Energy Tidbits

November 19, 2023

Produced by: Dan Tsubouchi

EIA's LNG Export Capacity Forecast Reminds There is an Opportunity for >15 bcf/d of Added US/CAN Natural Gas Supply

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. There is a need/opportunity for ~15 bcf/d of additional US/Canada natural as supply over the next 5 years to meet US/CAN/MEX LNG export capacity and pipelines to MEX. [click here]

2. A major roadblock to an Iraq/Kurdistan deal is Iraq want IOCs to switch from Production Sharing Contracts to Profit Sharing Contracts. [click here]

3. Big revision to Vortexa's Nov 10 floating storage has moved floating storage >80 mmb after six weeks in the 70's. [click here]

4. We still don't think Saudi Arabia will add back its voluntary cut barrels into physical markets in Q1/24, when oil demand is seasonally lower than Q4/23. [click here]

5. It's early for 2024 predictions but wonder if Biden can orchestrate a passing of the torch to who he anoints? [click here]

6. Note that I had an early news cut off of 10pm MT last night due to an early morning flight today.

7. Pease 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.

8. 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: +60 bcf build in US gas storage; now +198 bcf YoY surplus

US gas storage +198 bcf YoY surplus

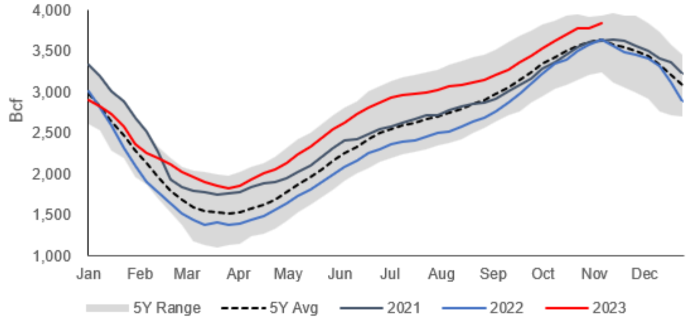
For the week of Nov 10, the EIA reported a +60 bcf build (above expectations of a +41 bcf build), and a YoY decrease compared to the +64 bcf build reported for the week of Nov 11, 2022. A reminder, this build is on last week's data, whose release was delayed due to an EIA systems upgrade. Total storage is now 3.833 tcf, representing a surplus of +198 bcf YoY compared to a surplus of +204 bcf last week. Total storage is +203 bcf above the 5-year average, up from the +164 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 (11/10/22)		Historical Comparisons: 5-year average (2018-22)	
Region	11/10/23	11/03/23	net change	implied flow	Bcf	% change	Bcf	% change
East	931	924	7	7	880	5.8	897	3.8
Midwest	1,116	1,105	11	11	1,082	3.1	1,075	3.8
Mountain	256	253	3	3	208	23.1	210	21.9
Pacific	292	284	8	8	242	20.7	276	5.8
South Central	1,238	1,206	32	32	1,223	1.2	1,173	5.5
Salt	332	313	19	19	325	2.2	316	5.1
Nonsalt	906	893	13	13	898	0.9	857	5.7
Total	3,833	3,773	60	60	3,635	5.4	3,630	5.6

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



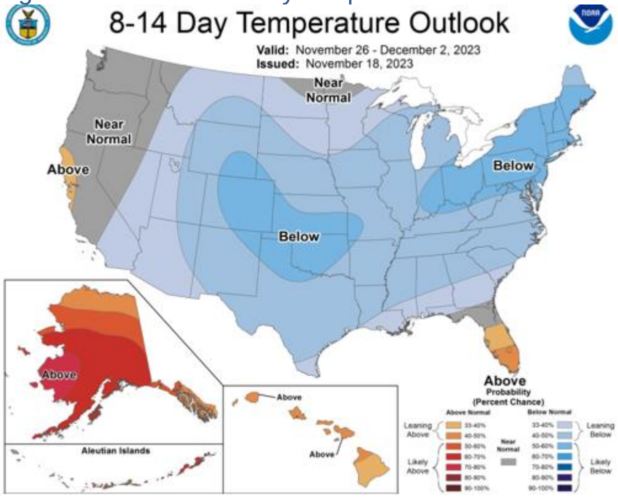
Source: EIA, SAF

Natural Gas: NOAA's calls for colder than normal to end Nov/start Dec

NOAA 8-14 day temperature outlook

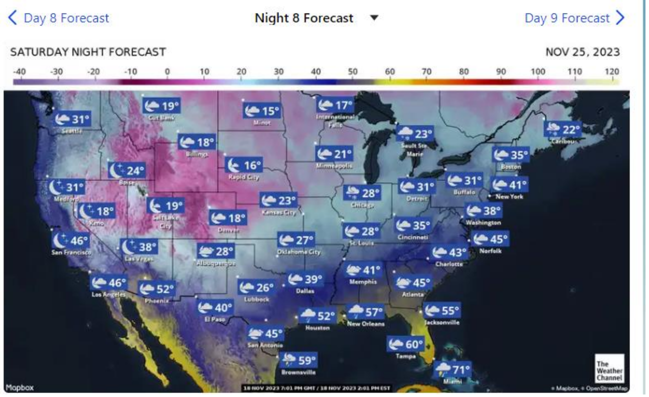
It's still just Nov, but colder than normal weather is always a help for natural gas prices. Yesterday, we tweeted [LINK] "*It's for late Nov so colder than normal isn't bitterly cold, but colder than normal should still support #NatGas demand. @NOAA updated 6-10, 8-14 day calls for colder than normal for almost all of US. @weatherchannel Nov 25 fcast shows daytime high & nighttime lows. #OOTT.*" NOAA updates its 6-10 day and 8-14 day outlooks every day, normally at 1pm MT. Yesterday's 6-10 and 8-14 day outlook cover Nov 24-Dec 2 and call for colder than norma temperatures for most of the US for this period. Our tweet also included The Weather Channel's forecast for Nov 25 daytime high and nighttime lows.

Figure 3: NOAA 8-14 day temperature outlook as of Nov 18



Source: NOAA

Figure 4: The Weather Channel nighttime forecast for Nov 25



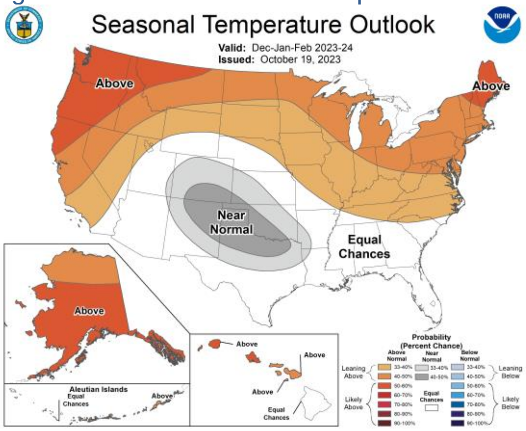
Source: The Weather Channel

Natural Gas: NOAA forecasts warmer than normal winter

Warmer than normal winter

On Thursday, we tweeted [LINK] "*Weather forecasts are far from 100% but a warmer than normal Dec/Jan/Feb more than offsets a colder than normal late Nov. Thx @NOAA. #OOTT".* On Thursday, NOAA posted its monthly update to its seasonal outlook, which calls for warmer than normal temperatures on the west coast and across the northern half of the US. NOAA sees El Nino conditions thru the winter and writes "*The DJF 2023-2024 Temperature Outlook favors above normal temperatures for Alaska, the west coast of the Contiguous United States (CONUS), the Northern Plains, the Ohio and Tennessee Valley regions, and the Mid-Atlantic. Above normal temperatures are more likely for western Alaska, parts of the west coast, and New England. Near normal temperatures are favored for the Central and Southern Rockies, and parts of the Central and Southern Plains."*

Figure 5: NOAA Seasonal Temperature Outlook Dec/Jan/Feb

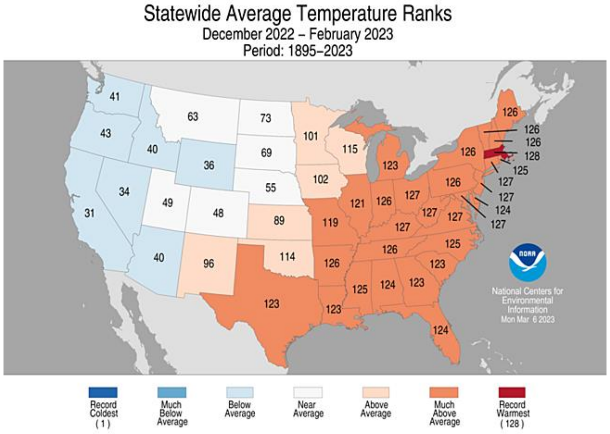


Source: NOAA

Last winter Dec/Jan/Feb was the 17th hottest DJF in last 129 years

Here is what we wrote in our March 12, 2023 Energy Tidbits memo. "*The hot weather in Feb brought the 3-month period from Dec to Feb to the 17th hottest average temperatures seen in 129 years across eastern states with Massachusetts seeing some of the hottest temperatures on record. Over the same period, states along the west coast saw slightly below normal temperatures. No surprise that the warmer months saw US gas storage fall -41% from 3.46 tcf on Dec 2 to 2.03 tcf as of Mar 3 because above average temperatures reduce demand for heating. For context, over the same 3-month period last year, storage fell -57% and -53% in 2021. Below is a graphic depicting the state average temperature ranks.*"

