seeing this specifically said by more producers. The math is straightforward. Oil and gas production levels are the result of decline rates and how much can they be offset or more than offset by new well completions. And the ability to complete a well for shale/tight plays needs wells that are being drilled or have been drilled for an inventory of DUCs to be completed to add to production. Shale/tight oil plays like the Permian are all fracked. So, a drilling rig drills the well, it then leaves the well as uncompleted and waiting for the frack spread to come and frack/complete the well. If drilling isn't high enough to keep adding to the DUCs and the existing DUCs inventory is low, there is less growth potential. It's math! This is why we still think it's tough to see how there is sustained production growth from the Permian for the coming years. It doesn't mean to say it declines and falls off a cliff, but it's hard to see sustained growth. Below is the table showing Permian DUCs vs rigs and production comparing June with Aug/Sept 2014 when DUCs were a similar level, and the excerpt from the DPR showing the new well production per Permian rigs that was in the August DPR.

Figure 25: Permian – EIA's Permian new-well-oil Production Per Rig



Source: EIA, SAF

Figure 26: Estimated Drilled Uncomplete Wells vs Permian Oil Production



Source: EIA, SAF

Oil: US gasoline prices -$0.06 this week to $3.55

US gasoline prices

As expected, US gasoline prices were down this week, in great part driven by lower California gasoline prices. Yesterday, AAA reported that US national average prices were down $0.06 this week to $3.55 on Oct 21, which is also down $0.32 MoM and down $0.27 YoY vs year ago of $3.82. Remember US gasoline prices started to ease below $4 in August 2022 and were helped in Q4 by the SPR releases.

California gasoline prices down big after Newsom allowed move to winter gas

The big reason for the drop in US gasoline prices over the past few weeks was the expected big drop in California gasoline prices following the three weeks ago Gov Newsom move to immediately switch to cheaper winter blend gasoline. AAA reported California average gasoline prices were down $0.18 WoW to $5.46 and are now down $0.33 MoM from mnth ago of $5.79. Here is what we wrote in our Oct 1, 2023 Energy Tidbits memo. "*California gasoline prices to drop as Newsom allows move to winter gas. We expect California gasoline prices to be down this week given Gov Newsom, on Thursday night, has moved an immediate switch to cheaper winter* *blend fuels. The San Diego Tribune reported [LINK] "In an attempt to curb a recent spike in gasoline prices, Gov. Gavin Newsom late Thursday instructed California regulators to speed the delivery of less expensive winter-blended gas to stations across the state. Winter-blended gas is about 20 to 25 cents per gallon cheaper than summer-blended gas and fuel analysts expect the waiver put in place by the California Air Resources Board at Newsom's behest will lead to a dip in prices within a few days. "This waiver will affect wholesale gas prices probably on Friday," said Patrick De Haan, head of petroleum analysis at GasBuddy, a tech company that helps drivers across the country find the cheapest places to buy gas. "But there's only one day left in the trading week. That may segue into another drop on Monday and theoretically retailers could be passing that along in lower prices this weekend, but it's not going to be much at first."*

Oil: US DOE solicits to buy 6 mmb for SPR at $79 or less for Dec/Jan delivery

DOE solicits to buy 6 mmb for SPR

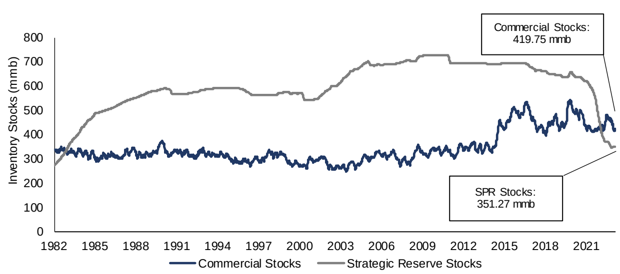
On Thursday, the US Dept of Energy announced [LINK] "*it will post monthly solicitations to purchase oil for the Strategic Petroleum Reserve (SPR) through at least May 2024, beginning with a solicitation for up to 6 million barrels of oil for delivery in December 2023 and January 2024. DOE will purchase oil in those months where it can do so at a good deal for taxpayers: a price of $79 dollars per barrel or below, far less than the average $95 per barrel DOE received for 2022 emergency SPR sales."* Our Supplemental Documents package includes the DOE announcement.

Oil: US SPR reserves now -68.474 mmb lower than commercial crude oil reserves

US SPR reserves

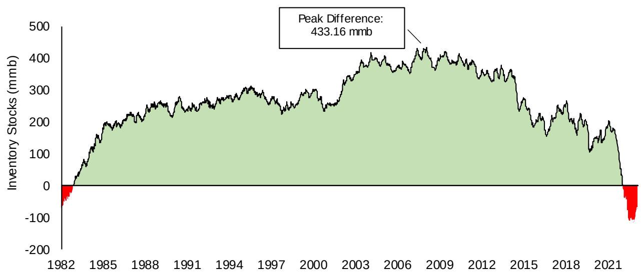
Oil in the US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sept 16, 2022 week. This deficit narrowed this week after a draw in commercial oil stocks of -4.491 mmb. The EIA's weekly oil data for October 13 [LINK] saw the SPR reserves stay flat WoW at 351.274 mmb, while commercial crude oil reserves decreased -4.491 mmb to 424.239 mmb. There is now a -68.474 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 27: US Oil Inventories: Commercial & SPR



Source: EIA, SAF

Figure 28: US Oil Inventories: SPR Less Commercial
Source: EIA, SAF



Oil: CER reasons for approving Trans Mountain TGMX route deviation

CER explains its decision

On Thursday, the "*Canada Energy Regulator issues reasons for decision for the Trans Mountain deviation application*." [LINK] This was for their recent decision to allow Trans Mountain to continue with its route deviation and not allow the First Nations appeal to the route deviation. We can't help believe that other pipelines are shaking their heads and saying why can't they get these type of rulings given the Liberal govt has been saying they don't influence the CER decisions. CER said "*The Commission found that continuing micro-tunnelling would most likely fail and could delay the completion of the TMEP by at least ten months. This delay could result in an estimated $2 billion of lost revenue for Trans Mountain and cause negative impacts on shippers and other parties.*" We don't recall ever seeing this type of ruling that was so clearly based on the lost revenues. The CER did say *"the Commission determined that there has been adequate consultation and accommodation with Indigenous Peoples for this decision*." Our Supplemental Documents package includes the CER release.

TMX adds 590,000 b/d capacity of oil to west coast

Here is Trans Mountain's overview of TMX [LINK]. "*The original Trans Mountain Pipeline was built in 1953 and continues to operate safely today. The Expansion is essentially a twinning of this existing 1,150-kilometre pipeline between Strathcona County (near Edmonton), Alberta and Burnaby, BC. It will create a pipeline system with the nominal capacity of the system going from approximately 300,000 barrels per day to 890,000 barrels per day." "Three new berths will be built at Westridge Marine Terminal in Burnaby. Once the new berths are completed and in service, the number of tankers loaded at the Westridge Marine Terminal could increase to approximately 34 per month. The existing pipeline will carry refined products, synthetic crude oils, and light crude oils with the capability for heavy crude oils. The new pipeline will carry heavier oils with the capability for transporting light crude oils."*

Money talks? Looks like no TMX timing risk to B.C First Nations appeal request

Here is what we wrote in last week's (Oct 15, 2023) Energy Tidbits memo on money. "*The Calgary Herald interview with Trans Mountain CEO Farrell did not specifically address the B.C. First Nation saying it was entitled to an appeal of the CER approved minor route change. But CEO Farrell's timing for line-fill to start end of Jan and commercial operations at the loading terminal by the end of March, which suggests* *she doesn't see any risk to her timeline for TMX startup. On Tuesday, we tweeted [LINK] "Risk to timing, hopefully only small, for 1st #Oil at TMX expansion? Seems hard for CER to not hear A.B.C First Nation appeal on the route change. CER Mission statement 👇 incl "recognizing and respecting the rights of the Indigenous peoples of Canada"? Thx @AmandaMsteph. #OOTT." The Canadian Press had reported [LINK] "In a letter to the regulator dated Wednesday, a lawyer representing the Stk'emlupsemc te Secwepemc Nation (SSN) said the decision to grant the route deviation Monday without providing its reasons has left the First Nation without the ability to decide its next steps. Article content. The letter said the First Nation has the right to request a reconsideration of the decision, or to appeal it through the Federal Court of Appeal." We have to believe the key reason that Trans Mountain isn't seeing any impact to its timing is that money talks and the owner of the pipeline is the Cdn government and not private sector. And CEO Farrell indicates that every month of delay is $200 million. The Calgary Herald wrote "I think we're close (on the latest price tag). For sure, there's pressure on it because every time there's a bit of a delay or you have to do a regulatory hearing, or you have to find a new methodology, that puts pressure on the contingency and on the reserve. But we are close, in that range," she added, noting rising interest rates are another factor. "The biggest pressure on this project right now is the timing, for sure. So every month of delay is $200 million that accrues to the project."*

Oil: Cdn WCS less WTI differentials +$0.25 to $23.25 on Oct 20

WCS less WTI differentials

It was a great last five months for WCS less WTI differentials, which were significantly less than norm linked to the global medium sour tightness and Saudi's 1 mmb/d voluntary cut starting July 1. So over the summer, Cdn crude traded at a lesser discount to WTI than normal. WCS less differentials didn't have their normal seasonal widening but have over the past three week, WCS less WTI differentials have widened seasonally as they normally do each year as fall refinery turnaround season hits. The WCS less WTI differential closed at $14.65 on Apr 28, $13.50 on May 31, $11.25 on June 30, $13.75 on July 31, $17.75 on Aug 31, and $18.60 on Sept 29. WCS less WTI differentials were +$0.25 this week to close at $23.25 on Oct 20. For perspective, a year ago, the WCS-WTI differentials last year were $26.75 on Oct 20, 2022. Below is Bloomberg's current WCS–WTI differential as of Oct 20, 2023 close.

Figure 29: WCS less WTI oil differentials including Oct 20 close

Source: Bloomberg

Oil: Crack spreads increased $1.08 WoW to $21.81

Crack spreads up this week

This week, crude oil into refineries were up 0.193 mmb/d WoWl, chich followed fouir strong down weeks for fall maintenance. The prior four weeks were down 0.399 mmb/d WoW, down 0.463 mmb/d WoW, down 0.239 mmb/d WoW and down 0.496 mmb/d WoW. We remind that oil demand is driven by refiners and their ability to make money by processing oil and selling petroleum products. So crack spreads are a good indicator if refiners will be looking to buy more or less oil. This week, crack spreads were up $1.08 WoW to $21.81 at Oct 20, which followed $20.73 on Oct 13, $19.28 on Oct 6, $22.35 on Sept 29, $26.07 on Sept 22, and $32.48 on Sept 15. Crack spreads at $21.81 are a little above the high end of the more normal pre-Covid that was more like $15-$20.

Explaining 321 crack spread

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, which was $20.73 as of the Friday Oct 13, 2023 close.

Figure 30: Cushing Crude Oil 321 Crack Spread Oct 20, 2013 to Oct 20, 2023

Source: Bloomberg

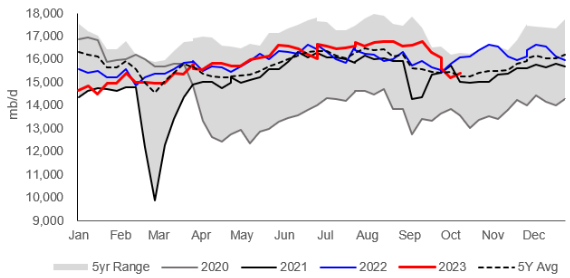
Oil: Refinery inputs up +0.193 mmb/d WoW to 15.396 mmb/d

Refinery inputs +0.193 mmb/d WoW

There are always unplanned issues that impact crude oil inputs into refineries, but refineries around the world follow seasonal patterns for their maintenance. There was the normal summer ramp up that lasted a little longer than normal given the big crack spreads. We saw the decline in crude oil inputs for the fall turnarounds, but it looks like US refineries are mostly coming out of turnarounds so we should start to see a steady increase in crude inputs. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended October 13 [LINK]. The EIA reported crude inputs to refineries were up +0.193 mmb/d this week to 15.396 mmb/d and are down -0.154 mmb/d YoY. Refinery utilization was up

+0.4% WoW to 86.1%, which is -3.4% YoY. We likely hit the seasonal peak in refining last month.

Figure 31: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: Moving WSJ story on the two brothers killed in 09/20/22 BP Toledo refinery fire

BP's Sept 2022 Toledo refinery fire

Last Sunday night, we tweeted [LINK] "*WOW! Compelling story about the tragic death of two young men. What a great reminder that deaths aren't statistics, they are when real people with families and futures are no longer with us. Thanks @jennystrasburg for writing. #OOTT.*" BP's Toledo fire during turnaround on Sept 20, 2022 was a big oil event and, unfortunately, it was a tragic event with the death of two workers. But, as in all industrial accidents, very little is known about workers who are tragically killed. So, it was great to read the WSJ feature story "*He Feared His Refinery Job. His Brother Stayed to Help. The Explosion Hit at 6:46 P.M. America's aging oil refineries faced pressure to ramp back up quickly after the pandemic. BP's Ohio site spiraled into tragedy." [LINK].* The WSJ story is a great story about brothers, Ben and Max Morrissey, some of their worries about the refinery, their lives and families and the tragic events on Sept 20, 2022. It was a great tribute to the Morrissey brothers. Our Supplemental Documents package includes the WSJ report.

Oil: US net oil imports -2.621 mmb/d WoW as oil exports up +2.234 mmb/d WoW

US net oil imports

The EIA reported US "NET" imports were down -2.621 mmb/d to 0.641 mmb/d for the October 13 week. US imports were down -0.387 mmb/d to 5.942 mmb/d, which is around the bottom for the last few months. But the big decrease in "net" US oil imports was driven by US exports being up +2.234 mmb/d WoW to 5.301 mmb/d. (i) Venezuela weekly imports. We know why the EIA doesn't have any data in the row for Venezuela weekly oil imports but we still don't know if the weekly oil imports are off or if Venezuela is included in the weekly oil imports in the Others number. But we do know that Chevron continues to import >100,000 b/d from Venezuela into the Gulf Coast. Give the EIA credit for putting out weekly oil import estimates, but it's a reminder that we have to be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. ii) The WoW increase in US imports was driven mostly by "Top 10". Top 10 was up +0.016 mmb/d. Some items to note on the country data: (i) Canada was up +0.179 mmb/d to 3.723 mmb/d. (ii) Saudi Arabia was up +0.141 mmb/d to 0.208 mmb/d. (iii) Mexico was down -0.047 mmb/d to 0.609 mmb/d. (iv) Colombia was down -0.139 mmb/d to 0.150 mmb/d. (v) Iraq was down -0.120 mmb/d to 0.127 mmb/d. (vi) Ecuador was flat +0.000 mmb/d at 0.000 mmb/d. (vii) Nigeria was up +0.002 mmb/d to 0.048 mmb/d.

Figure 32: US Weekly Preliminary Imports by Major Country

US Weekly Preliminary Crude Imports By Top 10 Countries (thousand b/d)													
(thousand b/d)	Jul 28/23	Aug 4/23	Aug 11/23	Aug 18/23	Aug 25/23	Sep 1/23	Sep 8/23	Sep 15/23	Sep 22/23	Sep 29/23	Oct 6/23	Oct 13/23	WoW
Canada	3,691	3,466	3,505	3,832	3,405	3,679	3,645	3,287	3,880	3,291	3,544	3,723	179
Saudi Arabia	427	330	285	221	462	567	383	383	383	291	67	208	141
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	760	667	901	780	437	699	1,095	603	844	524	656	609	-47
Colombia	290	296	75	290	295	300	211	287	286	143	289	150	-139
Iraq	235	305	304	283	232	100	248	233	280	306	247	127	-120
Ecuador	175	142	363	192	328	99	0	134	167	125	0	0	0
Nigeria	94	237	307	89	144	220	219	0	3	0	46	48	2
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Top 10	5,672	5,443	5,740	5,687	5,303	5,664	5,801	4,927	5,843	4,680	4,849	4,865	16
Others	996	1,239	1,418	1,246	1,314	1,106	1,781	1,590	1,386	1,535	1,480	1,077	-403
Total US	6,668	6,682	7,158	6,933	6,617	6,770	7,582	6,517	7,229	6,215	6,329	5,942	-387

Source: EIA, SAF

US imports from Saudi are still low at 208,000 b/d

One country to highlight from the weekly US oil import data was Saudi Arabia, which were very low last week at 67,000 b/d and still low this week at 208,000 b/d. The low levels of imports was expected given its about a 40-day transit time, this would reflect Saudi Aramco loadings at the end of August. Here is what we wrote in our Sept 3, 2023 Energy Tidbits memo on the expected low level of Saudi oil imports in Oct. *"Low Saudi oil shipments to US in Aug = lower US oil inventories in Sept/Oct. We remind that the best and quickest way for Saudi Arabia to impact global oil prices is to cut oil shipments to the US. The US is the only area with widely accepted weekly oil inventory changes so if the Saudis ship less to the US, it will show up in the EIA weekly oil inventory data. (i) On Friday morning, we tweeted [LINK] "Reminder quickest way for Saudi to impact #Oil prices is cut exports to US so it shows up in weekly US oil inventory data. Saudi cut crude shipments to US to 81,000 b/d in Aug vs 430,000 b/d in July. Provide support to Sept/early Oct prices. #OOTT @JLeeEnergy @bwingfield." And [LINK] "could have been clearer. low saudi oil shipments in aug = approx 40 days later less saudi oil landing on US = less in EIA weekly oil inventories on sept and early oct = support to sept and early oct prices. #OOTT." (ii) Our tweet included the below Bloomberg table with Bloomberg estimates from tanker loading data that Saudi oil exports to the US was down to only 81,000 b/d in Aug vs 430,000 b/d in July, 350,000 b/d in June and 306,000 b/d in May. When we saw the very low Saudi shipments to the US, we automatically thought that should show up in lower US oil inventories in Sept and early Oct. We still use an average ~40 days voyage from Saudi to the Gulf Coast. That moves around and may be impacted by the active tropical storm/hurricane activity in the Atlantic Ocean that normally causes tankers to take a longer more circuitous route."* Below is the table included in our Sept 3, 2023 Energy Tidbits memo.

Figure 33: Saudi Arabia key crude flows to selected destinations (000s of b/d)

Destination	Aug.	July	June	May
China	1,274	1,522	1,608	1,613
S. Korea	613	973	956	785
India	569	552	659	832
Japan	543	828	828	796
US	81	430	350	306
Egypt	65	645	533	806
Unknown	780	0	0	0
All destinations	5,552	6,266	6,657	6,551

Source: Bloomberg

US oil imports from Saudi in Aug fit the approx. 40-day lag to Saudi loadings

Here is another item from our Sept 3, 2023 Energy Tidbits memo. "*As noted above, we still use an ~40 day assumption for the typical Saudi tanker to get to the US Gulf Coast. The reason we put our second tweet on being clearer was because of a question on our first tweet that asked if there were some timing issues given the latest EIA data was that the US imported 462,000 b/d from Saud in the week ended Aug 25. We tweeted back our table of US weekly oil imports (see earlier in the memo) that notes the other weeks of US oil imports from Saudi were 225,000 b/d for Aug 18 week, 285,000 b/d for Aug 11 week and 330,000 b/d for Aug 4 week, which is roughly 325,000 b/d. And that the Bloomberg table was 306,000 b/d for May and 350,000 b/d for June. So the Aug oil imports from Saudi Arabia basically tracked the Saudi crude oil shipments for May and June. Our reply to the question was [LINK] "Yes, look at last 4 weekly imports that line up well with Saudi shipments assuming 40ish days voyage. July average from Saudi ~325 mbd. Vs May loadings 306 mbd and June loadings 350 mbd."*"

Oil: Venezuela and opposition sign Partial Agreements

Venezuela and opposition sign partial agreements

As expected, Venezuela and the opposition signed agreements that have led to Biden opening up more oil and gas. We recognize that the Biden Administration have used this to relax to some degree their sanctions on Venezuela oil and gas. But we can't help read the Norway release and wonder if the pathway to elections will be as smooth as some think. Norway has been facilitating the talks and ,on Tuesday, Norway had a short announcement [LINK] "*Joint Statement from the Venezuela Dialogue and Negotiation Process. In accordance with the Memorandum of Understanding signed on 13 August 2021 in Mexico City, the Government of the Bolivarian Republic of Venezuela and the Unitary Platform of Venezuela have resumed the Venezuela Dialogue and Negotiation Process on Venezuela. At today's session in Barbados, the parties signed a Partial Agreement on the Promotion of Political Rights and Electoral Guarantees for All, in accordance with the provisions of paragraphs 1 and 2 of the Agenda, referring to "Political Rights for All" and "Electoral Guarantees for All". In addition, they signed a Partial Agreement for the Protection of the Vital Interests of the Nation, with the purpose of preserving the assets of the Republic abroad, as well as defending Venezuelan territorial integrity and national sovereignty. Finally, they thanked the Facilitator for the Kingdom of Norway, the accompanying countries the Kingdom* *of the Netherlands and the Russian Federation, and the host country for this fifth round, the Republic of Barbados."*

Oil: Biden general license opens up Venezuela oil BUT it is only a 6-mth license.

Biden's 6-mth license to reopen VEN oil

We highlight the same caveat that we did when Biden gave Chevron it's license – the license is only for 6-months. The general license is good as it applies to basically all Venezuela oil and gas excluding those involving Russia. But the US Treasure stated the license can be revoked at any time and the license expires on April 18, 2024, although they say their intention is to renew if Maduro keeps his side of the bargain. We encourage people to read the Treasury Dept FAQ as it provides needed color to a short release. It looks to be a good license as it also allows the "*provisions of related goods and services*" and "*the payment of invoices for goods and services related to oil or gas sector operations in Venezuela."* This is important as it allows the oil and gas companies to do what they need to increase production. Our Supplemental Documents package includes the Treasury Dept release and FAQ.

How much more VEN oil depends on how much capital under a 6-mth license

It seemed like common estimate being used is that Venezuela oil production could increase by 200,000 b/d in 2024 with the Biden licenses. (i) The big wildcard for production increases will be how much capital will oil companies spend knowing the license terminates on April 18, 2024 unless the US renews the license. And the other caveat that the US can revoke the license at any time if Maduro doesn't deliver as committed. This general license doesn't have the benefit of the Chevron license that was on a rolling 6-month term unless revoked. (ii) We think the likely scenario is much like Chevron – a go slow scenario without big capex given the short term. Rather the oil companies will pick off low hanging fruit with little capex. But, even so, we think at least a 200,000 b/d increase is reasonable even if the oil companies take a Chevron approach and not implement any big drilling programs. Ie. we think there should be at least 200,000 b/d of low hanging fruit even before any major drilling program. This could include items like pumpjack replacements, bringing in diluent, adding equipment repairs, well workovers, etc.

We have been expecting this Venezuela relief ahead of US 2024 elections

We highlight that the key for the timing of increasing Venezuela oil production will be how much capital is invested to restore and grow Venezuela oil production. Here is what we wrote in our Aug 27, 2023 Energy Tidbits memo with the then reports that US was looking at this lifting of sanctions. Here is what we then wrote *"Oil markets should be prepared for the risk that there is addition oil supply coming from Venezuela in 2024. No one should be surprised to see the Bloomberg Wednesday report "The Biden administration is in talks with Venezuela to explore a temporary lifting of crippling sanctions in exchange for allowing fair elections next year. The preliminary discussions involve senior officials from both nations, including Venezuela's head of congress Jorge Rodríguez, according to people familiar with the process, who asked not to be identified. Washington has floated the idea of sanctions relief to persuade the regime of President Nicolás Maduro to hold a competitive presidential vote in 2024, and free political prisoners. Sanctions have aggravated Venezuela's economic and humanitarian crisis by hindering oil sales, though failed in their original objective of ousting Maduro. If a deal is reached, the US* *would grant a license to lift some or all of Venezuela's sanctions temporarily." And "Should Venezuela take concrete actions toward restoring democracy, leading to free and fair elections, we are prepared to provide corresponding sanctions relief," said Adrienne Watson, a spokeswoman for the White House's National Security Council, in a written response to questions." This fits the thesis (we share) that Biden is looking ahead to the 2024 election and looking for items to help him lower oil prices to flow thru to lower US gasoline prices given he used up his SPR help to lower US gasoline prices for the 2022 mid-terms. It's preliminary and there is no guarantee that it will happen. However, it makes sense that they are having discussions now to have the chance of any deal for 2024. What isn't clear is what is corresponding sanctions relief? The number one issue that Biden has wanted is free and fair elections so we would assume that would lead to lifting oil sanctions. The other interesting part is that the US says "taking concrete actions toward…", which means this could happen before any elections. This is why we highlight this item, the inference is that some sort of preliminary deal could see lifting of sanctions on Venezuela oil in early 2024."*

Remember Chevron has been on a go-slow Venezuela plan for now

The key factor for any potential lifting of oil sanctions on Venezuela will be what does the Biden Administration do with respect to its license to Chevron. It is important to remember that Chevron has been on a go-slow plan in Venezuela. Its licence is for six months but renewable every month so Chevron never has more than six months visibility that it can work here. And that without visibility to longer than six months, it hasn't committed to drill wells and make big infra capex spending. If Biden gives Chevron the green light for a longer period (ie. 2 years or so) it will open up the potential for big production and exports increases for Venezuela. Here is what we wrote in our Dec 25, 2022 Energy Tidbits memo. "*There was an overlooked Argus report on Wed [LINK] "High hurdles to grow Chevron's Venezuela oil output." It was likely overlooked for the title of the report. (i) But, yesterday, we tweeted [LINK] "Tip of the Iceberg! Chevron VEN Nov production is ~90,000 b/d, 1,400 wells, ~65 b/d ave well. Note 👇category 2: ~8,700 wells need ~$0.5 mm/well to become operational. At 65 b/d ave = ~550,000 b/d capacity add without drilling one well. Thx @ArgusMedia Carlos Camacho! #OOTT." (ii) The Argus report reminds of the huge near term upside For Chevron to add production in Venezuela without drilling one well. (iii) Recall that the US only gave a waiver for six months. It s a rolling six-month waiver as the current month ends so it's basically saying to Chevron you have six months from today, but no guarantee for longer. This lack of visibility beyond the six-month window is why Chevron CEO said they aren't planning to do any drilling within six months. Rather working to move the existing oil in inventory and do some well reworking. (iv) Chevron's go-slow plan looks to add >110,000 b/d in the next six months in the Occiente basin. I think most refer to it as the Oriente Basin. Production was 150,000 b/d early this year and is down to 90,000 b/d in Nov. Argus reports "An internal Chevron plan to increase Venezuelan oil production to 200,000 b/d by mid-2023 relies on efforts to rehabilitate some 18,000 wells in various states of disrepair in the country's once-prolific Occidente region". This addition makes sense given the rolling six-month term and what we call the go-slow plan. (v) Adding >110,000 b/d by mid-203 is the Tip of the Iceberg. (vi) We believe Chevron could* *crank up to add another 200,000 b/d by end of 2023, and a further 200,000 b/d or likely a lot more in 2024. We don't think it's unreasonable to see this up at 500,000 b/d to 1,000,000 b/d in two years if Chevron moves from a go-slow to a get-at-it plan. And this is without drilling one new well. This Argus report shows these elements. (vii) There is so much low-hanging fruit to Chevron to grow Venezuela oil production without drilling any wells. It's all existing wells that need some sort of work or power. (viii) Remember, this is apart from the previously reported 1.79 mmb of oil in storage ready for export. (ix) Argus reporting on an internal Chevron plan. Says "Occidente" region was 150,000 b/d earlier in 2022, but is now down to 90,000 b/d in Nov. Says there are 18,000 wells in total. But only 1,400 producing wells, that is ~65 bpd per well on average. Remember, this is in an industry starved for capital, equipment and basic operating efforts. The question is how much would these 1,400 producing wells be producing with proper maintenance, etc? we suspect a lot more than 65 bpd, would guess something over 100 bpd on average. Category 1 is producing wells. ~7% or 1,400 wells producing oil "but many at decline rates". As noted, these are on average producing 65 bpd. They don't say it, but these heavy oil wells are all likely now or soon to be candidates to reworking so we would expect also some upside here to effectively hold production if not increase. Category 2 is the huge low hanging fruit with "About 8,700 wells fall into Category 2, which includes non-operating wells that may just need minor work to become operational. These wells may need around $500, 000 each in new investment to be viable, according to sources familiar with the field." If we use the current producing average of 65 bpd, that is ~550,000 b/d of incremental production capacity for $4.35 billion. That assumes the 65 b/d average. Is it reasonable to assume the average as these are wells that down for some reason? If Chevron is prepared to spend $500,000 per well, it's safe to say these aren't stripper wells that produce a very low amount of production. Rather, we can't believe Chevron would put in this category any wells that aren't capable of a decent level of production and we suspect much more than the average well of 65 b/d. Again, this is not drilling, rather we expect well cleanouts, reworking, etc. If use 100 bpd, that is 870,000 bpd of incremental production capacity. Category 3 "are more than 7,900 wells that need between $5mn-$6mn of investment each to be commercially viable". We are not clear what is required here. Plus upside from wells that don't fit in to category, 1, 2 or 3. Argus notes 'Hundreds of wells in the PdV report are reportedly shut down just for a lack of reliable electricity, which plagues many parts of the country". This is where something like diesel power generation comes into play. The reality is that reliable power is something that is also involved in the above categories. Our Supplemental Documents package includes the Argus report."*

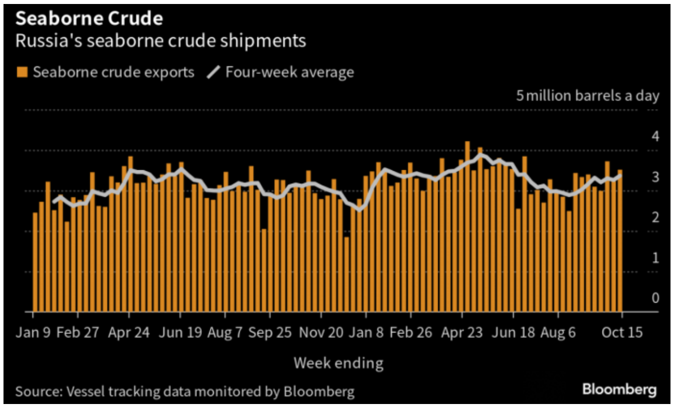
03/22/22. Chevron said could double Venezuela's 800,000 b/d within months
We continue to believe there can be big near-term growth in Venezuela oil production if the Biden licenses had a longer term. We don't see the continued 6-month terms being enough to give Chevron the confidence to drive ahead as it could in Venezuela. But if Chevron ever gets clarity to allocate capital for growth and access to any needed equipment, services and blending product, then there is big near-term upside. Here is what we wrote in our March 27, 2022 Energy Tidbits memo. "*On Tuesday, we tweeted [LINK] on the WSJ report "Chevron, Waiting It Out in Venezuela, Tells U.S. Now Is the Time to Pump Oil Company pledges to make up for fall in Russian exports". [LINK]. Chevron reportedly is telling the administration they can double Venezuela's oil production within months. The WSJ wrote "For months, Biden administration officials snubbed top executives and lobbyists for Chevron Corp. who had pressed officials in Washington to ease sanctions so the company could boost production in Venezuela, where the U.S. has banned such activities since 2019. Then Vladimir Putin invaded Ukraine. Now the Biden administration is listening closely to Chevron, say people familiar with the conversations, which says it can help double Venezuela's 800,000 barrels-a-day production within months. That could replace the loss of roughly 700,000 barrels a day the U.S. was importing from Russia before it attacked Ukraine. And it could help lower gasoline prices—a major concern for the Biden administration in a tough election year." Our Supplemental Documents package includes the WSJ report.*