Figure 6: US Statewide Average Temperature Ranks (Dec 2022 – Feb 2023)



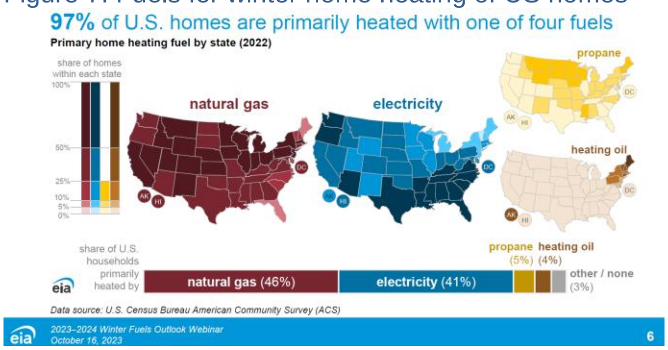
Source: NOAA

Natural Gas: 62% of US homes have winter home heating fueled by natural gas

Natural gas home heating

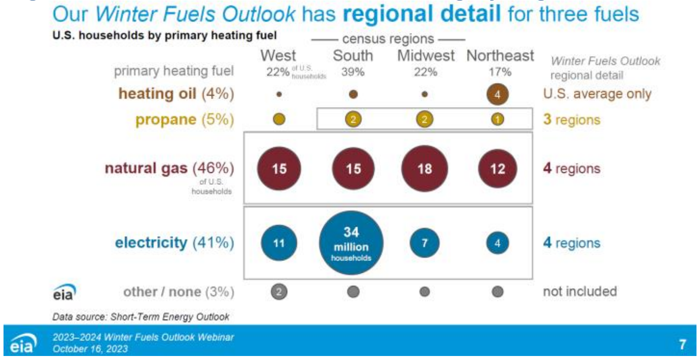
Our primary focus for winter weather tends to be in the US NE and around the Great Lakes for the combination of population density, areas that have colder winters, and a higher percentage of the US homes in these regions that primarily use natural gas for heating. Below is the EIA's map from Oct showing the primary fuel source for heating homes. (i) On Thursday, we tweeted [LINK] "*62% of US homes winter heated directly (46%) and indirectly (16%) by #natgas. All direct fuel % splits unchanged YoY ie. #natgas 46%, electricity 41%, etc. @EIAgov #natgas fuels 40% of electricity for home heating ie. indirect 16% #OOTT.*" (ii) Natural gas continues to be the major fuel for "direct" fuel for home heating with 46% of US homes followed by electricity 41%, propane 5%, heating oil 4% and other/none at 3%. Note these % shares are unchanged vs last year. (ii) much of the electricity is provided by natural gas. (iii) Natural also is the major fuel to generate electricity. On a direct basis, electricity is the primary source for heating 41% of US homes. The EIA notes that natural gas provides the fuel for 40% of electricity. The EIA wrote "*Last winter, electricity generation fueled by natural gas reached a new record of 619 billion kilowatthours (kWh), accounting for nearly 40% of all generation in the U.S. electric power sector. We forecast a similar level and share of natural gas generation for winter 2023–24. The addition of new natural gas-fired generating capacity has been one factor keeping natural gas the largest source of power generation. By October 31, we expect U.S. natural gas generating capacity to have grown by 4.7 gigawatts (GW) from the previous October*." ivi) Adding the indirect and direct, natural gas provides the fuel for 62% of US homes.

Figure 7: Fuels for winter home heating of US homes



Source: EIA

Figure 8: Fuels for winter home heating by region



Source: EIA

Natural Gas: EIA, US shale/tight natural gas back above 99 bcf/d after revisions to data

Shale/tight gas production

US natural gas production is still up strong YoY with the US shale/tight natural gas plays up almost 3 bcf/d YoY. Last month, we noted that Nov was below 99 bcf/d for the first time since April, however we note that in the Nov release, the EIA revised the data by 1.1 bcf/d to bring natural gas back above 99 bcf/d. (i) On Monday, the EIA released its monthly Drilling Productivity Report for November 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 November) and the next month (in this case December). (ii) The EIA forecasts US shale/tight natural gas for December at 99.638 bcf/d, which is down slightly from 99.939 bcf/d in November, after the upward revision to this month. (iii) Permian has been just above 24 bcf/d for the prior four months with, August at 24.03 bcf/d, September at 24.07 bcf/d, and October at 24.09 bcf/d; this month November increases to 24.75 bcf/d and Dec is forecasted at 24.86 bcf/d. (iv) Haynesville has been fairly flat for the last four months at just under 17 bcf/d; Nov and Dec are forecasted to decline to 15.56 bcf/d and 16.42 bcf/d respectively. (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 9: EIA Major Shale/Tight Natural Gas Production

mmcf/d	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Dec YoY	Dec YoY%	Dec MoM	Dec MoM%
Anadarko	6,606	6,668	6,904	6,886	6,872	6,801	6,893	6,827	6,763	6,694	6,617	6,587	6,528	-78	-1%	-59	-1%
Appalachia	34,555	35,538	34,982	35,770	35,450	35,736	35,842	35,880	35,852	35,831	35,699	35,953	35,764	1,209	3%	-189	-1%
Bakken	2,686	2,896	3,088	3,103	3,164	3,203	3,293	3,334	3,346	3,370	3,392	3,392	3,405	719	27%	13	0%
Eagle Ford	7,137	7,193	7,327	7,761	7,655	7,686	7,728	7,770	7,722	7,664	7,594	7,508	7,457	320	4%	-51	-1%
Haynesville	16,276	16,428	16,845	16,762	16,999	17,126	17,089	17,023	16,955	16,835	16,712	16,559	16,428	152	1%	-131	-1%
Niobrara	4,925	4,991	4,901	5,039	5,132	5,160	5,143	5,119	5,130	5,142	5,159	5,193	5,198	273	6%	5	0%
Permian	21,905	22,371	22,349	23,432	23,546	23,805	23,740	23,993	24,031	24,067	24,086	24,745	24,858	2,953	13%	113	0%
Total	94,089	96,084	96,397	98,752	98,818	99,517	99,727	99,945	99,799	99,603	99,259	99,937	99,638	5,549	6%	-299	0%

Source: EIA, SAF

Natural Gas: US LNG exports up +3% MoM to 11.7 bcf/d in September; up +20% YoY

US September LNG exports

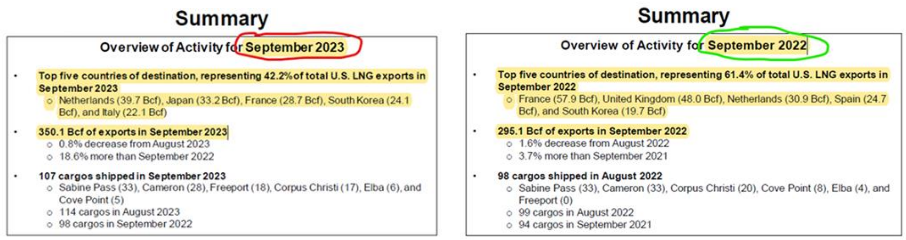
On Wednesday, the Department of Energy (DOE) posted its US LNG exports estimates for September 2023 [LINK]. This is a reminder that the US LNG export data is available about two weeks prior to the more commonly referenced US LNG exports from the EIA's Natural Gas Monthly. The EIA is a group under the Department of Energy. The data for LNG exports is either identical or just a rounding issue. On Wednesday, we tweeted [LINK] "*US #LNG* *exports Sep/23 11.7 bcfd, +3% MoM, +20% YoY. Freeport LNG was out in Sep/22.Sep/23 top 5 export mkts: Dutch, Japan, France, Korea, Italy. Aug/22: France, UK, Dutch, Spain, Korea. Note this DOE LNG data is posted 2 wks before same data in @EIAgov #OOTT".* US LNG exports were up marginally MoM to 11.7 bcf/d in September from 11.4 bcf/d in August. US LNG exports are now averaging 11.6 bcf/d per month YTD for 2023, which is +0.9 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 10: US Monthly LNG Exports

(bcf/d)	2016	2017	2018	2019	2020	2021	2022	2023
January	0.0	1.7	2.3	4.1	8.1	9.8	11.4	10.9
February	0.1	0.9	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
April	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
August	0.9	1.5	3.0	4.5	3.6	9.6	9.7	11.4
September	0.6	1.8	2.7	5.3	5.0	9.5	9.8	11.7
October	0.1	2.6	2.9	5.7	7.2	9.7	10.0	
November	1.1	2.7	3.6	6.4	9.4	10.2	10.1	
December	1.3	2.7	4.0	7.1	9.8	11.1	11.0	
Full Year	0.5	1.9	3.0	5.0	6.6	9.7	10.6	11.6