Oil: Russia crude oil shipments +80,000 b/d vs commit to cut shipments by 300,000 b/d

Russia oil shipments above commitment

A different message this week from Bloomberg's weekly recap of Russia crude oil shipments – the shipments have creeped up and are now over Russia's commitment to reduce shipments by 300,000 b/d. On Tuesday, we tweeted [LINK] "*Russia's Crude Oil Shipments Are Creeping Up Again", reports @JLeeEnergy on @business tanker tracking. Latest 4-wk average to Oct 15 creeped up to 3.36 mmb/d, 80,000 b/d over commitment to cut to 3.28 mmb/d. #OOTT."* Bloomberg reported on Russia crude oil shipments for the week ended Oct 15. Bloomberg reported "*Russia's oil flows are steadily climbing again after months of careful adherence to a pact with Saudi Arabia to keep barrels off the global market. The nation's seaborne crude exports rebounded in the seven days to Oct. 15, boosting four-week average flows to their highest in more than three months. About 3.51 million barrels a day of crude was shipped from Russian ports last week, a rise of about 285,000 barrels a day from the previous seven days, tanker-tracking data monitored by Bloomberg show. That lifted the less volatile four-week average to about 3.36 million barrels a day."* And "*Deputy Prime Minister Alexander Novak said in early August that Moscow would prolong export restrictions at a reduced level of 300,000 barrels a day below their May-June average until the end of the year. Bloomberg calculations indicate that shipments through ports should be running now at about 3.28 million barrels a day. Four-week average shipments have been creeping up relative to that target since the start of September, exceeding it by abut 80,000 barrels a day in the most recent period. That said, compliance has so far been good compared with the country's past performance against OPEC+ targets. Since the export restriction was introduced at the start of August, flows have averaged about 15,000 barrels a day below their required level, assuming pipeline deliveries have remained unchanged."* Our Supplemental Documents package includes the Bloomberg report.

Figure 34: Russia's seaborne crude shipments thru Oct 15 week



Source: Bloomberg

Oil: CNN says US secretly provided long-range missiles Ukraine hit deep into Russia

US long-range missiles to Ukraine

It's worth reminding that it is still unpredictable what happens in the Russia/Ukraine war n the coming weeks before winter starts. This is also because of the CNN report last night just before 7pm MT, when John Berman reported how the US secretly provided Ukraine with long-range missiles that Ukraine used to hit deep into Russia. The reality is that Russia knew this because of some of the targets within Russia that Ukraine has hit. But as of our 7am MT news cut off, we haven't seen a Russia response. Our concern is that this elevates US's military support to another levels and, if so, we have to be at least concerned to see some sort of Putin escalation.

Oil: Israel's Economy Minister warns Iran if Hezbolla opens a northern front

Israel warns Iran

Earlier this morning, we tweeted [LINK] "*Hmmm! Wouldn't have expected Israel Economy Minister to be the one to warn Iran of what happens if Hezbollah gets involved. Know it's a pipe dream but really hope somehow find a peace as an escalating regional conflict would bring no winners. #OOTT.*" We were surprised to see the Daily Mail (UK) report this morning "*Israel vows to cut off 'the head of the snake' and launch a military attack against Iran if Hezbollah joins the war with Hamas. Nir Barkat, Israel's Minister of Economy, gave exclusive Mail on Sunday interview.*" [LINK] We were surprised to see Israel's Minister of Economy out with this serious of a message as we don't recall Netanyahu saying this threat to Iran. It doesn't mean it's not Israel's position, but we would have expected this message from Netanyahu. But the reason we mentioned it is because the big question right now is if Hezbollah will get involved on a northern front. Daily Mail reported "*Israel last night vowed to cut off 'the head of the snake' and launch a military attack against Iran if Tehran-backed terror group Hezbollah joins the war. In an exclusive interview with The Mail on Sunday, Nir Barkat, Israel's Minister of Economy, warned that Iran's Ayatollahs will be 'wiped off the face of the earth' should Hezbollah, their proxy terror group in Lebanon, attack Israel.*" Our Supplemental Documents package includes the Daily Mail report.

Oil: Iran calls on Islamic countries to boycott oil sales to Israel

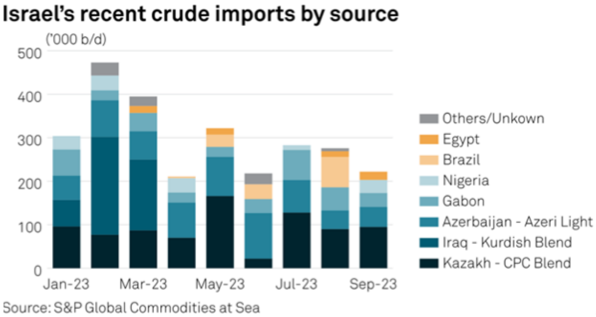
Iran wants oil boycott of Israel

On Wednesday, the Organization of Islamic Cooperation held its meeting in Jeddah. Bloomberg reported *"Iranian Foreign Minister Hossein* Amirabdollahian calls *for "full and immediate boycott" of Israel by Muslim countries, the expulsion of Israeli ambassadors and an oil embargo against Israel, according to statement by ministry on Telegram."* The IOC did not agree with the request, but issued a number of condemnations such as their Oct 18 "T*he Secretary General of the Organization of Islamic Cooperation (OIC), Hussein Ibrahim Taha, has strongly condemned the horrific massacre committed by the Israeli occupation against Al-Ahli Baptist Hospital in the Gaza Strip, which claimed the lives of hundreds of people and injured others. The OIC Secretary-General held the Israeli occupation fully responsible for the consequences of its crimes, terrorist practices and brutal attacks against the Palestinian people, which contradict all human values and constitute a flagrant violation of international humanitarian law. The OIC Secretary-General also reiterated his call on the international community, especially the UN Security Council to urgently intervene to halt the war crimes committed by the Israeli occupation in the Gaza Strip and provide international protection for the Palestinian people."*

Israel oil is almost all from Organization of Islamic Cooperation members

On Wednesday, we tweeted [LINK] "*Geopolitical risk for oil. See 👇@jcgnana tweet, ex Brazil, all other Israel #Oil sources are @OIC_OCI members. OIC 11:45am MT, still blames Israel "strongly condemned the horrific massacre perpetrated by the Israeli occupation by bombing the Baptist Al-Ahli Hospital" #OOTT"* Our concern was that, despite what the US was saying, the OIC was still blaming Israel for the hospital bombing. Our tweet included the below Platts graph that noted Israel's oil imports by country and we noted that all, but Brazil, were members of the OIC. Our tweet also included the OCI's member country listing. Our Supplemental Documents package includes the OCI member country listing.

Figure 35: Israel's recent crude oil imports by source



Source: Platts

The Arab Oil Embargo Oct 19, 1973 was THE defining oil event

Iran trying to get other countries stop selling oil to Israel brought up commentators linking to the concept of the Arab Oil Embargo of 1973/74. Here is what we put in last week's (Oct 15, 2023) Energy Tidbits memo. "*Before the Hamas terrorist attack in Israel, our Oct 1, 2023 Energy Tidbits memo highlighted the anniversary of the*

Yom Kippur War, which was the catalyst for THE defining oil event in history – the Arab Oil Embargo 1973-74. We have highlighted the Arab Oil Embargo since we first started our Energy Tidbits memos 25 yeas ago. It was the most significant game changer to oil market. Here is what we have included in prior Energy Tidbits going back over the years/decades. "We normally include a reminder of the 1973-1974 Arab Oil Embargo because it was "THE" game changer to oil markets. Most weren't born or too young or not in the US to remember the 1973/1974 Arab oil embargo that hammered the US economy and moved oil prices from ~$3 to ~$12. It forced the US and other western countries to have their first real look at oil security. There is no question that having an immediate cut off of oil forced change. Change always happens when something is cut off rather than just becomes more expensive. It was "THE" game changer to the oil and gas industry that led to lasting trends such as the 1976 election of Jimmy Carter (who introduced the first tax credits to kickstart the US shale gas/oil revolution), the creation of Strategic Petroleum Reserves, the International Energy Agency, the push to find oil outside the Middle East in regions, the US govt push to begin to import LNG, etc . It was also a game changer for consumers and led to the move to fuel efficient cars like the Honda Civic (don't forget made in Japan wasn't a good brand in the 60's). The big reason for this was that the Arab Oil Embargo led to an immediate rationing of gasoline in many parts of the US – it was immediate. And to the famous multi block long lineups to buy gasoline. I was in college in St. Louis (Missouri) at the time and the pictures, like the one below, were reality of line ups for gasoline. In. St. Louis, it immediately had restrictions on how many gallons of gasoline on day 1, and by day 2 they had switched to only allowed restricted volumes of gasoline to be purchased on odd days if your license plate ended in odd number and vice versa for even days. Don't forget there was no self-service gas stations so you couldn't fill up in violation of the restrictions. In areas like St. Louis that had poor access to gasoline, it was common to line up for an hour for gasoline with your car in neutral and turned off, and taking turns with your friends to push your car to the gas station. The end of the oil embargo was on March 17, 1974."

Figure 36: Gas Station Line Up During Arab Oil Embargo 1973-74

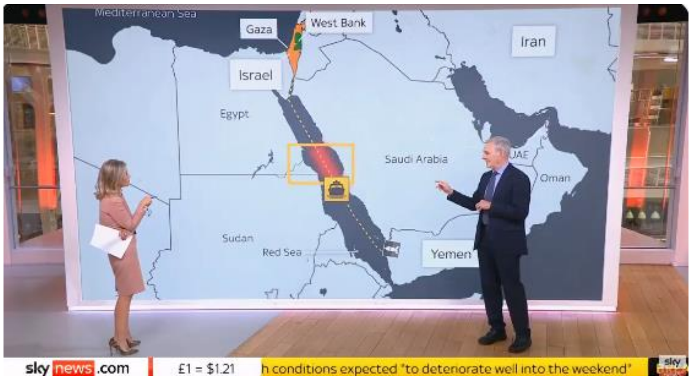
Source: Time

Oil: US intercepts cruise missiles & drones from Yemen in Red Sea

Houthi missiles & drones

Late Thursday afternoon, the breaking news was that US nay intercepted multiple cruise missiles and drones launched from Yemen going north in the Red Sea. We tweeted [LINK] "*Breaking! Add to #Oil geopolitical risk premium. @wolfblitzer reports US navy warship shot down missiles & drones launched from Yemen and potentially headed to Israel. #OOTT."* And then 40 minutes later [LINK] "*Houthi missiles POTENTIALLY at Israel, where if not there? 👇@ErinBurnett missile path up Red Sea. Really hope Houthis haven't decided to reopen KSA attacks after months of relative calm. But huge Red Sea path target would be Aramco oil export terminal, refineries at* Yanbu. #OOTT." The media reports quoted Pentagon's Brigadier General Patrick Ryder ""*We cannot say for certain what these missiles and drones were targeting, but they were launched from Yemen, heading north along the Red Sea, potentially towards targets in Israel.*" There were more details on Friday with the Pentagon confirming they shot down three cruise missiles and eight drones. But it is important to note that we have not seen any speculation that the missiles and drones were potentially shot at targets other than potentially at Israel ie. no officials suggested targets other than Israel.

Figure 37: Sky News are of interception of cruise missiles and drones

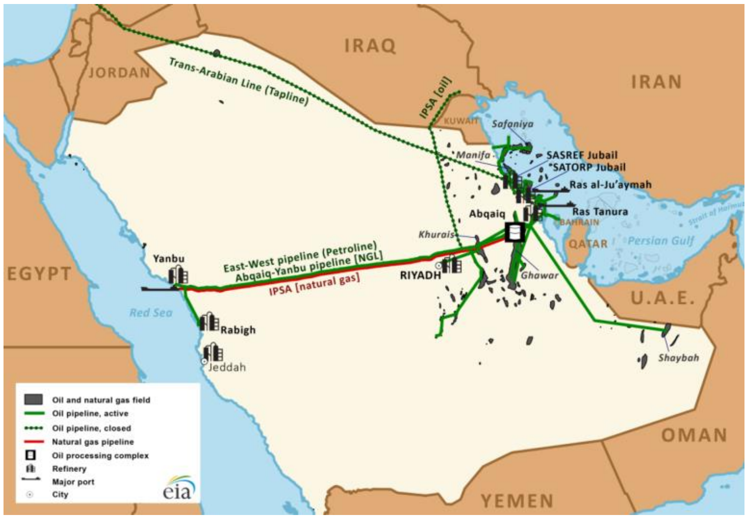


Source: Sky News

No suggestion by US officials that Houthis attack may have been on Saudi

It is important to note that we did not see any US officials hint or suggest the cruise missiles and drones shot from Yemen had potential targets other than Israel. And we also haven't seen them say they were launched for sure at Israel, still just potentially at Israel. In other words, there have been no US officials suggest or hint the cruise missiles and drones were launched at other targets along the Red Sea such as Saudi Aramco key oil and gas infrastructures on the Red Sea at Yanbu. When we watched the Sky News report on the area of interception, we couldn't not immediately see the Sky News area of interception lines up with Jeddah on the south end to Yanbu on the north end of the area of interception. Yanbu was the only other logical target for missiles shot north over the Red Sea. Especially since Houthis have on multiple occasions launched long range missiles at Saudi Aramco oil facilities at Yanbu. That would have broken a long period of no long-range Houthi missiles deep into Saudi Arabia. Yanbu is also Saudi Aramco's major oil export terminal on the Red Sea.

Figure 38: Saudi Arabia major oil and natural gas infrastructure



Source: EIA

03/19/22: Houthis drone attack hits Aramco 430,000 b/d refinery in Yanbu

The reason why we identify Yanbu as a logical Red Sea target if it isn't Israel was because the Houthis have launched long-range missiles at Saudi Aramco oil facilities at Yanbu on at least four occasions – 2017, 2019, 202 and the latest was March 19, 2022. Here is what we wrote in our March 20, 2022 Energy Tidbits memo. *"We recognize that markets generally don't price in any Houthi missile attack on Saudi Aramco but there was a significant drone attack last night – a drone hit a major Aramco refinery at Yanbu, which is Aramco's major Red Sea oil complex. Earlier this morning, we tweeted [LINK] "KSA confirms #Aramco 430,000 b/d YASREF refinery in Yanbu hit by drone & led to temporary reduction in refinery's production, compensated f/ inventory. Reminds just because supply is kept, doesn't mean operations aren't damaged. #Houthis have range to hit any #Oil facility #OOTT." The Saudi Press Agency reported "An official spokesman at the Ministry of Energy said that yesterday, Saturday March 19, 2022, at around 11:30 PM a drone assault was made on the petroleum products distribution terminal in Jizan in the south east of the Kingdom. Two additional drone attacks were made today, Sunday March 20, 2022, at around 5:30 AM, on Yanbu's natural gas plant, and shortly after, on the facilities of Yanbu Aramco Sinopec Refining Company (YASREF). The assault on YASREF facilities has led to a temporary reduction in the refinery's production, which will be compensated for from the inventory. The assaults resulted in no casualties." As everyone knows, for Saudi Arabia to admit there is an impact on a refinery operations has to raise a red flag question on how much damage or impact there will be on the refinery operations. And it is a reminder that there is a big difference between a refinery being able to maintain "supply" vs maintaining its "operations". All refineries have tanks for storing crude oil to be processed at the refinery and for storing finished petroleum products to be shipped/delivered. And in the case of a major* *refinery on the coast, the tankage for finished petroleum products will have large capacity as the products will be typically loaded on tankers. We will have to watch to see if we can get any clues on the actual impact on the refinery operations."*

Oil: Still not looking like Iran gets drawn directly into the Israel/Hamas war

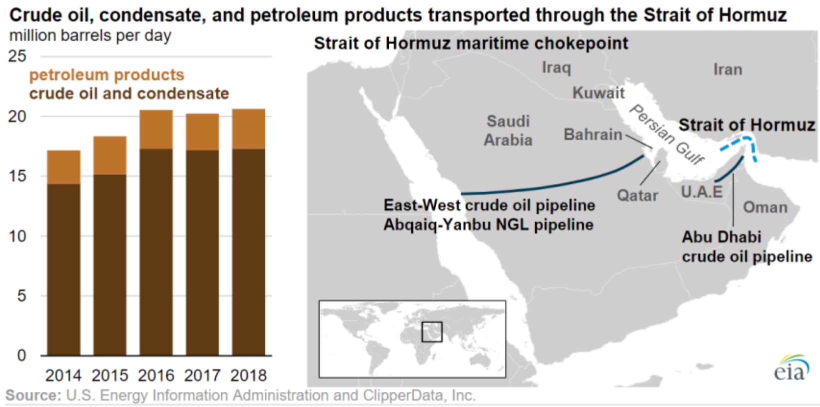
There is a lot of speculation but there is still not an indication Iran will get directly drawan into the Israel/Hamas war. We have to believe that, despite this morning's comments by Israel's Economy Minister noted earlier) that Israel wouldn't want to try to open up a three-front war. There is already the risk or expectation that some sort of stepped up fighting is likely with Hezbollah in the north. And Hezbollah is supposed to be much better armed than Hamas. And we don't think markets are reflecting any probability for Iran to directly enter the war otherwise there would be a big risk premium in oil prices. We agree that no one knows what would play out and for how long. And who would be involved if somehow Iran gets directly involved. But, the potential risk to oil supply is huge if oil, petroleum products and LNG shipments get interrupted/stopped in the Strait of Hormuz, or if there are missile/attacks on Iran and other Persian Gulf oil wells, production facilities or export terminals. This would be brutal. The risk is there that Iran gets drawn in or decides it is obligated to join in.

Will Iran be drawn in?

The Strait of Hormuz is the most important oil/LNG chokepoint

Last Sunday morning, we tweeted [LINK] "*Reminder any military conflict that interrupts tankers via Strait of Hormuz will have a huge impact. It is the most important tanker transit chokepoint for #Oil #PetroleumProducts #LNG tankers. See 👇 @EIAgov Strait of Hormuz, it's 4-yrs old but still makes the point. #OOTT."* The Strait of Hormuz is the most important chokepoint for global oil and LNG shipping. This EIA blog is four years old, but still provides an excellent recap of the significance of the Strait of Hormuz. We recommend adding the June 20, 2019 EIA brief "*The Strait of Hormuz is the world's most important oil transit chokepoint"* to reference libraries. The brief reminds that 17.3 mmb/d of crude oil and condensate flows thru the Strait of Hormuz, but also highlights there is 3.3 mmb/d of petroleum products and over 11 bcf/d of LNG flows thru the Strait. The significance is that the EIA the liquids flows are "*equivalent of about 21% of global petroleum liquids consumption".* This is of total global consumption, not of global oil import/export volumes. The brief also notes "*There are limited options to bypass the Strait of Hormuz. Only Saudi Arabia and the United Arab Emirates have pipelines that can ship crude oil outside the Persian Gulf and have the additional pipeline capacity to circumvent the Strait of Hormuz. At the end of 2018, the total available crude oil pipeline capacity from the two countries combined was estimated at 6.5 million b/d. In that year, 2.7 million b/d of crude oil moved through the pipelines, leaving about 3.8 million b/d of unused capacity that could have bypassed the strait*". Our Supplemental Documents package includes the EIA brief.

Figure 39: Crude oil, Condensate & Petroleum Products Flows Thru Strait of Hormuz



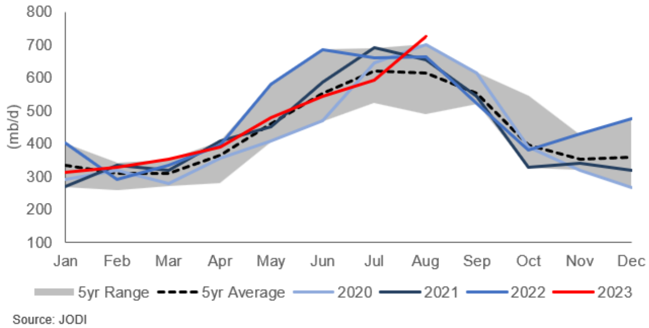
Source: EIA

Oil: Saudi use of oil for electricity up big in August ie., less oil available for export

Saudi oil use for electricity up big in August

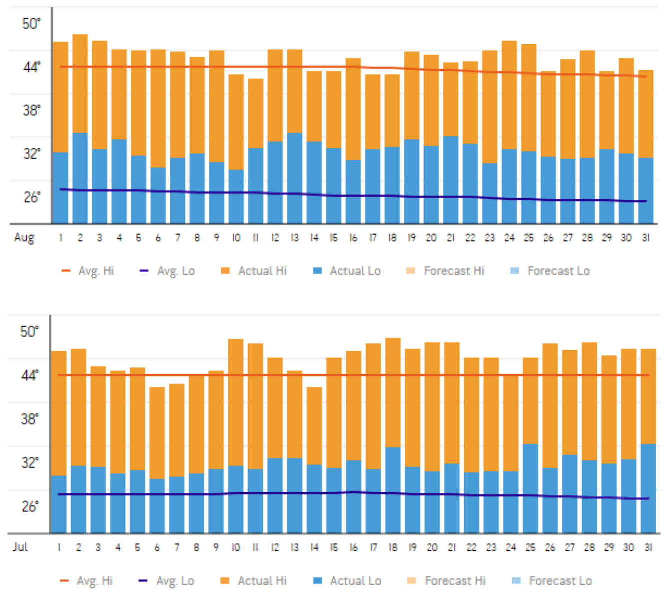
The key seasonal theme for Saudi oil exports is that, all things being equal, Saudi can export more oil in winter months as it uses less oil for electricity and, conversely, it would have less oil for export in summer months as it uses more oil for electricity i.e. air conditioning. Note that a normal peak to trough decline is ~400,000 b/d. If there is less oil used for electricity, then there is more oil for export and vice versa. The JODI data for Saudi Arabia oil supply and demand for August [LINK] was updated on Monday. Saudi used more oil for electricity in August vs July. Both July and Aug were hot, but we expect the increased oil for electricity demand in Aug was due to it being hot even in the night time lows that were over in the low 30C every night ie. more air conditioning/electricity demand to sleep. Oil used for electricity generation in August was 726,000 b/d (vs August 2022 of 664,000 b/d) and July was 592,000 b/d (vs July 2022 of 661,000 b/d). Also note that this year fits the normal trough-to-peak swing of 400,000 b/d. The low was 312,000 b/d in Jan and we just saw 726,000 b/d in Aug. Below are the AccuWeather Temp maps for Riyadh for August and July.

Figure 40: Saudi Arabia Direct Use of Crude Oil for Electricity Generation



Source: JODI, SA

Figure 41: Riyadh Temperature Recaps for August (top) and July (bottom)



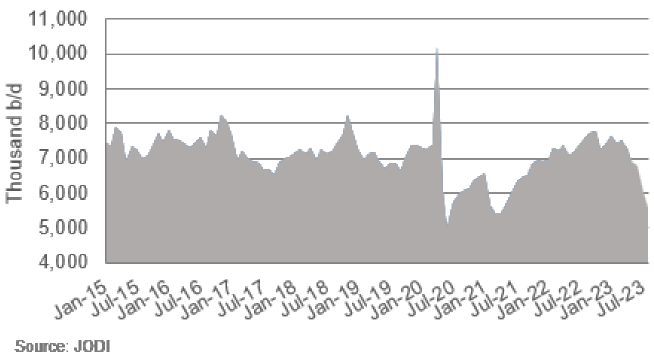
Source: Accuweather

Oil: Saudi oil exports down -428,000 b/d to 5,584 mmb/d in August

The JODI data was that production was down 95,000 b/d MoM to 8.918 mmb/d. Saudi oil exports were down -428,000 b/d MoM to 5.584 mmb/d, which is would be consistent with the slightly lower production and increased use of oil for electricity vs the prior month. The math is off immaterially. Below is our graph of Saudi Arabia monthly oil exports.

Saudi oil exports down -428,000 b/d MoM

Figure 42: Saudi Arabia Oil Exports (mb/d)



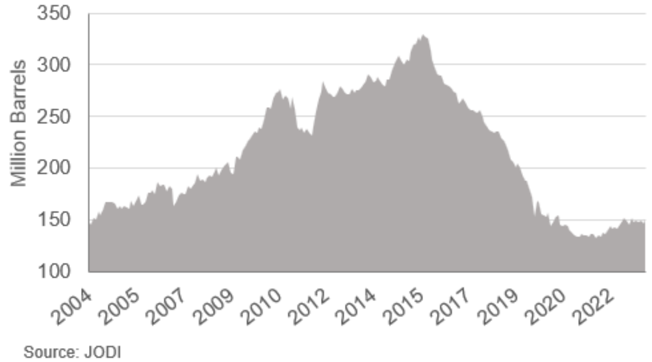
Source: JODI, SAF

Oil: Saudi oil inventories up 4.157 mmb MoM in August

Saudi oil inventory data

It looks like the increasing Saudi imports of Russian fuel oil is the missing piece of the puzzle for the MoM reconciliation of Saudi oil inventories. JODI data shows inventories were +4.157 mmb MoM, or +134,100 b/d MoM. Looking at the basic components, we would have expected a larger build on inventory closer to +228,000 b/d MoM or up +7.068 mmb MoM. There should have been a MoM inventory draw impact from production being -95,000 b/d MoM and crude oil used for electricity +134,000 b/d MoM. But the offsetting impact for a MoM inventory build would be for exports being -428,000 b/d MoM and oil intake into refineries being -29,000 b/d MoM. This would mean a build of 228,000 b/d MoM, but inventories were only up by 134,100 b/d MoM leaving 93,900 b/d unexplained MoM items. There is always some minor unexplained variance, but we believe this is most likely due to increasing oil and fuel oil imports from Russia.

Figure 43: Saudi Arabia Oil Inventories (mb/d)



Source: JODI, SAF

Oil: Iraq warns continued Israel attack will "*jeopardize energy supplies'*

Iraq PM warns on oil supply risk

Earlier this morning, we tweeted [LINK] "*Iraq warns on #Oil supply risk. Iraq PM Al-Sudani warns Israel "... including those pertaining to warfare, affirming "This will impact global security, escalate regional conflict, jeopardize energy supplies, exacerbate economic crises, and invite further conflicts".* Yesterday, the Iraqi News Agency (state media) reported on comments by Iraq PM Al-Sudani. Other than Iran that comes right out and says they want to cut off oil supplies, Iraqi PM was more the type of political speak we would expect to see from a country that deals and needs the west. So it wasn't a direct warning that some middle east oil producers would cut back oil supplied to global markets, but that seemed to be the inference. The INA wrote "*Al-Sudani continued,"The Zionist entity persists in its transgressions against international laws, including those pertaining to warfare, affirming "This will impact global security, escalate regional conflict, jeopardize energy supplies, exacerbate economic crises, and invite further conflicts."* And Al-Sudani also warned how this could hurt instability in the region "*and the world*". The INA wrote "PM Al-Sudani clarified that "*Neglecting the legitimate rights of the Palestinian people only fuels more violence, extremism, and instability in both the region and the world*". Our Supplemental Documents package includes the Iraqi News Agency report.

Oil: Still no visibility to when restart Kurdistan/Iraq oil via Turkey

Kurdistan oil via Turkey

As of our 7am MT news cut off, there doesn't seem like any visibility to when there could be a restart of Kurdistan/Iraq oil via the Turkey pipeline to export from Ceyhan. It's understandable with the Israel/Hamas war, the concerns on it spreading thru more of the Middle East, rocket attacks on US forces in Iraq and Syria, that it was all silent this week on the resumption of Kurdistan/Iraq oil via the pipeline in Turkey. Our view is unchanged, it seems like this could last for longer than expected. And that there are two deals, not one deal to be made. We have highlighted for weeks that Turkey has an ask on what they want, and we have seen no indication that Iraq and Turkey have reached a deal. And then there is still a Iraq/Kurdistan deal that still is unresolved. It seems like it's in Baghdad's hands and our concern remains that the OPEC+ quotas are to run thru Dec 2024 so Iraq can't crank up production. Iraq's oil exports are flat and it's Kurdistan oil that is being shut-in so, under the continued OPEC+ quota, Baghdad isn't being disadvantaged. And it just feels like a bit of a delaying tactic on who says what and what is or isn't happening.

Turkey "*we need to take care of our interests*" before restart of Kurd oil

Here is what we wrote in our Sept 17, 2023 Energy Tidbits memo on Turkey's latest public comments. "*It was interesting to see the reports and tweets on the Turkish energy minister Alparsian Bayraklar comments on Friday. The reports focused on his comments that the pipeline will soon be "technically" ready for operations. Rather, it seemed like his key comments were overlooked, which is why we tweeted [LINK] ""we need to take care of our interests" says Turkey before can restart Iraq/Kurdish #Oil exports. - Iraq owes $950mm re ICC arbitration, net of damages Turkey has to pay Iraq. - Iraq to withdraw 2nd arbitration case. - negotiate a reduced payment. What else does Turkey need? #OOTT." No question Bayraklar said the pipeline will technically ready to resume production soon, but he was also clear that Turkey will need to take of their interests before there is a resumption. And that they want concessions from Iraq before they let the oil exports resume. It seems clearly in Iraq's court if they want to satisfy Turkey's demands. Reuters wrote "Turkey also calculates Iraq owes $950 million as a result of ICC arbitration, net of damages Turkey has to pay Iraq. Ankara will also file in the Paris court for a "set-aside case", Bayraktar said. Iraq opened an enforcement case against Turkey in a U.S. federal court in April, to enforce a $1.5 billion arbitration award. "As two neighbouring countries, we need to find an amicable solution. But from the legality perspective, we need to take care of our interests. Most likely in the future we might face another court challenge. But the pipeline will be operational technically. It is more or less ready and we will start the operation soon", Bayraktar said. Ankara wants Baghdad to withdraw a second arbitration case covering the period from 2018 onward, and negotiate a reduced payment. Turkey also wants Erbil and Baghdad to agree on a common position and negotiate the continuance of the pipeline agreement, which is set to expire in 2026". Our Supplemental Documents package includes the Reuters report."*

Oil: Libya oil production stable at ~1.2 mmb/d

Libya oil stable at 1.2 mmb/d

As of our 7am MT news cut off, the latest NOC production update was posted on Tuesday. The Google Translate of the NOC Oct 17 Facebook post [LINK] was "*Crude oil production reached 1,210,000 barrels per day, and condensate production reached 52,000 barrels per* *day during the past 24 hours*." This is unchanged from the ~1.2 mmb/d levels over the past several months. .