Source: EIA, DOE

Figure 11: US LNG Exports September 2023 vs September 2022


Summary

Overview of Activity for September 2023

- **Top five countries of destination, representing 42.2% of total U.S. LNG exports in September 2023**
  - Netherlands (39.7 Bcf), Japan (33.2 Bcf), France (28.7 Bcf), South Korea (24.1 Bcf), and Italy (22.1 Bcf)
- **350.1 Bcf of exports in September 2023**
  - 0.8% decrease from August 2023
  - 18.6% more than September 2022
- **107 cargos shipped in September 2023**
  - Sabine Pass (33), Cameron (28), Freeport (18), Corpus Christi (17), Elba (6), and Cove Point (5)
  - 114 cargos in August 2023
  - 98 cargos in September 2022

Summary

Overview of Activity for September 2022

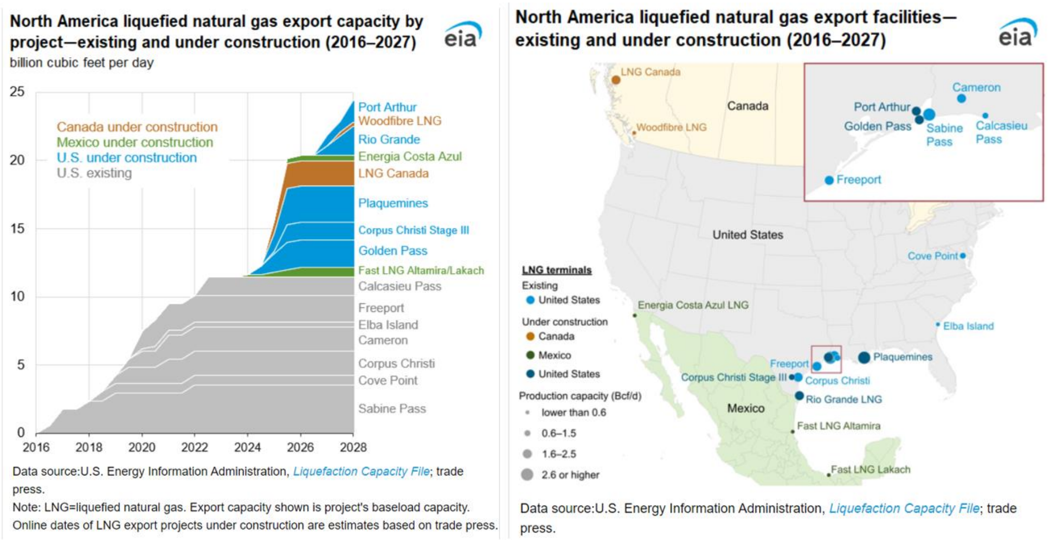
- **Top five countries of destination, representing 61.4% of total U.S. LNG exports in September 2022**
  - France (57.9 Bcf), United Kingdom (48.0 Bcf), Netherlands (30.9 Bcf), Spain (24.7 Bcf), and South Korea (19.7 Bcf)
- **295.1 Bcf of exports in September 2022**
  - 1.6% decrease from August 2022
  - 3.7% more than September 2021
- **98 cargos shipped in August 2022**
  - Sabine Pass (33), Cameron (33), Corpus Christi (20), Cove Point (8), Elba (4), and Freeport (0)
  - 99 cargos in August 2022
  - 94 cargos in September 2021

Source: DOE

Natural Gas: Need/opportunity for >15 bcf/d of Cdn & US gas in next 5 yrs

We believe one of the overlooked themes for Cdn and US natural gas is that there is the need and/or opportunity for >15 bcf/d of additional Cdn and US natural as supply in the next five years. Call it need, call it opportunity, one way or another there should be another >15 bcf/d of new export LNG and/or natural gas pipeline export capacity being added. One of the LNG stories getting attention this week was from Monday, when the EIA posted a Today in Energy blog "*LNG export capacity from North America is likely to more than double through 2027"* [LINK]. The EIA wrote "*By the end of 2027, we estimate LNG export capacity will grow by 1.1 Bcf/d in Mexico, 2.1 Bcf/d in Canada, and 9.7 Bcf/d in the United States from a total of 10 new projects across the three countries."* This blog is actually an exact repeat of what the EIA wrote in its Natural Gas Weekly posted Oct 26. Here is what we wrote in our Nov 5, 2023 Energy Tidbits memo that led to a number of discussions that week on this subject. We then wrote "*There was a good reminder last week there is a need/opportunity for >15 bcf/d of US and Canada natural gas supply over the next five years. The EIA Natural Gas Weekly* *posted Oct 26 [LINK] highlighted "Over the next five years, we expect North America's liquefied natural gas (LNG) export capacity to expand by 12.9 billion cubic feet per day (Bcf/d) as Mexico and Canada place into service their first LNG export terminals and the United States adds to its 11.4 Bcf/d of existing LNG capacity. By the end of 2027, we estimate LNG export capacity will grow by 1.1 Bcf/d in Mexico, 2.1 Bcf/d in Canada, and 9.7 Bcf/d in the United States from a total of ten new projects across the three countries." Mexico' has been unable to grow natural gas production so the need/opportunity to fill this capacity is for US and Canadian natural gas supply. And this 12.9 bcf/d oesn't include the buildout of Mexico domestic natural gas infrastructure capacity that TC Energy forecast last year to add 3 bcf/d demand for Permian natural gas via pipeline. Of this, only 11% (1.8 bcf/d) is direct Canada natural gas export via LNG Canada Phase 1. But the other big swing factor is the question on how much US natural gas can grow. Obviously more if the price is higher. But there will be the need or opportunity for more Cdn natural gas thru the US, not less. And at the same time, Canada will have the direct LNG Canada 1.8 bcf/d to export markets that will take some of Canada's existing natural gas moving to the US out to the LNG Canada instead. Our Supplemental Documents package includes the EIA blog from the Oct 26 Natural Gas Weekly."*

Figure 12: North American LNG capacity growth thru 2027



Source: EIA

Natural Gas: Getting even worse for LNG tankers trying to transit Panama Canal

Panama Canal problems

It's a good thing it has started off warmer than normal for the most part of Asia and natural gas demand isn't strong because there are increasing supply delays for US LNG tankers via the Panama Canal. And these delays are getting worse. On Thursday, Platts reported [LINK] "*LNG vessels will likely have no choice but to participate in auctions to expedite their transit through the Panama Canal starting in December, given a change in the rules governing the booking slots available to them. "Starting from December 1, only one slot will be available in period 1A and one slot in period 2. If container vessels secure these slots through the* *application of priority rules, LNG vessels will have no choice but to opt for auctions," a Panama Canal Authority spokesperson said via email Nov. 15."* And "*The anticipated inability for LNG vessels to reserve slots for transiting the canal starting in December will likely lead to spot cargoes bound for Asia to seek alternatives routes, trading sources said. "A lot of spot cargoes have started to look for alternative routes," an Atlantic-based trader said. "I think the slight uptick we see [in Asian LNG prices] is because of that*." Our Supplemental Documents package includes the Platts report.

Reminder of BC's shorter LNG tanker days to Asia

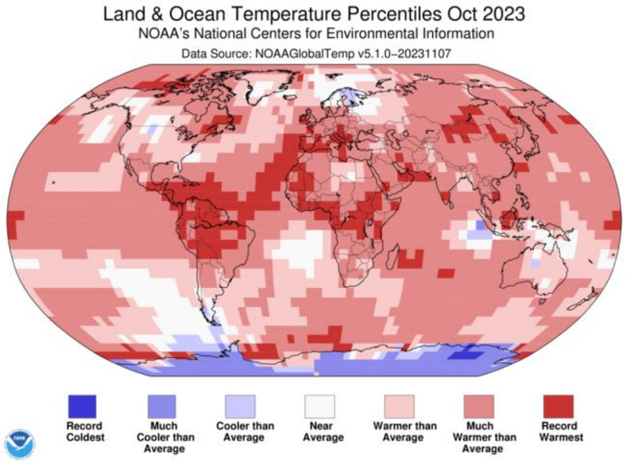
Yesterday, we tweeted [LINK] *"Reminds why big Asian #LNG customers want diversity of supply. In about a year or so, #LNGCanada 1.8 bcf/d Phase 1 should be starting with its approx 2-week shorter tanker transit time to Asia vs US Gulf Coast via Panama Canal. #OOTT."* The Panama Canal problems for US LNG tankers to Asia reminds of the big advantage for LNG Canada – it's a direct route right to Asia and it's about a 2-week shorter transit to Asia. In our Dec 12, 2021 Energy Tidbits memo, we wrote *"we should point out that LNG Canada's stated time is 12 days for LNG tankers to reach China*." That's about two weeks shorter transit to Asia.