Oil: China scheduled domestic flights expected up huge with international flight ramp

China scheduled domestic flights

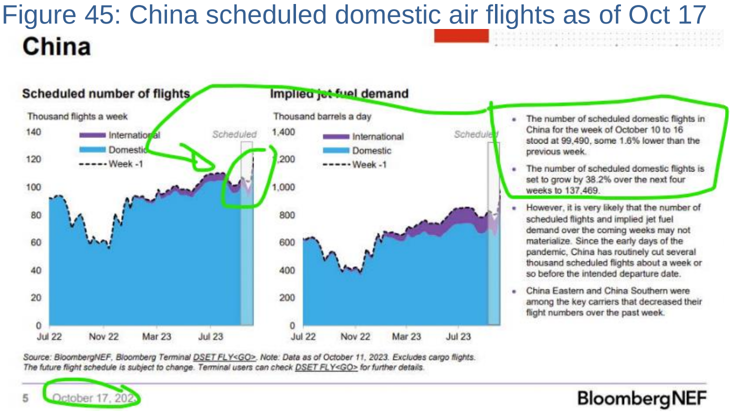
On Tuesday, we tweeted [LINK] "T*oo optimistic #s, but more international flights up = more domestic feeder lights. Scheduled +355/wk increase for next 4-wks in international flights is driver for huge jump in China scheduled domestic flights over next 4 wks to 137,469. Thx @BloombergNEF Claudio Lubis #OOTT."* (i) Early Tuesday morning, BloombergNEF posted its Aviation Indicators Weekly Oct 17. (ii) China scheduled domestic flights -1.6% WoW to 99,490 flights after the end of Golden Week holidays. It's down post holidays, but look to be higher than what was seen after the end of summer holidays and higher than before the summer holidays. So, at least relative to pre-summer, it's a little stronger. But the item to note, even moreso than last week, is the huge increase expected in domestic flights over the next four weeks that is currently scheduled to increase +38.2% to 137,469 flights. This is 30% above the summer peak. BNEF reminds that flights may not materialize and we have to believe that is a crazy high growth in only four weeks. Last week, BloombergNEF reminded that a key reason for the huge growth is that this is linked to an expected big increase in international flights around the end of Oct. There is logic to a big increase in domestic flights as international flights ramp up ie. a need for domestic flights to feed into and out of the international hubs. BloombergNEF says international flights by the major seven airlines is to increase by more than 335 flights a week to around 3,440 by the first week of November. Again, some of these international flights may not materialize. So it seems way too aggressive, but the key is that China scheduled domestic flights should be in a strong growth period. (iii) China scheduled domestic flights were -1.6% WoW to 99,490 flights for the Oct 10-16 week, which followed 101,120 flights for the Oct 3-9 week, 97,009 flights for Sept 26-Oct 2 week and start of Golden Week travel, 95,742 flgiths for the Sept 19-25 week. The decrease in domestic flights was expected with the end of the 12-day travel rush for national holidays. At 99,490 flights, it is higher than seen after the end of summer holidays and higher than seen before the summer holidays. (iv) This week is an even bigger surprise to the upside in BloombergNEF's updated scheduled domestic flights over the next four weeks, who write "*The number of scheduled domestic flights is set to grow by 38.2% over the next four weeks to 137,469"*. That is hugely above the just finished Golden Week rush peak of 101,120 flights, the summer holiday peak of 104,823 in Aug 8-14 week, and the highest by far over the last year or more. BloombergNEF forecasts international flights out of China for the seven major airlines "*Relative to the week starting October 10, the combined number of international flights out of China for seven major airlines – Air China, China Eastern Airlines, China Southern Airlines, Hainan Airlines, Shenzhen Airlines, Sichuan Airlines and Xiamen Airlines – will rise by more than 335 a week to around 3,440 by the first week of November*." These next four week increases seem crazy high, but they point to a strong increase in international flights and therefore, it makes sense that domestic flights go up. The reminder is that opening international flights is likely the next boost for china Domestic flights and can take it much higher. Below is our running WoW changes from the prior BloombergNEF reports and the BloombergNEF charts from Oct 17.

Figure 44: China scheduled domestic flights from BNEF Aviation Indicators Weekly reports

Oct 10-16: -1.6% WoW to 99,490 flights
Oct 3-9: +4.2% WoW to 101,120
Sept 26-Oct 2: +1.3% WoW to 97,009
Sept 19-25: essentially flat WoW to 95,742
Sept 12-18: -2.7% WoW to 95,853 flights
Sept 5-11: -5.0% WoW to 98,469
Aug 29-Sep 4: -1.2% WoW to 103,637
Aug 22-28: +0.2% WoW to 104,932
Aug 15-21: -0.1% WoW to 104,716
Aug 8-14: +0.8% WoW to 104,823
Aug 1-7: -0.4% WoW to 104,000
July 25-31: +0.4% WoW to 104,436
July 18-24: +1.3% WoW to 104,011
July 11-17: +2.8% WoW to 102,709
Jul 4-10: +2.4% WoW to 99,904
Jun 27-Jul 3: +1.9% WoW to 97,572
Jun 20-26: +3.4% WoW to 95,724
Jun 13-19: -0.9% WoW to 92,568
June 6-12: -1.2% WoW to 93,328
May 30-Jun 5: +0.2% WoW to 94,486
May 23-29: -0.1% WoW to 94,321
May 16-22: -2.8% WoW to 94,417
May 9-15: basically flat at 97,049
May 2-8: +2.8% WoW to 97,087
Apr 25-May 1: +0.04% to 94,471
Apr 18-24: +2.1% WoW to 94,138
Apr 11-17: +0.7% WoW to 92,231
Apr 3-10: -4.2% WoW to 91,567
Mar 28-apr 3: +6.8% WoW to 95,624
Mar 21-27: +1.5% WoW to 89,513
Mar 14-20: -0.6% WoW to 88,166
Mar 7-13 week: -0.8% WoW to 88,675
Feb 27-Mar 3 week: -2.6% WoW to 89,430
Feb 21-27 week: +0.0% WoW to 91,828
Feb 14-20 week -0.5% WoW to 91,561
Feb 7-13 week -0.7% WoW to 92,007
Jan 31- Feb 6 week +10.9% WoW
Jan 24-30 week -9.2% WoW to 83,500
Jan 17-23 week +7% WoW to 91,959
Jan 10-16 week +20% WoW to 85,910
Jan 3-9 week: -5.3% WoW to 71,642
Dec 27-Jan 2 week: -5.6% WoW to 75,652

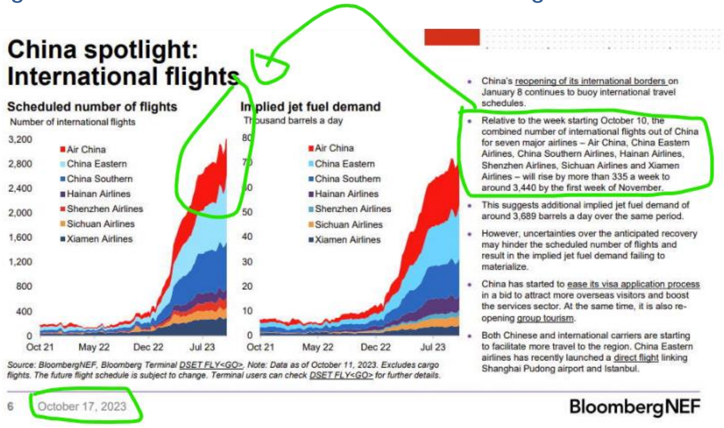
Source: BloombergNEF

Figure 45: China scheduled domestic air flights as of Oct 17



Source: BloombergNEF

Figure 46: China scheduled international air flights as of Oct 17



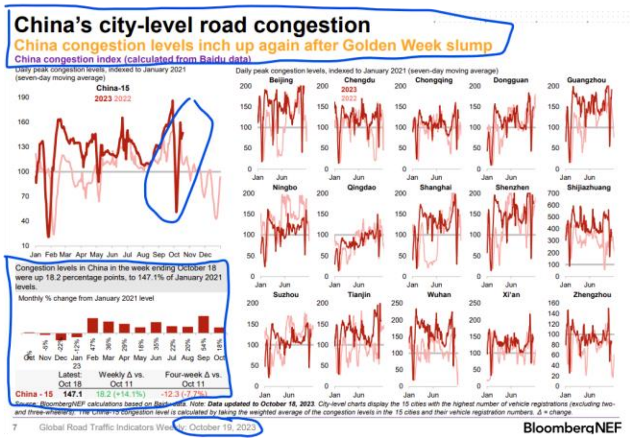
Source: BloombergNEF

Oil: Baidu China city-level road congestion now at 107% of Oct 2021 levels

China city-level traffic congestion

The headlines from the BloombergNEF Global Road Traffic Indicators Oct 19 report were "*China congestion levels inch up again after Golden Week slump*" and "*Traffic levels in October is picking up speed*". (i) On Thursday, we tweeted [LINK] "*Positive China mobility indicator. China Baidu city-level road congestion MTD Oct 18 for Top 15 cities are now 107% of Oct 2021 levels. Up big YoY as still had Covid restrictions in Q4/22. Thx @BloombergNEF. #OOTT*." (ii) For the week ended Oct 18, Baidu data for China city-level road congestion was +14.% WoW to 147.1 of Jan 2021 levels. This follows last week's big +65.1% WoW jump post Golden Week holidays. Prior to the big drop in city-level road congestion during the 12-day holiday rush with the combined holidays for mid-Autumn Festival and National Day holidays, there had been eight consecutive WoW increases in city-level road congestion as summer holiday season ended and people returned to cities and back to work. For the Top 15 Cities in aggregate, for the first 18-days of Oct, they are at 107% of Oct 2021 levels Vs Oct 2022 that was only 90% of Oct 2022 levels. (iii) As noted above, the Baidu data is to the end of Oct 18 and that is effectively two weeks after the 12-day holiday period ended. For the Top 15 cities in aggregate, Oct 2023 is 107% of Oct 2021 levels vs Oct 2022 that was 90% of Oct 2021 levels. Eleven of the top 15 cities were higher YoY and 4 were lower YoY. The 4 lower YoY cities are Dongguan (11 mm population city right among Hong Kong, Shenzhen & Guangzhou). Ningbo (10 mm population, port city ~220 km south of Shanghai), Qingdao (11 mm population, port city across Yellow Sea from South Korea), and Suzhou (13 mm population, right to the west of Shanghai). Compared to Oct 2021, 10 of the top 15 cities are higher and 5 are lower. The 5 lower cities for Oct 2019 are Dongguan, Ningbo, Qingdao, Suzhou and Zhengzhou (13 mm population, inland in central China.)

Figure 47: China city-level road congestion for the week ended Oct 18



Source: BloombergNEF

Figure 48: China city-level road congestion for the week ended Oct 18

China's city-level road congestion

Traffic levels in October is picking up speed

- Table to the left shows monthly congestion levels indexed to the average daily peak congestion levels **in January 2021** for each respective city.
- Table to the right shows monthly congestion levels indexed to the average daily peak congestion levels **in the same month last year** for each respective city.
- Three-color scale conditional formatting is set to red = 0, **white** = 100 and green = 200. It is possible for congestion levels to hit zero.
- Data below are downloadable by hitting {97 <GO>} on the Terminal, or via the attached Excel on the BNEF website.

Indexed to January 2021 = 100

	Sep 22	Oct	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
China-15	141	107	99	81	90	154	145	136	124	140	128	127	158	127
Beijing	171	107	78	59	107	172	164	150	138	151	138	137	179	151
Chengdu	75	104	94	93	83	134	126	131	110	131	109	115	130	118
Chongqing	130	86	31	52	81	125	111	110	98	116	105	88	124	105
Dongguan	140	120	135	92	47	128	130	109	114	127	117	101	143	116
Guangzhou	161	110	56	59	81	169	172	154	137	158	151	149	181	144
Ningbo	186	124	144	112	63	134	125	104	99	117	114	115	124	115
Qingdao	106	96	80	53	45	82	75	80	73	86	96	105	102	87
Shanghai	200	110	166	87	74	147	149	129	124	131	121	123	161	117
Shenzhen	149	140	175	109	79	167	166	138	130	165	143	146	180	143
Shijiazhuang	222	285	107	179	317	507	430	459	383	427	375	440	468	318
Suzhou	155	119	145	87	69	132	121	105	97	114	107	109	130	101
Tianjin	82	138	124	78	97	141	141	136	122	130	110	114	170	147
Wuhan	132	72	83	85	110	191	186	170	150	169	148	136	183	135
Xi'an	143	90	112	101	115	147	128	131	122	136	122	111	144	129
Zhengzhou	95	47	33	66	93	113	96	95	89	94	88	92	100	76

Indexed to same month in 2021 = 100

	Sep 22	Oct	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
China-15	87	90	81	60	90	240	100	93	97	117	109	116	97	107
Beijing	85	83	67	36	107	263	105	91	96	101	104	118	89	118
Chengdu	54	102	96	75	83	239	89	90	92	109	101	107	94	115
Chongqing	89	83	29	43	81	200	103	94	88	104	96	95	85	101
Dongguan	92	97	96	82	47	283	104	75	81	127	98	80	95	94
Guangzhou	98	85	48	45	81	357	130	106	107	186	128	111	111	112
Ningbo	125	97	102	82	63	245	88	79	84	105	95	84	83	90
Qingdao	79	104	79	55	45	163	64	59	63	75	84	108	76	94
Shanghai	125	97	125	67	74	241	102	95	104	111	113	110	101	103
Shenzhen	84	103	113	70	79	287	117	94	100	133	109	99	101	105
Shijiazhuang	56	96	44	44	317	210	104	129	133	153	146	190	117	107
Suzhou	123	108	127	65	69	224	93	87	86	102	111	117	103	91
Tianjin	47	112	68	57	97	202	99	102	98	104	105	106	98	119
Wuhan	77	63	72	63	110	333	114	116	120	131	134	159	107	117
Xi'an	96	83	92	109	115	196	76	75	90	107	113	115	97	118
Zhengzhou	79	51	40	60	93	181	85	88	105	106	76	171	83	82

*Source: BloombergNEF calculations based on Baidu data. Note: Data updated to **October 18, 2023. Values for the latest month are month-to-date.** The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers.*

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Source: BloombergNEF

Oil: China consumer still looks to be holding back

LVMH and L'Oreal in China

On Monday night, Bloomberg TV had the below graph on LVMH shares being hit by a lesser than expected growth in the Chinese consumer. That theme of lesser than expected China consumer was reinforced by L'Oreal on Thursday. (i) LVMH. Last week, LVMH gave its Q3 revenue update [LINK] that noted Asia excluding Japan was still 32% of revenues. LVMH said Q3/23 revenue is +11% YoY, which compares to Q2/23 +34% YoY and Q1/23 +14% YoY. Bloomberg wrote how LVMH shares "tumbled" on the Q3 update and said "*LVMH is considered a bellwether for luxury and shares of rivals including Hermes International and Gucci owner Kering SA, which report later this month, also tumbled on Wednesday. LVMH's sales in Asia, excluding Japan, grew 11% — well short of estimates in the third quarter and a sign that China may be weaker than expected.*" (ii) L'Oreal. On Thursday, L'Oreal provided its sales at 30 September 2023 update [LINK], which were viewed as less than expectations. L'Oreal wrote "*Despite the slower than expected recovery of the beauty market in mainland China and the reset in Asian Travel Retail, L'Oréal kept its double-digit pace1.*" "*North Asia continued to be impacted by the reset in Travel Retail following the change in policy regarding daigous. Despite the muted recovery in mainland China, where the beauty market is broadly stable, L'Oréal kept its pace, growing at +7.7% like-for-like and gaining significant market share across all Divisions; growth was dynamic in all categories. Resumption of tourist activity in Hong Kong SAR drove buoyant momentum.*"

Figure 49: Bloomberg's Watching the China Impact

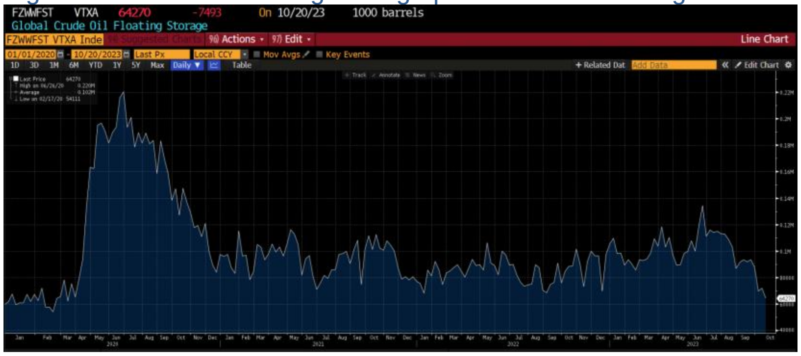
Source: Bloomberg

Vortexa floating storage

Oil: Vortexa crude oil floating storage est 64.27 at Oct 20, -7.49 mmb WoW

We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Oct 14 at 9am MT. (i) Our tweet yesterday [LINK] said *"Oil bulls will really like this*" on the Vortexa data. The headline is a big positive for oil with the lowest floating storage since Covid and, a 3rd consecutive week of very low crude oil floating storage at 64.27 mmb, which followed prior weeks 71.76mmb and 69.55 mmb. There have only been five weeks since Covid with floating storage below 70 mmb. To put in perspective, this is down 70.09 mmb vs the recent high 134.36 mmb on June 23, 2023. (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Oct 20 at 64.27 mmb, which is -7.49 mmb WoW vs basically unchanged Oct 13 of 71.76 mmb. Note Oct 13 was basically unchanged at 71.76 mmb vs the 71.79 mmb originally posted at 9am on Oct 14. (iii) Revisions. There were a mix of +/- revisions. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am MT on Oct 14 are as follows: Oct 13 revised -0.03 mmb. Oct 6 revised -4.25 mmb. Sept 29 revised +3.50 mmb. Sept 22 revised -2.47 mmb. Sept 15 revised +1.35 mmb. Sept 8 revised +1.48 mmb. Sept 1 revised -1.76 mmb. (iv) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 81.65 mmb vs last week's then seven-week average of 85.83 mmb. The decrease is due to the adding of a very low 64.27 mmb in the average. (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 now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (vii) Oct 20 estimate of 64.27 mmb is -24.54 mmb YoY vs Oct 21, 2022 of 88.81 mmb. (viii) Oct 20 estimate of 64.27 mmb is -156.04 mmb vs the Covid peak of 220.31 mmb on June 26, 2020. (ix) Oct 20 estimate of 64.27 mmb is -1.34 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Oct 21, 9am MT Oct 14, and 9am MT Oct 7.

Figure 50: Vortexa Floating Storage posted on Bloomberg Oct 21 at 9am MT



Source: Bloomberg, Vortexa

Figure 51: Vortexa Estimates Posted 9am MT on Oct 21, Oct 14, and Oct 7

Posted Oct 21, 9am MT			Oct 14, 9am MT			Oct 7, 9am MT		
FZWWFST VTXA Inde			FZWWFST VTXA Inde			FZWWFST VTXA Inde		
01/01/2020 - 10/20/2023			01/01/2020 - 10/13/2023			01/01/2020 - 10/06/2023		
	Date	FZWWFST VT... Last Px		Date	FZWWFST VT... Last Px		Date	FZWWFST VT... Last Px
Fr	10/20/2023	64270	Fr	10/13/2023	71792	Fr	10/06/2023	70555
Fr	10/13/2023	71763	Fr	10/06/2023	73801	Fr	09/29/2023	86846
Fr	10/06/2023	69549	Fr	09/29/2023	84139	Fr	09/22/2023	98074
Fr	09/29/2023	87637	Fr	09/22/2023	95814	Fr	09/15/2023	93663
Fr	09/22/2023	93341	Fr	09/15/2023	90352	Fr	09/08/2023	93249
Fr	09/15/2023	91699	Fr	09/08/2023	91791	Fr	09/01/2023	92371
Fr	09/08/2023	93267	Fr	09/01/2023	93116	Fr	08/25/2023	85005
Fr	09/01/2023	91364	Fr	08/25/2023	86815	Fr	08/18/2023	102.389k
Fr	08/25/2023	86721	Fr	08/18/2023	102.337k	Fr	08/11/2023	108.306k
Fr	08/18/2023	103.001k	Fr	08/11/2023	108.099k	Fr	08/04/2023	111.692k
Fr	08/11/2023	108.69k	Fr	08/04/2023	112.16k	Fr	07/28/2023	113.137k

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 the key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the "Other" or rest of world. (i) Please note we have "n/a" for the originally posted Oct 13. We lost access to our Bloomberg terminal last Saturday morning before we could get the regional splits. So by the time we regained access on Monday morning, Vortexa data for Oct 13 had been revised and the regional splits didn't add up to what the Vortexa total posted on Oct 14 9am MT. (ii) As noted above, Oct 13 total was essentially unchanged with a revision of -0.03 mmb. (iii) Total floating storage was -7.49 mmb WoW. The largest WoW changes were Asia -9.28 mmb WoW, Other +3.06 mmb WoW and West Africa -2.01 mmb WoW. (iii) Oct 20 of 64.27 mmb is down a huge 70.09 mmb vs the recent June 23, 2023 peak of 134.36 mmb. The major changes vs the recent June 23 peak are Asia -43.48 mmb and Other -21.31 mmb. (iv) Asia at 31.03 mmb on Oct 20 is the 2nd lowest week since Covid. The only lower week was Nov 11/22 at 30.77 mmb, then Oct 20, and then Dec 16/22 at 31.08 mmb. (v) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday.

Figure 52: Vortexa crude oil floating by region

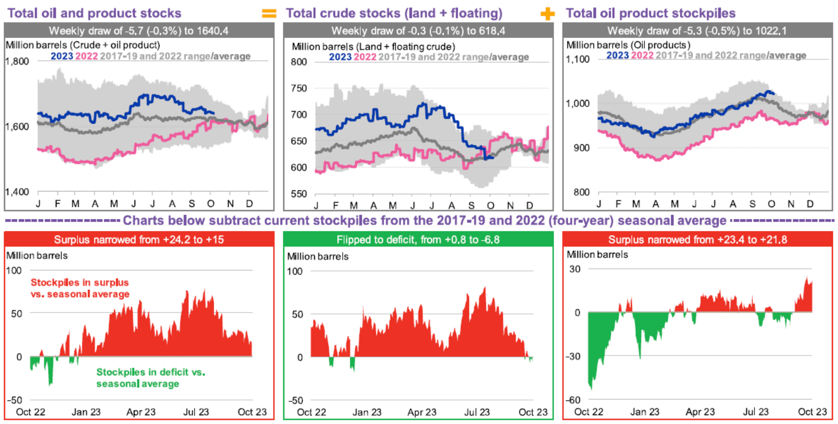
Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Oct 20/23	Oct 13/23	WoW	Oct 13/23	Jun 23/23	Oct 20 vs Jun 23
Asia	31.03	40.31	-9.28	n/a	74.51	-43.48
Europe	2.07	2.76	-0.69	n/a	6.52	-4.45
Middle East	5.69	4.80	0.89	n/a	7.18	-1.49
West Africa	8.38	10.39	-2.01	n/a	7.87	0.51
US Gulf Coast	1.10	0.56	0.54	n/a	0.97	0.13
Other	16.00	12.94	3.06	n/a	37.31	-21.31
Global Total	64.27	71.76	-7.49	n/a	134.36	-70.09
Note: the "n/a" for originally posted Oct 13 as we couldn't get the regional splits until Oct 16 ie. not a true WoW comparison						
Source: Vortexa, Bloomberg						

Source: Bloomberg, Vortexa

Oil: BNEF – global oil and product stocks surplus narrowed WoW to 15.0 mmb

Please note that the BloombergNEF global oil and products stocks estimate are for the week ending Oct 6, which is a week earlier than the EIA US oil inventory data that is for the week ending Oct 13. So, the BloombergNEF global oil stocks data won't include the US crude oil inventory draw of -4.49 mmb for the week ending Oct 13. 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, and other times using a five-year average 2016-2019 + 2022. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products surplus narrowed from 24.2 mmb to 15.0 mmb for the week ending Oct 6. (iii) Total crude inventories (incl. floating) decreased by -0.1% WoW to 618.4 mmb, flipping the +0.8 mmb surplus to a -6.8 mmb deficit. (iv) Land crude oil inventories increased by +1.9% WoW to 544.7 mmb, narrowing the deficit to -32.9 mmb against the five-year average (2016-2019 + 2022). (v) The gas, oil, and middle distillate stocks decreased by -1.3% WoW to 151.6 mmb, with the deficit against the four-year average narrowing to -13.5 mmb. Jet fuel consumption by international departures for the week of October 23 is set to decrease by -31,100 b/d WoW, while consumption by domestic passenger departures is forecast to decrease by -67,400 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 53: Aggregate Global Oil and Product Stockpiles

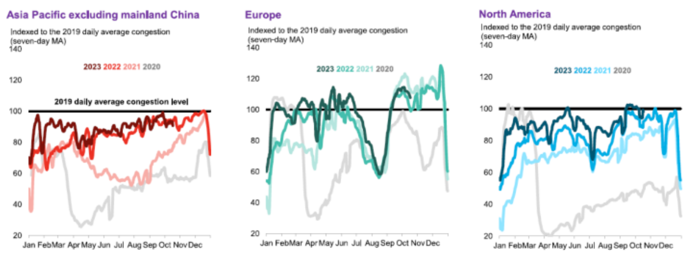


Source: BloombergNEF

Oil: TomTom mobility indicators: NA increases, Asia-Pacific and EU decrease WoW

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly report, which recaps traffic indicators in all the major economic regions of the world i.e. mobility indicators like TomTom. For the week ending Oct 17, North American traffic levels increased by +3.7% WoW, while Asia Pacific (ex-China) and EU traffic levels decreased by -2.5% and -3.8% WoW, respectively. Traffic levels in Europe, North America, and Asia Pacific (ex-China) traffic are +7.8%, -1.9% and -9.3% compared to the 2019 average and are +8.9%, +6.3% and -3.8% YoY, respectively. Traffic in Europe has recovered to pre-summer levels while Asia Pacific (ex-China) is recovering from its expected big drop due to the golden week holidays. It is worth noting that TomTom data on congestion levels now reflects daily average congestion compared to peak congestion previously. The change in methodology took effect from January 19.

Figure 54: Mobility Indicators



	Week-on-week (2019 average = 100)				Year-on-year (same week last year = 100)			
	Latest week: Oct 17	Δ vs. Oct 10	4-week MA	Δ vs. Oct 10	Latest week: Oct 17	Δ vs. Oct 10	4-week MA	Δ vs. Oct 10
Asia Pacific ex-China	90.7	-2.3 (-2.5%)	93.3	-1.5 (-1.5%)	96.2	-3.7 (-3.7%)	99.8	-2.4 (-2.4%)
Europe	107.8	-4.3 (-3.8%)	111.8	-0.5 (-0.5%)	108.9	+4.4 (4.2%)	104.8	+2.0 (+2.0%)
North America	98.1	+3.5 (3.7%)	98.9	-1.0 (-1.0%)	106.3	-0.2 (-0.2%)	106.2	+0.2 (+0.2%)

Source: BloombergNEF calculations based on TomTom data. Note: ***Data updated to October 17, 2023****. Δ = change. MA = moving average.*

Source: BloombergNEF

Oil: Mixed outlooks from US airlines

It looks like, at least for now, the US airlines are as United CEO Kirby sees splitting into haves and have nots. The haves look to be Delta and United and the have nots are the rest in particular the discount airlines. American looks to be left behind bit but has the same key advantage as Delta and United – premium fares. Here are of the highlights we noted from some of the Q3 calls.

xxxx

American: Still "*in the midst of recovery*"

American Airlines held its Q3 call on Thursday. (i) Analysts did not like the reduced guidance and there were target cuts in particular, J.P. Morgan cutting their American price target from $29 to $19. (ii) American's outlook was vague and used words like steady instead of giving any indication relative to how orders are relative to any levels. e. Mgmt said "*We have seen steady improvement in business travel with encouraging signs from both managed and unmanaged corporate customers, strong international demand, and historically high premium revenue both domestically and internationally. Consistent with recent trends, we expect steady demand during the upcoming peak holiday travel season."* (iii) In the Q&A, mgmt. said "*And on top of that, look, we're in the midst of recovery still.*" Ie. they haven't recovered yet.

Delta: Continued strength in bookings across Delta'sglobal network

Delta Airlilnes held their Q3 call last week. (i) Continued positive outlook for their customers. CEO Bastian said "*Turning to our outlook, travel remains a top purchase priority and our core customer base is in a healthy financial position. We continue to see strength in bookings across Delta's global network driven by our consumers. Demand for premium experiences, international travel, and increasing business travel further differentiate the trends that Delta is seeing within the industry."* (ii) Higher costs for airlines. "*We are seeing the structural step up in operating costs amid increasing fuel prices, creating some near-term pressure on industry margins."* (iii) Business travel is coming back. In the Q&A, CEO Bastian said "*Well, we said on the last call that we anticipated post-Labor Day that we'd see volumes of corporate travel pickup, and indeed we're seeing that. I think Glen mentioned a couple of sectors, the tech sector and the financial services sector as areas that we're seeing double digit growth. We have -- I'd say across the board, we're seeing increases. And it's -- corporate travel as it's come back, it comes back and then plateaus, come back and plateaus, and I think you'll see another wave of return. I think a lot of it's being driven by the return-to-office and getting into the new normal work patterns, which many companies are still sorting out for themselves. But it's healthy to see and it's one of the distinguishing factors between us and some of the carriers that are on the other end of the fare spectrum*. (iv) Asia ex China is fully restored. In the Q&A, CEO Bastian said "*And if you look at the Pacific, absent of China, it's been fully restored. So I think we're very pleased with the demand to the Pacific*."