Natural Gas: October 2023 was the globe's warmest ever

Warmest Oct ever

No one will be surprised to see the recap of Oct to see it was the warmest Oct in history for the world. Very hot Oct weather was a common news story. NOAA posted its Global Climate Report for Oct 2023 [LINK]. It was hot everywhere. NOAA wrote "*The October global surface temperature was 1.34°C (2.41°F) above the 20th-century average of 14.0°C (57.1°F), making it the warmest October on record. This was 0.24°C (0.43°F) above the previous record from October 2015. October 2023 marked the 47th-consecutive October and the 536th-consecutive month with temperatures at least nominally above the 20th-century average. The past 10 Octobers (2014–2023) have been the warmest Octobers on record."* And *"Temperatures were above average throughout most of North America, South America, western, southern, and eastern Europe, Africa, Asia, Oceania and the Arctic. Parts of Central and South America, Africa, Europe, northeastern North America and central Asia experienced record-warm temperatures this month. Sea surface temperatures were above average across much of the northern, western and eastern Pacific as well as the northern Atlantic and the Indian Oceans. Record-warm temperatures covered nearly 11% of the world's surface this October, which was the highest percentage for October since the start of records in 1951*."

Figure 13: Oct 2023 Blended Land and Sea Surface Temperature Percentiles



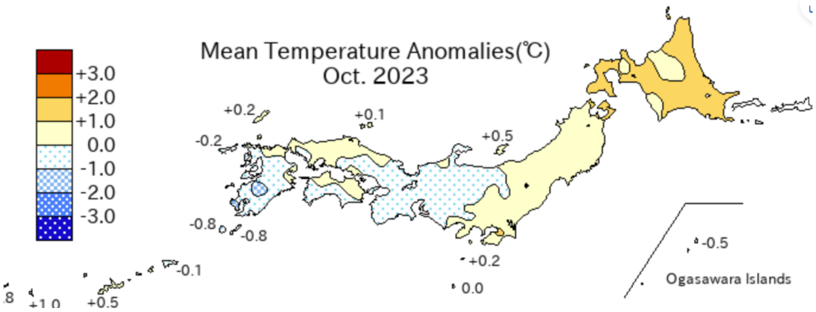
Source: NOAA

Natural Gas: above normal temperatures in Japan in Oct

Above normal tempers in Japan

No one should have been surprised by the Japan Meteorological Agency's recap of Oct 2023 temperatures that it was above normal temperatures but, it wasn't as hot overall for all of Japan like it was the prior summer months. It was above normal temperature in central and northern Japan in Oct. This type of weather in Oct isn't hot enough to generate natural gas demand for air conditioning. The JMA posted its climate report over Japan for Oct [LINK]. It included the below map and the JMA said "*Monthly mean temperatures were significantly above normal in northern Japan, because the region were less affected by cold air and affected by significantly above normal sea surface temperature anomalies around the region.*"

Figure 14: JMA Mean Temperature Anomalies Oct 2023

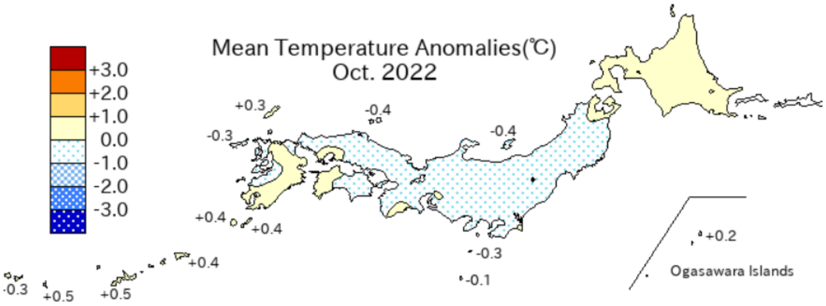


Source: Japan Meteorological Agency

Year ago, cooler than normal Oct 2022 in Japan meant no air conditioning

Here is what we wrote I nour Nov 20, 2023 Energy Tidbits memo. "The Japan Meteorological Agency recap of October temperatures in Japan were that there was cooler than normal temperatures for most of Japan ie. highs in Tokyo were generally in low to mid 20s ie. no support for weather related natural gas consumption. On Wednesday, the Japan Meteorological Agency posted its recap of October weather [LINK] and their mean temperature anomalies map (below) shows the mean temperature breakdown for the month. Their recap noted, *"monthly mean temperatures were below normal in eastern Japan due to cold-air inflow from the continent. Temperatures varied widely across Japan."*

Figure 15: Japan Mean Temperature Anomalies October 2022



Source: Japan Meteorological Agency

Natural Gas: Japan forecast warmer temps for 1st half of December

Japan's 30-day temperature forecast

We continue to stress that it's hard to catch up from a warm start to winter in natural gas regions. And if there is a warm start to winter, it means it has to be cold in Jan/Feb to catch up. Every Thursday, the Japan Meteorological Agency updates its 30-day outlook [LINK]. The November 16 update calls for warmer than normal temperatures for the first half of December, especially in the southern prefectures. We checked AccuWeather who forecasts the first two weeks of December for Tokyo daily highs around 15-16C and nighttime lows of around 5-8C. This shouldn't generate much natural gas demand as these are "leave the windows open" temperatures. Below is the JMA's 30-day temperature probability forecast for Dec 2 – Dec 15.

Figure 16: JMA Dec 2 – Dec 15 Temperature Probability Forecast

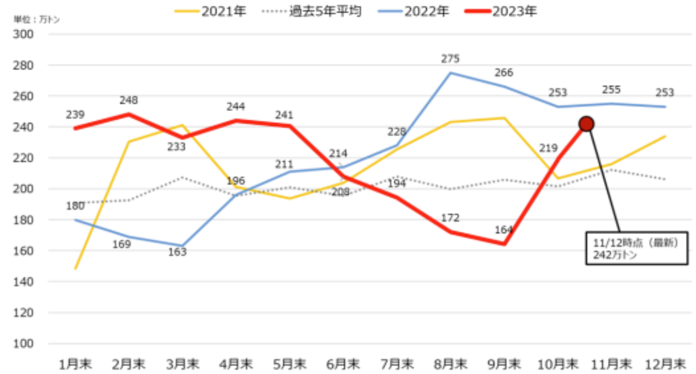
Source: Japan Meteorological Agency

Natural Gas: Japan LNG stocks up WoW, down YoY, and above 5-yr average

Japan LNG stocks up +2.11% 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. Through October, Japan was building up their stocks and it looks like that build is continuing through November. Stocks are still below 2022 levels but now above the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK]. LNG stocks on Nov 12 were 116.2 bcf, up +2.11% WoW from Nov 5 of 113.8 bcf, and down -5.1% YoY from 122.5 bcf a year earlier, but above the 5-year average of 96.5 bcf. Storage is now the highest it's been since May. METI did not comment on the WoW increase. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 17: Japan LNG Stocks



Source: METI

Natural Gas: Japan LNG imports down MoM to 8.38 bcf/d in October

Japan LNG imports down 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 of 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 decrease in LNG imports in Oct. On Thursday, Japan's Ministry of Finance posted its import data for October [LINK] and pointed to a YoY increase in LNG imports. The MOF reported Japan's October LNG imports were 8.38 bcf/d, which is down -0.5% MoM from 8.84 bcf/d in September, and up +6.4% YoY from 7.88 bcf/d in October 2022. October's imports of 8.38 bcf/d show some recovery from the recent low in May of 7.14 bcf/d. Japan's thermal coal imports in October were down -5.9% YoY, compared to -8.7% YoY in September. Petroleum products imports were down -0.7% YoY. Below is our table that tracks Japan LNG import data.

Figure 18: 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%	8.38	6.4%
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 LNG imports +23.7% YoY to 9.54 bcf/d in September

China LNG imports

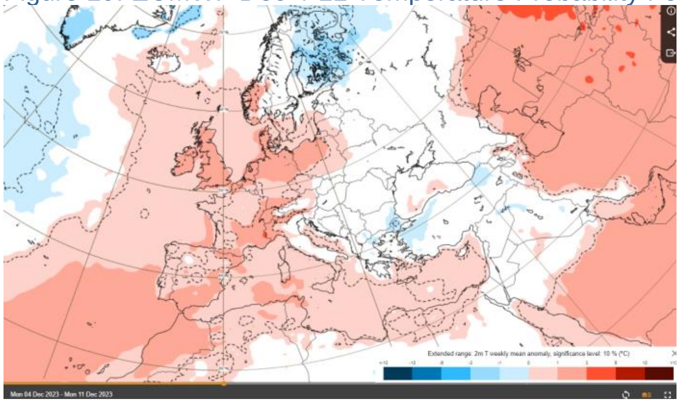
Two weeks ago China reported its September 2023 LNG import data [LINK]. We have been highlighting a big change in China's natural gas and LNG dynamics over the past two years. China has been increasing its domestic natural gas production, which means less need for LNG imports. That has been compounded by China's increasing natural gas pipeline imports of cheaper Russian natural gas. This reduces the need for LNG imports. (i) China's General Administration of Customs released the finalized natural gas import data for September, which provided the split of natural gas imports between pipeline imports and LNG imports. (ii) Natural gas pipeline imports for September were down +5.3% MoM to 6.91 bcf/d and are +1.6% YoY from 6.80 bcf/d in September 2022. (iii) Natural gas demand remaining elevated drove a slight increase MoM for September LNG imports at 0.3% to 9.11 bcf/d in September, down -3.6% from September 2022 of 9.45 bcf/d. LNG imports have been sustained over 9.0 bcf/d for four consecutive months.