United – No signs of any consumer slowdown

On Wednesday, United Airlines CEO Scott Kirby was on CNBC Squawk Box post the Q3 release (i) Airlines being split into haves and have nots. We tweeted [LINK] "b*ifurcation of air travel into those that can and do raise fares vs those competing in the low pricing model. united ceo says no sign of consumer pull back but they are 1* *of 2 airlines seeing 98% of revenue growth. the other 8 may feel differently. @SquawkCNBC #OOTT."* Kirby also said *"I think there is a seismic shift in the structure of the airline industry*." " (ii) Higher costs for all airlines. We created a transcript of Kirby's comments "T*here are two issues. Higher fuel costs, fuel has gone up a lot" "There is cost pressure everywhere in the industry including at United. There are two things driving that across the entire industry. One is much higher labor costs than any of us expected at the start of the year. And the second one is all of the supply chain challenges, which are affecting everyone. It's aircraft, it's engines, it's spare parts, it's air traffic control. And just for a simple example, this quarter we're taking 15 few aircraft deliveries than we were expecting. When you're expecting those aircraft, you hire employees, we've got these expenses associated with these airplanes that aren't producing at capacity. So, as long as these supply chain challenges exist, it just drives continued cost pressure, at all airlines."* (iii) United is able to pass on higher costs. Kirby said "*labor costs are higher across the board in the industry. But we're able to, at United, we're mostly able to, we have been able to pass that on to the consumer*". (iv) Note seeing any sign of consumer weakness. Kirby said ""*No, at United, we're not. Demand is strong and steady second quarter, third quarter, fourth quarter. Again, it's a little different at United, two airlines that are 98% of the revenue growth. If you're one of the eight airlines that are trying to share 2% of the revenue growth, it may feel a little different. But at United, it's strong and steady*."

Oil & Natural Gas: Schlumberger, IOCs/NOCs are accelerating upstream spending

Majors accelerating upstream spending

There has been a dramatic shift in IOCs/NOCs spending and focus in the last year, which we believe indicates they have a more bullish view that oil and gas will be needed for longer than expected. One of the key reasons is that they are seeing the energy transition is nowhere near plans and aspirations. And the best data to support this is their increased spending in long-cycle projects including offshore. The big theme in the recent Q2 reporting for service companies was how they are seeing longevity to a shift to offshore drilling and long cycle projects by the global oil and gas companies. On Friday morning, Schlumberger was the first of the big oilfield service companies to report Q3 and they continued to be very bullish on this theme. Schlumberger's business is probably over ¾ international so hs the bet window on what is going on around the world, in particular in offshore drilling. The interesting reminder was how they highlighted upstream spending is accelerating. We tweeted [LINK] "*NOCs/IOCs see #Oil #NatGas here to stay. $SLB "multiyear growth cycle that has shifted to the international & offshore markets...upstream spending is accelerating as operators continue to invest in long-cycle developments .. breadth, durability, & resilience of this cycle". #OOTT."* Mgmt's comments on the Q3 call were essentially the same as in the Q3 release. Baker Hughes wrote *"Looking ahead, we believe the market fundamentals remain very compelling for our business. The oil and gas industry continues to benefit from a multiyear growth cycle that has shifted to the international and offshore markets where we are the clear leader. Concurrently, upstream spending is accelerating as operators continue to invest in long-cycle developments, production capacity expansions, exploration and appraisal, and enhanced gas production. The long-term nature of these global investments underscores the breadth, durability, and resilience of this cycle, and we expect these market dynamics to continue to drive profitable growth in the years ahead."*

Oil & Natural Gas: Declines in Alberta and BC wildfires

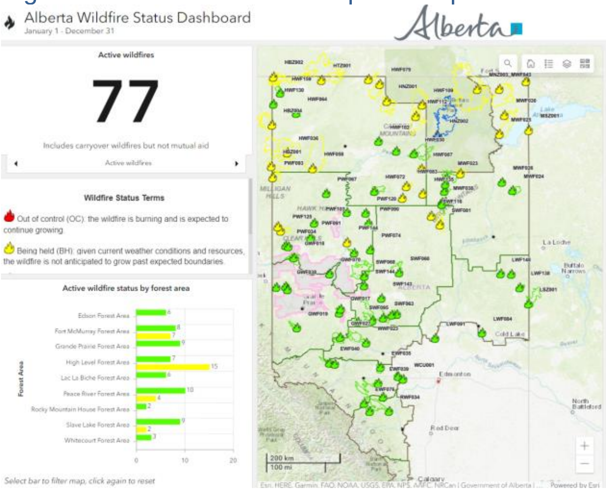
BC and Alberta Wildfires

There were small declines in both Alberta and BC wildfires. As of 7pm MT last night, there were 77 Alberta wildfires and zero Out of Control, which compares to a week ago at 83 Albera wildfires and, for the first time in months, zero Out of Control. In BC, it was another week of big decline in Out of Control wildfires. As of 7pm MT last night, there were 287 wildfires including 39 Out of control, which compares to a week ago at 321 wildfires including 43 Out of Control.

Links to Alberta and BC wildfire status maps

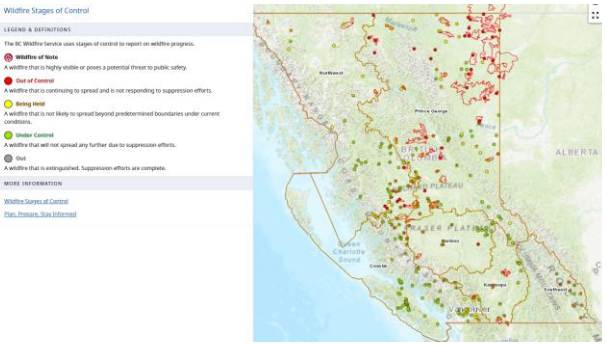
We recommend bookmarking the starting points for wildfire information are the Alberta Wildfire Status interactive map [LINK] and the BC Active Wildfires interactive map [LINK]. Please note these links have changed over the past few years. Both maps are interactive and open up for the information on any particular fire. Here are the wildfire maps as of 7pm MT last night.

Figure 55: Alberta wildfire map as of 7pm MT on Oct 21



Source: Alberta Wildfire Status Dashboard

Figure 56: BC wildfire map as of 7pm MT on Oct 21



Source: BC Wildfire Service

Energy Transition: Siemens CEO on what the transition means/needs

Siemens CEO

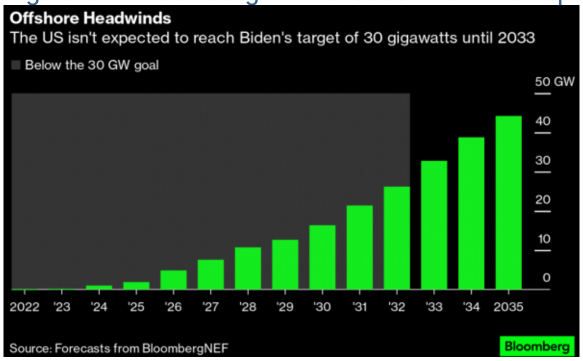
Yesterday, we tweeted [LINK] *"#EnergyTransition reality from @Siemens CEO. "intermittent energy which is coming in ... a market which is more driven by source than by the demand" "it costs a lot of money" "you cannot cut #Oil and #NatGas from now till then" Thx @dan_murphy. #OOTT".* There were a number of good reminders in the short Siemens CEO Roland Busch being interviewed by CNBC's Dan Murphy. (i) Energy Transition requires upfront capital. The challenge the western leaders are now facing is that they are now at the point where they have to admit to their citizens that the energy transition will cost way more than expected and need way more money upfront or else they risk falling further behind. Busch didn't say it like that but his comments lead to the same point. Busch said "*On a high level view, we are moving our energy system from an OPEX based system to a CAPEX based system. What I am saying here is the following. You currently can build a very cheap power plant for gas for example but then you have to spend money for gas over the lifetime. This is what I call OPEX based. When you install renewables like solar or wind, you spend a lot of money at the beginning but then service and operational costs are basically zero. But that means you have to invest money now and enjoy the benefits later once the assets are written off*." And "*We are in the midst of this transition, it costs a lot of money*." (ii) Moving away from an energy system that has energy available when you need/want it to an energy system that people will have to change when they need/want it. So the end of 24/7 available, reliable, affordable energy. Busch said "*At the same time, it is obviously you have intermittent energy which is coming in so therefore you have to talk about a market which is more driven by the source than by the demand."* (iii) Need oil and gas during the transition. Busch said "*At the same time, and this is also the message this morning, you cannot cut oil and gas from now till then. So it needs a transition, a fair transition, and a timely one.*" Our Supplemental Documents package includes the transcript we made of Busch's comments.

Energy Transition: BNEF Biden's wind generation "*30-gigawatt target is a pipe dream*"

BNEF slashes its US wind capacity forecast

We believe forecasts like the Bloomberg NEF are a stark reminder that politicians are facing a tough reality – if they want to keep moving on the energy transition, they have to step up now and tell their citizens it's going to cost a lot more money and that money has to be spent now. Because if they don't step up and give that tough message, they will keep dawdling and put the transition further and further behind. On Wednesday, we tweeted [LINK] *"#NatGas will be needed for longer. @BloombergNEF slashed wind capacity fcast to 16.4 GW by 2030, "[Biden] 30-GW target is a pipe dream". Here's why: Approved offshore wind projects has 9 GW trying to renegotiate plus 3 GW cancelled. Thx @willwwade @jendlouhyhc @atinjai #OOTT."* (i) No one should be surprised to see BloombergNEF made a big reduction in their forecast for US wind capacity as, for the past few months, they have been highlighting how approved NE US offshore wind projects are being cancelled and delayed due to insufficient economic returns to developers. Bloomberg wrote "*In June, the forecast was for 23.1 gigawatts in 2030. But then, the industry suffered another blow last week after New York forcefully rejected developers' pleas for higher rates, raising serious questions about some of their projects. That prompted Atin Jain, senior wind analyst at BNEF, to slash his estimate by 29% on Wednesday. The researcher now expects total US capacity to reach just 16.4 gigawatts by the end of the decade — a little more than half of Biden's target. "The 30-gigawatt target is a pipe dream," Jain said."* (ii) 9 GW of approved projects facing delays/uncertain timelines. Bloomberg wrote "*Still, as the price of construction climbs, developers are rapidly backpedaling on their plans or asking to re-negotiate their deals. Equinor ASA, BP Plc, Orsted A/S and Eversource Energy were the most recent developers to hear "no." The companies had asked New York state to let them raise their rates, a request that the New York Public Service Commission unanimously denied on Oct. 12, leaving the developers at a loss for how best to move forward. "These projects must be financially sustainable to proceed," Molly Morris, president of Equinor Renewables Americas, said following the ruling, referring to its Empire and Beacon wind farms being developed with BP. David Hardy, chief executive officer for the Americas at Orsted, said the viability of the Sunrise project it's co-developing with Eversource east of Long Island was "extremely challenged" due to the state's decision. In total, developers building about 9 gigawatts of capacity for five East Coast states have sought to renegotiate deals."* (iii) 3 GW of approved projects cancelled. Bloomberg wrote "*That's in addition to the more than 3 gigawatts of power contracts that have been outright canceled in recent months — at great cost. In July, Avangrid Inc. agreed to pay around $48 million in fines to get out of its deal to supply power to three utilities from its Commonwealth project off the coast of Massachusetts. The next month, a Shell Plc unit and its joint-venture partners agreed to pay more than $60 million to exit their own deals. In October, Avangrid agreed to pay $16 million to terminate contracts for its Park City project near Connecticut."* Our Supplemental Documents includes the Bloomberg report.

Figure 57: BloombergNEF forecast US wind capacity

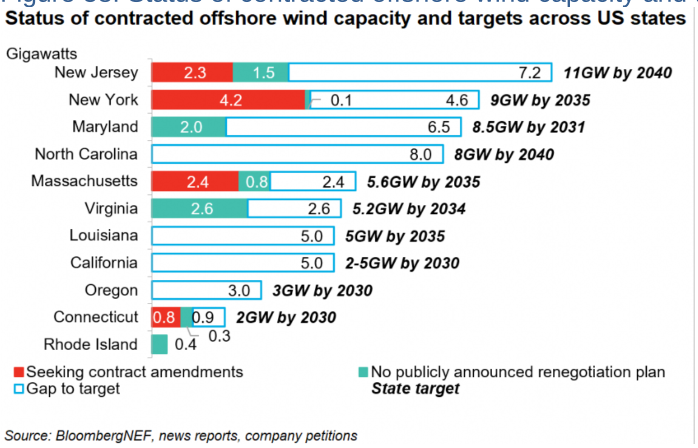


Source: BloombergNEF

07/10/23: BNEF highlighted over ½ of US offshore wind projects face delays

We said no one should be surprised by BloombergNEF slashing its forecast for US wind capacity because they have been highlighting the problems with NE US offshore wind since July. Here is what we wrote in our July 16, 2023 Energy Tidbits memo. "*Wind generation and the big offshore wind projects are key to the Energy Transition. And no question, over the past few years there have been a number of major offshore wind projects announced including offshore the US east coast. But it isn't enough to have a project announced, the project has to get done and done on time. There have been some offshore wind project cancellations and project developers leaving projects. And there are also many offshore projects in delay limbo as the project developers seek to renegotiate the deals to get satisfactory returns due* *to big cost increases. These projects are in limbo. We have been reporting on this lack of returns to OEMs and project developers. In the, BloombergNEF estimates that more than half of all offshore wind projects are now delayed and there could be more projects delays on top of that. On Monday, we tweeted [LINK] "Over 1/2 of US #OffshoreWind face delays as "developers such as Avangrid, Shell-Ocean Winds, BP-Equinor & Orsted-Eversource have cited deteriorating economics due to rising costs in trying to renegotiate or cancel contracts" reports @atinjai. #NatGas power will be needed for longer. #OOTT." Our tweet included the below BloombergNEF graph and wrote "New York state has a target to add 9 gigawatts of cumulative offshore wind capacity by 2035 and contracted 4.36GW of projects in its two concluded solicitations. But renegotiation attempts mean that 95% of the contracted capacity is at risk of delays. Neighboring Massachusetts sees 75% of contracted capacities being delayed by renegotiation attempts. In Connecticut it's 73%. New Jersey, which is targeting of 11GW, risks delays to 60% of its contracted pipeline. About 9.7GW of US offshore wind projects, or just over half of the 17.8GW total contracted, face delays, and more projects may soon face the same fate. Developers such as Avangrid, Shell-Ocean Winds, BP-Equinor and Orsted-Eversource have cited deteriorating economics due to rising costs in trying to renegotiate or cancel contracts." Our Supplemental Documents package includes the BloombergNEF report."*

Figure 58: Status of contracted offshore wind capacity and targets across US states



Source: BloombergNEF

RWE CEO says "*worst-case scenario for energy transition*" as "*offshore wind projects in EU & US have been stopped*"

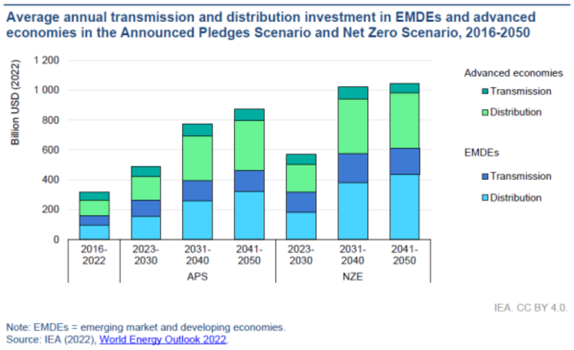
We have been highlighting that our concern that key success factors for the Energy Transition are not anywhere near the aspirations/plans for Net Zero and one of these was offshore wind. This was recently reinforced by RWE CEO Krebber. Here is what we wrote in our Sept 3, 2023 Energy Tidbits memo on the RWE CEO LInkedin post. Here is what we wrote "*We have to wonder if governments are hearing wind developers and OEMs insisting the economics are working for wind generation, in* *particular offshore wind, or if they are just ignoring it and hoping for the best. Sooner or later, governments will have to make changes or accept what is clearly happening – wind projects aren't proceeding as approved and planned. There is a pause in wind, in particular offshore wind, in EU and US in 2023 and no visibility to unlock that pause. We have been highlighting this issue and clearly wind developers and OEMs don't see any changes coming to get a restart. (i) On Wednesday, we tweeted [LINK] "WOW! Must read 👇RWE CEO post "... #OffshoreWind projects in EU & US have been stopped, mainly citing cost increases" "worst case scenario for the #EnergyTransition when large projects that have already been awarded are not realised as planned". #NatGas needed for longer. #OOTT." (ii) Our tweet included a Linkedin post by RWE CEO Markus Krebber last week "is there a perfect storm brewing in the offshore wind industry?" Krebber had a very clear message that the offshore wind industry is stuck in 2023 and it needs a lot from governments if they want offshore wind to get unstuck. And Krebber warned that offshore wind being stuck is the "worst-case scenario" for the energy transition. Krebber said "In recent weeks, for the first time, offshore wind projects in Europe and the U.S. have been stopped, mainly citing cost increases. In other news, turbine manufacturers were once again in the red in their latest quarterly reports, with losses running into billions. This is not good news, it's in fact the worst-case scenario for the energy transition when large projects that have already been awarded are not realised as planned. Happening at a time when the entire offshore industry has to scale up to achieve expansion targets, this quickly calls into question the achievement of climate protection goals." Krebber then goes thru five actions and says clearly "This development must serve as a wake-up call for policymakers to adapt the regulatory framework to market realities." The Krebber Linkedin post is short and worth a read. Our Supplemental Documents package includes the Krebber Linkedin post."*

IEA's electricity report

Energy Transition: IEA's Electricity Grids and Secure Energy Transitions

We recommend adding the IEA's Electricity Grids and Secure Energy Transitions report to reference library. It's a big read so takes a lot of time and we have only gone thru it once, but there is a lot of good data and food for thought. We will incorporate the detail over the coming memos but a few general takeaways. (i) This report should be an eye opener (we suspect it was meant to be given COP28) for western governments on how much more the energy transition will cost them directly and that the emerging countries will need more western capital if they west wants them the to commit to Net Zero. We expect that the west delivering more money, not just what they had previously promised, to be a big theme at COP28. (ii) The IEA got the right headlines to attract attention "*Reaching national goals also means adding or refurbishing a total of over 80 million kilometres of grids by 2040, the equivalent of the entire existing global grid*." We asked investors and energy people who had not read the report what they thought the IEA meant by this and most seemed to think the IEA was referring to electricity transmission. No question, transmission is a big part but refurbishing a grid is much more than transmission. (iii) One of our concerns is that the refurbishing the grid was one of the key items that people weren't told about when western countries all signed onto Net Zero – moving to a clean energy world doesn't really replace the current energy system, it's an add on to the most part. (iv) This report seems pretty clear – the future is all about solar and wind generation to lead the world to Net Zero. And there is no question that adding wind and solar reduces fossil fuel consumption for basic power generation when the sun shines and the wind blows. But, as noted earlier in the memo on the Siemens CEO comments, people have to be prepared for an electricity system that isn't there when it is wanted/needed but one that is there when the source provides it so will require changes to when electricity is wanted/needed. That was never part of the sales pitch but it is the reality people will have to expect. And a reminder that it won't be a choice given smart home electricity systems that can restrict power at times of the day. (v) The headlines seen in the west is how new transmission lines are needed to bring renewable power from areas like the desert to demand centers. But remember for western countries, that is not where the capital is required. Rather the IEA capital forecast gets back to what wasn't said, adding renewable is an add-on to grids to accommodate interruptible wind and solar. The IEA forecast shows how "*Most growth in grid spending is occurring in advanced economies and is focused on grid upgrade and replacement rather than expansion.*" And this shows up in the IEA forecast of capital for distribution vs transmission. (vi) There is much, much more in the IEA report. Our Supplemental Documents package includes IEA report executive summary.

Figure 59: Average annual transmission and distribution investment



Source: IEA

Energy Transition: WSJ, EV buyers have median household income of $186,000

EV buyer median income.

We are big believers that EVs will continue to show strong new car growth rates. But our concern with forecasts is unchanged in that we think it way overly optimistic to assume the very high initial growth rates in EV sales in higher income households continue at the same growth rates as EVs have to move to penetrate normal and lower income households. New cars are increasingly more expensive, whether they be ICE vehicles or EVs. For years we have highlighted how buyer demographics for EVs has been higher income households. Earlier this morning, we tweeted [LINK] "*Challenge for #EV forecasts - will huge rate of growth in EV sales to higher income continue in middle/lower income. Median family household income. New ICE car buyers = $122k New EV buyers = $186k @timhiggins reporting on Strategic Vision's survey #OOTT.*" Yesterday, the WSJ report *"Electric Cars Were Already Having Issues. Then Things Got Political. The 2024 race for the White House reignites debate over EVs."* [LINK] included the following on EV buyer demographics. WSJ wrote "*As new cars and trucks become more costly, the practical effect on buyers shows up in Strategic Vision's survey: The median family household income of new-car buyers has risen to $122,000. That is a significant increase from around $90,000, where it had been at for a couple of decades until just recently. EV buyers are even better off, with a median* *household income of $186,000."* We could not find the referenced Strategic Vision Inc. survey.

Energy Transition: SolarEdge leads a bad day in a bad year for many solar stocks

Bad day for most solar stocks

Early Friday morning, we tweeted [LINK] "*Ouch! #Solar stocks hit by $SEDG warning. "experienced substantial unexpected cancellations and pushouts" "installation rates for the 3Q were much slower at the end of the summer & in Sept where traditionally there is a rise in installation rates" #OOTT #NatGas @SquawkCNBC."* One of the CNBC Squawk Box opening stores was how SolarEdge Technologies warned on substantial unexpected cancellations and installations much slower than expected was driving down solar stocks in the pre-market. SEDG reported *"During the second part of the third quarter of 2023, we experienced substantial unexpected cancellations and pushouts of existing backlog from our European distributors," said Zvi Lando, Chief Executive Officer of SolarEdge. "We attribute these cancellations and pushouts to higher than expected inventory in the channels and slower than expected installation rates. In particular, installation rates for the third quarter were much slower at the end of the summer and in September where traditionally there is a rise in installation rates."* Our tweet included the Squawk Box graphic of the solar stocks down in the pre-market. Here is how the solar stocks highlighted by CNBC finished on Friday. SolarEdge -27.3% to $82.90 on Friday, and now down 70.7% in 2023. Sunrun -6.9% to $9.85 on Friday, and now down 59.0% in 2023. SunPower down 8.6% to $5.09 on Friday, and now down 52.3% in 2023. Enphase Energy down 14.8% to $98.89 on Friday, and now down 62.7% in 2023. First Solar +0.8% to $150.77 on Friday, and now up +0.7% in 2023. Our Supplemental Documents package includes the SolarEdge release.

Capital Markets: #1 worry for Americans is cost of living

Cost of living is #1 worry

We put this item in Capital Markets because the US elections are now just over 12 months away and market players have to be aware there will be an increasing number of Biden actions as he works to improve polls for re-election. (i) Cost of living vs inflation. Americans and Canadians have been hearing their leaders trumpet how inflation is coming down. That looks to be the case. However, there was a good reminder from CNBC's Steve Liesman that it's not just inflation, it's the cost of living. We tweeted [LINK] "*Leaders better not take a victory lap too early on #inflation coming down. "really what the public is clamoring about, what they're upset about is the price level and the Fed is addressing the rate of price change" says @steveliesman @SquawkCNBC ie. #CostofLiving is still high!"* (ii) Cost of living. We were referring to CNBC reporting, on Friday morning, the results of its All-America Economics Survey, which included the ranking of the worries of Americans. The survey noted the % of respondents who were worried about a particular issue. The #1 worry for Americans by a far margin was Cost of Living, which worried 32% of Americans that was followed by Immigration/border security 18%, and a list of items that individually had less than a 105 worry including deficit, healthcare, foreign policy + national security, crime, abortion and unemployment. And they said some of these are down to 4-5%. (iii) Venezuela oil sanctions being relaxed and lower gasoline prices. We have been highlighting that the key benefit of Biden relaxing sanctions on Venezuela oil is to get more Venezuela oil into the PADD 3 Gulf Coast with a view to medium sour crude prices into the Gulf Coast refineries and hopefully and lower gasoline prices and impact cost of living for Americans in the run up to the 2024 election. We tweeted [LINK] "*Why Biden hopes more Venezuela #Oil = lower gasoline price in 2024. #CNBC survey issues worry Americans: Cost of living 34%. immigration/border* *security 18%, then issues that had <10% ie. deficit, healthcare, national security, crime, abortion, unemployment. #OOTT @steveliesman."*

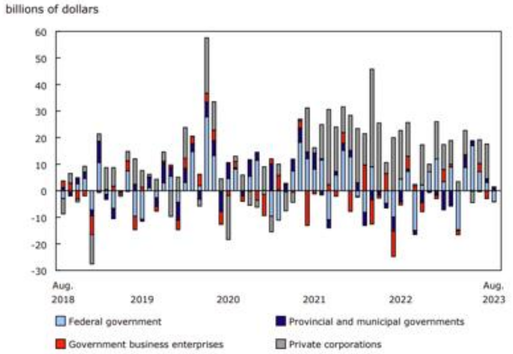
Climate change didn't even make the highlghted list of worries for Americans
CNBC didn't include the full list of worries and the % of Americans worried about any particular issue. But, on Friday, we tweeted [LINK] "*Was a little surprised that #ClimateChange didn't make this list of shown issues that worry Americans even if just in the group that had <10% of Americans worried about. #OOTT*." We were a little surprised that in the list of others that appeared to have at least 4-5% of Americans worried didn't include climate change. That is very surprising given the continuous messaging from western leaders and media on the dangers of climate change.

Capital Markets: Canadian investors invest $14.9bn in foreign securities

International transactions in Cdn securities

Statistics Canada released Canada's international transactions in securities for August 2023 on October 17 [LINK]. Foreign investors divested -$8.5bn of Canadian securities in August with the largest sell-offs occurring in equities. Non-residents divested a net total of -$2.7bn from Canadian bonds in August, led by the retirement of federal government bonds totalling -$6.7bn. The overall foreign investment activity was moderated by a net investment in federal government paper of $4.3bn. Non-resident investors also divested -$5.8bn of Canadian equity securities from their portfolios, with divestitures widespread across all industries except transportation and banking. Total foreign equity divestments in 2023 up until August is now -`$40.5bn. Canadian investors increased their investment by $14.9bn of foreign securities in August with $4.3bn in foreign debt investments. This is the largest total investment since April 2022. Investment activity was led by investments in US shares and bonds. The report stated, *"Foreign investors reduced their exposure to Canadian securities by $8.5 billion in August 2023 after four months of strong investment. The activity in August was attributable to divestments in Canadian shares and federal government bonds. Non-resident investors reduced their holdings of Canadian shares by $5.8 billion in August for a total divestment of $40.5 billion so far in 2023. In comparison, the foreign divestment was $3.5 billion over the same period in 2022... At the same time, foreign holdings of Canadian debt securities were down by $2.7 billion in August, following four months of strong investment totalling $70.4 billion. The activity in August was led by retirements of federal government bonds (-$6.7 billion), which were moderated by a $4.3 billion investment in federal government paper. Meanwhile, net new issuances abroad by Canadian private corporations reached a nine-month low"* and "*Canadian investors acquired $14.9 billion of foreign securities in August 2023, led by purchases of foreign shares and, to a lesser extent, US bonds... In August 2023, investors targeted both US (+$6.7 billion) and non-US (+$3.9 billion) foreign shares. The former was led by large capitalization technology shares, and the latter focused on shares of Asian and European markets. Major world equity markets declined in August. In addition, Canadian investors added $3.7 billion of US bonds to their portfolios in August, mainly instruments issued by the US government and its agencies. In August, US long-term interest rates reached the highest level since December 2007*". Below is a graph illustrating foreign investment in Canadian debt securities.

Figure 60: Foreign Investment in Canadian debt securities



Source: Statistics Canada

Demographics: China's marriage age keeps getting older

China's aging marriage age

China's population continues to look like it peaked in 2021 as 2022 was the first year of population decline in over 60 years. A key factor is that people are getting a lot older before they get married. In 2010, couple registering to be married couples between 20-24 yrs were 37.6% of total and are now down to 15.2%. Less young married couples = less births. Last Sunday night, Global Times (China state media) reported "*In 2022, the proportion of the married couples aged between 25 and 29 was 37.24 percent, an increase of 1.96 percentage points compared to a year ago, said the latest statistical bulletin released by the ministry. The ratio of couples aged between 30 and 34 and aged between 35 and 39 respectively rose to 20.7 and 9.1 percent in 2022 from 11.3 and 6.6 percent in 2010. The ratio of couples aged between 20 and 24, however, dropped to 15.2 percent in 2022, a continuous decline since 2010, when the ratio was 37.6 percent.*" Our Supplemental Documents package includes the Global Times report.

Twitter: Look for our first comments on energy items on Twitter every day

@Energy_Tidbits on Twitter

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].

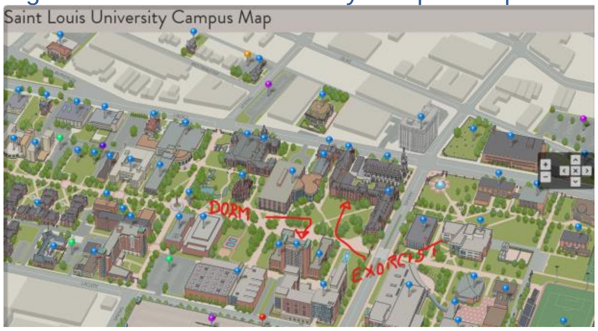
Misc Facts and Figures

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 and Calgary items.

The Exorcist 1973 movie trivia

On Friday, the Washington Post ran a story '*The Exorcist' is 50 years old, and its origin story is still haunting"* [LINK]. At that time, The Exorcist was cutting edge for special effects but that was 50 years ago. The Post story is good as it reminds of the key differences between the real exorcism vs the movie version. The actual exorcism was a teenage boy not a teenage girl. The actual exorcism was completed in St. Louis and not in Georgetown. The actual exorcism was performed by Father William F. Bowdern and the movie character name was Father Damian Karras. The other trivia was that I knew Father Bowdern at St. Louis University in 1973. Father Bowdern taught at SLU and he was passionate teaching theology. And any of his theology students in the early 70s can tell you some of the things he said if anyone questions the existence of evil and the devil. And being a Jesuit university, there were mandatory theology courses. Our dorm faced the building where the exorcism took place, maybe a few hundred feet away. And there was a section of the floor that was roped off from both ends where the exorcism took place. And knowing the trivia before the movie seemed to make the movie more impactful.

Figure 61: St. Louis University campus map



Source: St. Louis University

Washington Commanders Eric Bieniemy despises losing

I couldn't help think of a couple of my former partners in the investment dealer business, who were the best in the Cdn investment dealer business in the 2000s when I read reports of comments by Washington Commanders Asst Head Coach and Offensive Coordinator Eric Bieniemy. Bieniemy said ""*Losing gets on my nerves," "I'm being serious. In order to appreciate winning, you have to despise losing. I despise it. It's my job to make sure that we don't have to go through these emotions. How do I conquer that? I got to make sure that I'm doing everything under the sun, making sure that we don't go through these experiences."* They hated to lose and that attitude from their leadership flowed thru the organization. They set standards for themselves that were the highest and achieved them. And everyone could see that and it encouraged/forced people to jump on or get out of the way. It may not have been the easiest but the people realized that winning is fun and worth the effort.