Natural Gas: Still looking warmer than normal temps in Dec for Europe

Europe Dec forecast

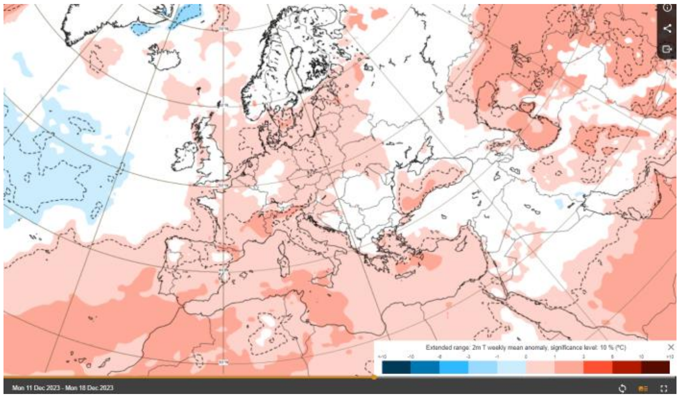
Our concern is always a warm start to winter needs to get offset sometime and a warmer than normal winter can be a hold back on natural gas/LNG prices for several months. Last winter 2022/23 was a hot winter and it held back prices all of 2023. Forecasts for all the key natural gas areas has been for a warm start to winter and that continues to be forecast. ECMWF is European Centre for Medium Range Forecasts. Yesterday's ECMWF's near term forecast calls for mostly warmer than normal temperatures in most of Europe for for the first half of Dec.

Figure 19: ECMWF Dec 4-11 Temperature Probability Forecast



Source: ECMWF

Figure 20: ECMWF Dec 11-18Temperature Probability Forecast



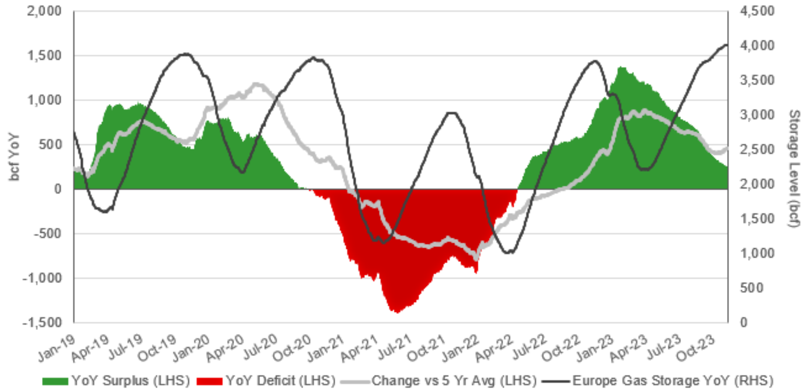
Source: ECMWF

Natural Gas: Europe storage continues to be effectively full at 99.20%

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 is now over 99% full, which means they entered winter essentially completely full. This week, Europe storage decreased by +0.03% WoW to 99.20% on Nov 16. Storage is now +3.81% greater than last year's levels of 95.39% and is +10.25% above the 5-year average of 88.95%. Last week, storage levels hit a 5-year high at 99.63% full. Below is our graph of Europe Gas Storage Level.

Figure 21: European Gas Storage Level



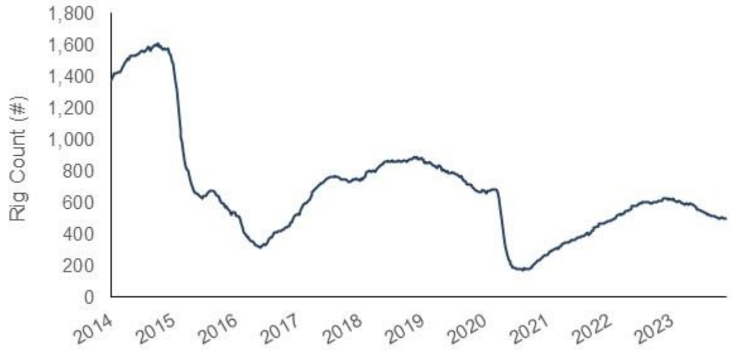
Source: Bloomberg, SAF

Oil: US oil rigs +6 WoW to 500 rigs, US gas rigs down -4 WoW at 114 rigs

US oil rigs up WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Total US oil rigs were +6 WoW to 500 rigs. This is likely the peak for US rig activity through to Christmas as US rigs normally start their seasonal decline just before US Thanksgiving, which is on Thurs Nov 23. (ii) Total US oil rigs were up +6 rigs WoW at 500 total rigs and are down -123 rigs YoY for the week of November 17. This is up +19 rigs from the 2022 low of 481 rigs in January. (ii) Key changes in the major US basins were Permian +4 to 307 oil rigs, Bakken +1 to 33 oil rigs, Mississippian -1 to 0 oil rigs DJ- Niobrara +1 to 15 oil rigs, Cana Woodford +1 to 14 rigs, Ardmore Woodford -1 to 0 oil rigs and Barnett +1 to 1 oil rig. (iii) The Permian is near its lowest level since March 18, 2022, and is down -50 rigs from its recent high of 357 rigs on April 28, 2023. (iv) Gas rigs were -4 to a total of 114 rigs and have now decreased -43 rigs YoY. On a per basin basis, Haynesville was up +1 rig WoW at 38 rigs, Permian was down -3 rigs WoW at 4 rigs and Eagle Ford was down -1 rig WoW to 3 rigs. Below is our graph of total US oil rigs.

Figure 22: Baker Hughes Total US Oil Rigs



Source: Baker Hughes, SAF

Patterson-UTI says US rig activity needs to increase to build up DUCs
Patterson-UTI held its Q3 call last week on Nov 8. One of their sector insights was that there are *"really no DUCs out there*", which means US rig activity has to increase. This is not a new issue but they confirm the concern that DUCs have to the most part being drawn down so there needs to be able to increase rigs to DUCs up. Mgmt said "*Because we can already see the inflection in our own rig count at Patterson-UTI, and I realize we've been outperforming the market in general and with our drilling rig count but based on, how commodity prices have been trading especially the forward strip on natural gas. I think you'll see an inflection in the overall rig count. Now, we're going to see the traditional lag between the drilling rigs picking up, and the frac operations just because there's really no ducts out there right now, that we've got frac spreads bumping into drilling rigs and drilling rig activity does need to pick up so the frac activity can pick up. So as, as we see those increases in early '24, we're already seeing the inflection now, but as we see the increases in early '24 on the drilling side, there's going to be a bit of lag on the completion, but then you're going to see completion activity pick up following drilling activity."*

Oil: Total Cdn rigs down -3 rigs WoW to 196 total rigs

Cdn total rigs down WoW

For the week of November 17, total Cdn rigs were down -3 rigs WoW to 196 rigs. On a per province basis, Saskatchewan was down -2 rigs WoW to 26 rigs and Manitoba was down -1 rigs to 3. All other provinces were flat this week. We still expect to see some modest increases in Alberta and BC over the next few weeks before Xmas and as wildfires in both provinces decrease. Cdn oil rigs were down -2 WoW at 123 rigs, both land-based rigs and gas rigs were down -1 at 73 rigs. Cdn oil rigs are down -12 rigs YoY, while gas rigs are up +7 rigs YoY. Below is our graph of total Cdn oil rigs.

Figure 23: Baker Hughes Total Cdn Oil Rigs

Source: Baker Hughes, SAF

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

US oil production flat WoW

A month ago there was a second big adjustment to the EIA's weekly oil production estimates. The first was in August, when our Aug 13, 2023 Energy Tidbits memo highlighted the EIA increased their weekly US oil production estimates by +0.4 mmb/d. Our Oct 15th Energy Tidbits memo highlighted the EIA's second big, another +0.4 mmb/d, adjustment to the weekly production estimates. Last month, the EIA wrote *"Crude Oil Production Re-*

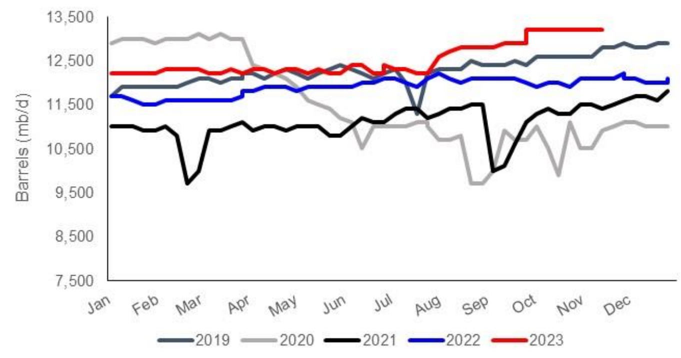
benchmarking Notice: When we release the Short Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude production reported in the Petroleum Supply Monthly (PSM) and other current data. If we find a large difference between the two series, we may re-benchmark the weekly production 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 2nd EIA adjustment was needed to bring the weekly production estimates in line with the EIA's actuals. And as noted in the Form 914 item below, the EIA's Oct adjustment basically makes up for the weekly estimates being below the EIA's actuals for Aug. This week, the EIA's production estimates were flat WoW at 13.200 mmb/d for the week ended November 10 [LINK]. Alaska was down +0.004 mmb/d WoW to 0.433 mmb/d. Below is a table of the EIA's weekly oil production estimates.

Figure 24: 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	10/20	13,200	10/27	13,200		
2023-Nov	11/03	13,200	11/10	13,200						

Source: EIA

Figure 25: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

North Dakota oil production

Oil: North Dakota Sept oil production increases +0.055 mmb/d MoM to 1.278 mmb/d
On Wednesday, the North Dakota Industrial Commission posted its Director's Cut, which includes September's oil and natural gas production data [LINK]. North Dakota oil production in September was up +0.055 mmb/d MoM to 1.278 mmb/d, which is up +14.0% YoY from 1.121 mmb/d in September 2022. (i) North Dakota hitting 1.2 mmb/d is what North Dakota expected give the increasing frac spreads. In our Sept 20, 2023 Energy Tidbits, we wrote "North Dakota 1.2 mmb/d in sight thanks to completions of DUCs. Yesterday, we tweeted [LINK] "*More oil growth to come in #Bakken.North Dakota now sees 1.4 mmb/d as the new peak #Oil production number. Current is 1.278 mmb/d. #OOTT"* Our Supplemental Documents package includes both the Director's cut.

Figure 26: North Dakota Oil Production by Month

(b/d)	2017	2018	2019	2020	2021	2022	2022/21	2023	2023/22
Jan	981,380	1,179,564	1,403,808	1,430,511	1,147,377	1,088,613	-5.1%	1,060,708	-2.6%
Feb	1,034,248	1,175,316	1,335,591	1,451,681	1,083,554	1,089,091	0.5%	1,158,837	6.4%
Mar	1,025,690	1,162,134	1,391,760	1,430,107	1,108,906	1,122,640	1.2%	1,122,693	0.0%
Apr	1,050,476	1,225,391	1,392,485	1,221,019	1,123,166	900,597	-19.8%	1,133,435	25.9%
May	1,040,995	1,246,355	1,394,648	859,362	1,128,042	1,059,060	-6.1%	1,135,009	7.2%
June	1,032,873	1,227,320	1,425,230	893,591	1,133,498	1,096,783	-3.2%	1,166,604	6.4%
July	1,048,099	1,269,290	1,445,934	1,042,081	1,076,594	1,072,632	-0.4%	1,180,611	10.1%
Aug	1,089,318	1,292,505	1,480,475	1,165,371	1,107,359	1,075,307	-2.9%	1,223,617	13.8%
Sept	1,107,345	1,359,282	1,443,980	1,223,107	1,114,020	1,121,063	0.6%	1,278,190	14.0%
Oct	1,183,810	1,392,369	1,517,936	1,231,048	1,111,910	1,121,754	0.9%		
Nov	1,194,920	1,375,803	1,519,037	1,227,138	1,158,622	1,098,389	-5.2%		
Dec	1,182,836	1,402,741	1,476,777	1,191,429	1,144,999	957,864	-16.3%		

Source: NDIC, NDPA

North Dakota cautioned snow storms to hit Oct production
It is important to remember that North Dakota holds a monthly press conference on the monthly oil and gas data. It seems like analysts and investors don't listen to the press conference, but we always get additional insights. That was the case with Tuesday's press conference [LINK]. North Dakota director Lynn Helms cautioned that snow storms in Oct will impact production. We made a transcript of Helms comments. At 1:50 min mark. On the impact of Oct snow storms, Helms *"Little bit of a cautionary statement about October. You know what happened. We had a major storm and we saw what we think looked like a 50 to 90,000 b/d hit on production that lasted for 3 or 4 days and still maybe 20-25% of that is lingering as we work through the first week or 10 days of November. Those things hit hard. Usually what happens is oil tanks on the wellsite fill up and trucks aren't able to get there or pumpers or people that sell the oil aren't able to get there. So as oil backs up, the wells get shut in and you can see that reflected in water transfer and natural gas transfers. October, we're hoping it will be flat, could be down just slightly from September but should still be above that 1.2 mmb/d mark, that's our year end target and we should be really solid on that. We got to almost 1.3 before the October weather.*"

North Dakota expects new peak for Bakken is 1.4 mmb/d
Another insight from the press conference was North Dakota seeing more oil growth to a new peak of 1.4 mmb/d. On Wednesday, we tweeted [LINK] "*More oil growth to come in #Bakken. North Dakota now sees 1.4 mmb/d as the new peak #Oil production number. Current is 1.278 mmb/d. #OOTT."* Here is the transcript we

created of Helms comments. At 16:20 min mark on how Exxon and Chevron are enhanced oil recovery companies, Helms "*are big enhanced oil recovery companies and we've talked a lot about the fact that that's a 20-year extender for North Dakota once production achieves that 1.4 mmb/d peak number that we think is the new peak number*." At 17 min mark, on the recent Exxon and Chevron acquisitions and what it means to Bakken activity, Helms "*In the shorter term, there's probably going to be less drilling activity. Slower growth in terms of our production numbers. But I don't think it's going to throw us off that 1 to 2% a year track*". Note Helms is also reminding of something we have been expecting – the big acquisitions will lead to less Bakken drilling in the short term.

Oil: North Dakota says getting more oil per foot with new completions

Bakken Tier 2 wells

One of the overlooked themes for the past few months has been how drilling 3-mile wells with better completions means that wells in Tier Two geology are delivering production in line with wells in Tier One geology. North Dakota first highlighted this theme in their Aug monthly press conference. On Wednesday, we tweeted [LINK] "*#Bakken contiguous acreage value. Yes, faster drilling of #Bakken 3-mile wells BUT completion technology has really improved = more oil per foot! "..hoping to get stimulation folks in to hold a whole session on more barrels per foot because that's what we see happening" #OOTT."* There have been many comments on how producers are drilling faster, but North Dakota also highlighted how they are seeing more oil per foot ie. completions are better so they are getting more oil out per foot. Our tweet included the transcript that we made of North Dakota Director Helms comments. At 19:40 min mark, on what is driving the month over month production growth North Dakota has seen recently. Helms "*The driving factor is really the 3-mile laterals and the newer completion technology. So our Tier Two geology is now Tier One equivalent. So a lot of that acreage, I think we talked earlier this year, the Tier Two geology is only about 50% developed and the Tier Three is only about 25% developed. So now all of a sudden, those 7,000 well slots have the same productivity potential as the 15,000 that were drilled in the Tier One geology. And we've just seen so much improvement. A little bit in drilling efficiency, they can do a 3-mile lateral now in 12 to 13 days, which is mind boggling so that extra mile is only taking a couple days to drill. But the completion technology has really improved too. And so I think you are going to hear from the folks like Halliburton. I think we're looking at getting some stimulation folks in. Shameless plug, the Williston Basin conference is in May in Bismarck. We're hoping to get stimulation folks in to hold a whole session on more barrels per foot because that's what we see happening*."

10/13/23 North Dakota also says Bakken Tier 2 wells are as good as Tier 1 wells

Last month's North Dakota press conference highlighted the Tier Two well success. Here is what we wrote in our Oct 15, 2023 Energy Tidbits. "*There is an overlooked upside to the Bakken that is still not getting the headlines – Bakken Tier 2 wells are delivering wells comparable to Tier 1 wells. (i) On Friday, we tweeted [LINK] "Overlooked #Bakken upside to value of contiguous acreage. 3-mile horizontals plus new completions = Bakken Tier 2 wells performing as well as Tier 1. See 👇SAF transcript. North Dakota's Lynn Helms yesterday reinforces Harold Hamm Aug comments on Tier 2 upside. #OOTT." (ii) On Thursday, North Dakota highlighted this in its monthly webcast on how Tier 2 wells have as good performance as Tier 1, plus they have the added benefit of lower gas/oil ratios. Here is the transcript we made of*

Helms' comment. At 20:15 min mark, Helms "the question was what's the reason for the migration out of Tier 1 into Tier 2. Probably #1 reason is that high gas/oil ratio in Tier 1 area. It's about 90% drilled up so there's only about 10% of the potential drilling slots left in that Tier 1 geology. And the gas/oil ratios are very high. And so with the new, with the development of the ability to easily and for very little incremental cost drill 3-mile laterals and the performance of some of the new completion technologies, the Tier 2 geology is performing just as good as the Tier 1 was. And so the incentive has been very strong because of the low gas/oil ratios and the high well IPs and the economics out there to go drill 3-mile laterals in Tier2. It's actually more economic in terms of infrastructure and capital deployment. It's exciting news and we think ultimately that's going to spill over into the Tier 3 geology. We see one or two rigs working out there. And some leasing activity. Folks are seeing landmen and getting leasing offers up in Divide County. And been a long time since that was happening."

08/17/23: Continental's Harold Hamm Tier 2 wells are as good as Tier 1 wells

Our Oct 13, 2023 tweet included what we first wrote on this in our Aug 20, 2023 Energy Tidbits memo, when Continental's Harold Hamm highlighted Tier 2 wells were now as good as Tier 1. Here is what we wrote in that memo. "*Is Harold Hamm the only one drilling Tier 2 wells as good as Tier 1 wells? It is worth noting some new commentary from North Dakota on Bakken Tier 2 wells. North Dakota has been highlighting how Bakken drilling has been moving away from the core to Tier 2 and Tier 3 lands and that is leading to lower productivity wells as wells as higher gas/oil ratio in the wells. BUT in the Thursday press conference, North Dakota's Lynn Helms said something very different. Helms came out and said that drilling and completion technology development is leading to Tier 2 wells performing better and now performing like Tier 1 acreage. He referenced Harold Hamm having this success but surely, the way technology gets quickly adopted, Hamm isn't the only one having this success. If so, it speaks to better Bakken oil potential in North Dakota. This will be one to watch what we see from the public Bakken players. Here is the transcript we created of Helms comments on this point. At 1:05 min mark, Helms "… what we're seeing is the migration of the drilling and completion activity out of the core and into the Tier 2 area and somewhat out into the Tier 3 areas. I think if you were at Mr. Hamm's event earlier in the week or late last week, you also heard comments from him that a lot of that Tier 2 acreage with the newer drilling and completion technologies is now performing like Tier 1 acreage." [Note Helms was referring to Harold Hamm's Aug 10 event promoting his new book "Game Changer: Our Fifty-Year Mission to Secure America's Energy Independence"]*

Oil: North Dakota crude by rail up MoM to 95,650 b/d in September

North Dakota CBR up MoM in September

On Wednesday, the North Dakota Pipeline Authority posted its monthly update "*November 2023 Production & Transportation"* [LINK]. Please note that we always go to the backup excel sheets from the North Dakota Pipeline Authority that provide low and high estimates for Williston crude by rail exports. The NDPA Monthly Update (graph below) report has a thick line that represents the low and high range. In the backup excel, the NDPA estimates crude by rail in September from a low of 80,650 b/d and a high of 110,650 b/d for an average of 95,650 b/d. A moderate increase from the August average of 78,179 b/d. The NDPA did not comment on the MoM changes. Below is a chart from the NDPA monthly update showing the crude by rail volumes since 2013. Our Supplemental Documents package includes excerpts from the NDPA monthly update.

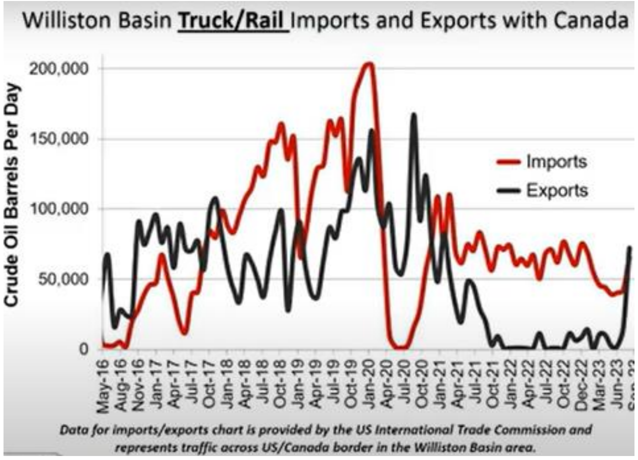
Figure 27: Estimated North Dakota Rail Export Volumes

Source: NDPA

Uptick in Bakken oil export via trucks to Canada

There was one surprise comment in the monthly North Dakota press conference. At 29 North Dakota's Justin J. Kringstad, Director North Dakota Pipeline Authority said "*Imports/exports, some interesting, real strong spike up in both imports and exports. Even strong on the exports which is reports of barrels leaving North Dakota going up into Canada. The International Trade Commission, they do not provide any other color, exactly where they are going and what mode of transportation it was. We are assuming mostly truck but if I can find out any more information there*."

Figure 28: Williston Basin Truck/Rail imports and exports with Canada



Source: NDPA

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

Shale/tight oil production

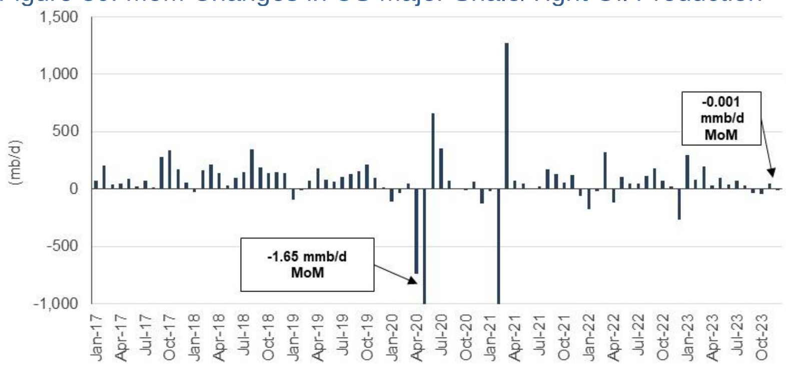
US shale/tight oil production moved back below 9.6 mmb/d after four months over 9.6 mmb/d. On Monday, the EIA released its monthly Drilling Productivity Report for November 2023 [LINK], which is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case November) and the next month (in this case December). (ii) The EIA is forecasting a MoM production increase in November of +51,000 b/d MoM to 9.654 mmb/d and a marginal MoM decline of -1,000 b/d to 9.653 mmb/d in December. (iii) November is forecast back above 9.6 mmb/d, due to revised estimates, after being forecast below last month. Oil production has been sustained over 9.6 mmb/d for five months now with July at 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 9.654 mmb/d. (iv) Permian shale/tight oil production has been flat above 5.9 mmb/d for the past eight 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, November at 5.976 mmb/d and now December at 5.981 mmb/d. (v) US shale/tight oil production is +798,000 b/d YoY to 9.653 mmb/d in December 2023. The major change areas are Permian +325,000 b/d YoY, Bakken at +284,000 b/d YoY, and Eagle Ford at +81,000. (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 29: US Major Shale/Tight Oil Production

Thousand b/d	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Dec YoY	Dec YoY%	Dec MoM	Dec MoM%
Anadarko	382	392	405	417	422	426	422	420	419	418	415	396	392	10	3%	-4	-1%
Appalachia	122	144	152	152	153	155	148	137	137	136	134	135	133	11	9%	-2	-1%
Bakken	988	1,093	1,191	1,157	1,165	1,173	1,203	1,217	1,263	1,267	1,270	1,270	1,272	284	29%	2	0%
Eagle Ford	1,070	1,105	1,134	1,181	1,156	1,178	1,185	1,189	1,174	1,157	1,138	1,154	1,151	81	8%	-3	0%
Haynesville	33	35	35	35	34	35	35	35	36	36	35	32	32	-1	-4%	0	0%
Niobrara	605	624	612	638	654	667	671	658	672	675	680	691	692	87	14%	1	0%
Permian	5,656	5,754	5,699	5,843	5,866	5,914	5,922	5,998	5,982	5,961	5,931	5,976	5,981	325	6%	5	0%
Total	8,855	9,148	9,227	9,422	9,450	9,547	9,587	9,655	9,684	9,649	9,603	9,654	9,653	798	9%	-1	0%

Source: EIA, SAF

Figure 30: MoM Changes in US Major Shale/Tight Oil Production



Source: EIA, SAF

Oil: EIA DUC's down MoM in October

DUCs down in October

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 -92 MoM (-545 YoY) in October to 4,524 DUCs. Note that September's data (including the Permian) had a net downwards revision of -65 to 4,616. (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 six 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, 4,616 in September and now 4,524 DUCs in October. (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 (-166 YoY), Eagle Ford (-244 YoY), and Bakken (-207 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 31: Estimated Drilled Uncomplete Wells in 2023

Drilled Uncompleted	June	July	Aug	Sept	Oct	Oct YoY	YoY %	Oct MoM	MoM %
Anadarko	739	734	730	719	709	-37	-5%	-10	-1%
Appalachia	782	765	755	758	747	-87	-10%	-11	-1%
Bakken	490	472	458	368	350	-207	-37%	-18	-5%
Eagle Ford	450	428	419	416	399	-244	-38%	-17	-4%
Haynesville	718	725	732	749	751	130	21%	2	0%
Niobrara	830	807	792	763	736	66	10%	-27	-4%
Permian	841	852	849	843	832	-166	-17%	-11	-1%
Total	4,850	4,783	4,735	4,616	4,524	-545	-11%	-92	-2%

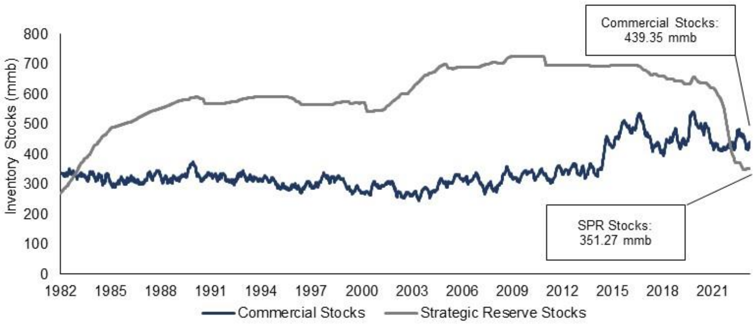
Source: EIA, SAF

US SPR reserves

Oil: US SPR reserves now -88.080 mmb lower than commercial crude oil reserves

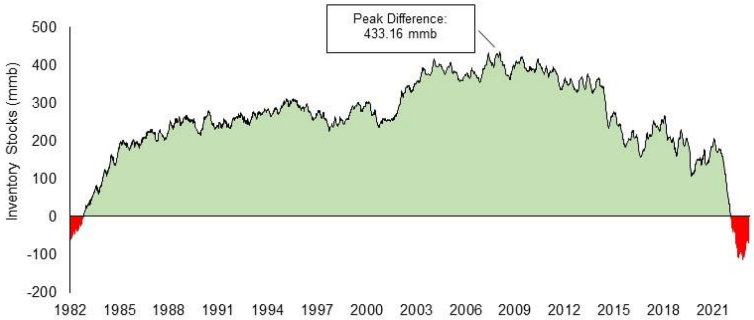
Oil in the US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sept 16, 2022 week. This deficit widened this week after a build in commercial oil stocks of +0.773 mmb. The EIA's weekly oil data for November 10 [LINK] saw the SPR reserves stay flat WoW at 351.274 mmb, while commercial crude oil reserves increased +3.592 mmb to 439.354 mmb. There is now a -88.080 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 32: US Oil Inventories: Commercial & SPR



Source: EIA, SAF

Figure 33: US Oil Inventories: SPR Less Commercial



Source: EIA, SAF

Oil: US gasoline prices -$0.06 this week to $3.32

US gasoline prices

US gasoline prices continue to drift lower, in great part driven by lower California gasoline prices. Yesterday, AAA reported that US national average prices were down $0.06 this week to $3.32 on Nov 18, which is also down $0.26 MoM and down $0.39 YoY vs year ago of $3.71. 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 several weeks was the expected big drop in California gasoline prices following the surprise late Sept Gov Newsom move to then immediately switch to cheaper winter blend gasoline. Yesterday, AAA reported California average gasoline prices were down $0.08 WoW to $5.00 and now down $0.56 MoM and down $0.34 YoY. 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: Crack spreads increased $1.46 WoW to $23.95

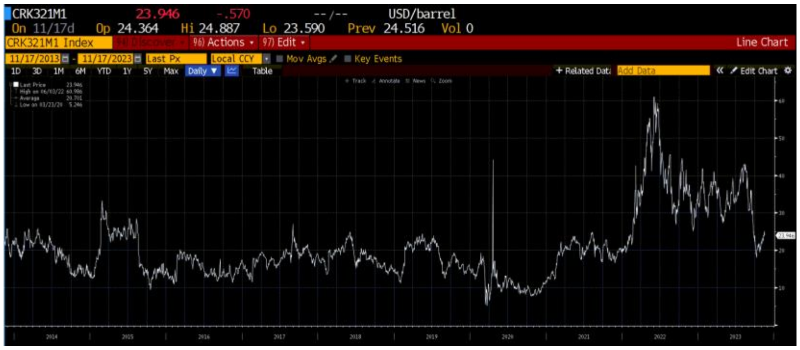
Crack spreads up this week

Recall that last week, the EIA data wasn't available due to their site maintenance. 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 +$1.46 to $23.95 on Nov 17, which followed $22.39 on Nov 10, $21.65 on Nov 3, $20.47 on Oct 27, $21.81 at Oct 20, $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 $23.95 are a little above the high end of the more normal pre-Covid that was more like $15-$20, but not high enough to drive any real change in refiner plans.

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 $23.95 as of the Friday Nov 17, 2023 close.

Figure 34: Cushing Crude Oil 321 Crack Spread Nov 17, 2013 to Nov 17, 2023



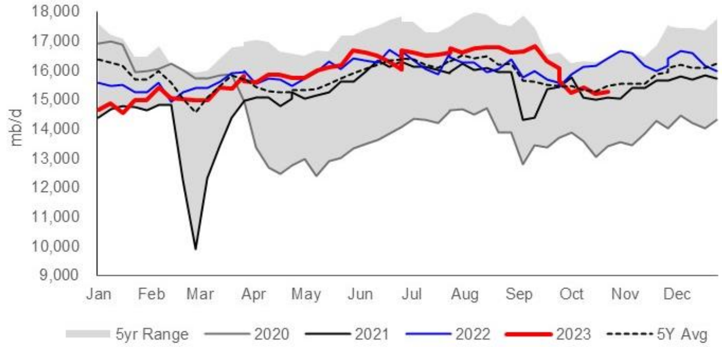
Source: Bloomberg

Oil: Refinery inputs up +0.164 mmb/d WoW to 15.399 mmb/d

Refinery inputs +0.164 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 November 10 [LINK]. The EIA reported crude inputs to refineries were up +0.164 mmb/d this week to 15.399 mmb/d and are down -0.753 mmb/d YoY. Refinery utilization was up +0.9% WoW to 86.1%, which is -6.8% YoY. We likely hit the seasonal peak in refining last month.

Figure 35: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports -0.385 mmb/d WoW as oil exports up +0.364 mmb/d WoW

US net oil imports

The EIA reported US "NET" imports were down -0.385 mmb/d to 1.484 mmb/d for the November 10 week. US imports were down -0.021 mmb/d to 6.373 mmb/d, which is among the low points for the last few months. (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 decrease in US imports was driven mostly by "Top 10". Top 10 was down -0.046 mmb/d. Some items to note on the country data: (i) Canada was down -0.038 mmb/d to 3.835 mmb/d. (ii) Saudi Arabia was up +0.050 mmb/d to 0.242 mmb/d. (iii) Mexico was down -0.099 mmb/d to 0.366 mmb/d. (iv) Colombia was down -0.048 mmb/d to 0.316 mmb/d. (v) Iraq was up +0.096 mmb/d to 0.283 mmb/d. (vi) Ecuador was down -0.025 mmb/d to 0.036 mmb/d. (vii) Nigeria was up +0.031 mmb/d to 0.070 mmb/d.

Figure 36: US Weekly Preliminary Imports by Major Country

(thousand b/d)	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	Oct 20/23	Oct 27/23	Nov 3/23	Nov 10/23	WoW
Canada	3,505	3,832	3,405	3,679	3,645	3,287	3,880	3,291	3,544	3,723	3,387	3,485	3,873	3,835	-38
Saudi Arabia	285	221	462	567	383	383	383	291	67	208	436	294	192	242	50
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	901	780	437	699	1,095	603	844	524	656	609	614	1,004	465	366	-99
Colombia	75	290	295	300	211	287	286	143	289	150	146	74	364	316	-48
Iraq	304	283	232	100	248	233	280	306	247	127	182	351	187	283	96
Ecuador	363	192	328	99	0	134	167	125	0	0	92	133	61	36	-25
Nigeria	307	89	144	220	219	0	3	0	46	48	89	30	39	70	31
Brazil	130	198	245	68	545	209	240	209	362	63	221	168	234	135	0
Libya	83	85	0	90	0	0	0	89	88	47	86	106	0	86	0
Top 10	5,953	5,970	5,548	5,822	6,346	5,136	6,083	4,978	5,299	4,975	5,253	5,645	5,415	5,369	-46
Others	1,205	963	1,069	948	1,236	1,381	1,146	1,237	1,030	967	760	780	979	1,004	25
Total US	7,158	6,933	6,617	6,770	7,582	6,517	7,229	6,215	6,329	5,942	6,013	6,425	6,394	6,373	-21

Source: EIA, SAF

Oil: Chevron increasing diluent to Venezuela should increase Venezuela oil exports

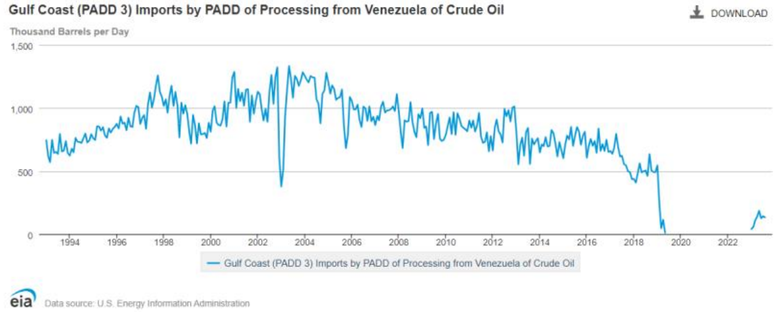
Venezuela oil exports should increase

On Thursday, we tweeted [LINK] "*Heavy oil 101. More diluents to Venezuela = More Venezuela #Oil exports. Chevron increasing Naptha (diluent) supply to blend with VEN heavy oil to bring to export quality. Thx @mariannaparraga @ArathySom @LauraSanicola #OOTT.*" Chevron importing diluent into Venezuela was one of the first actions we identified a year ago as a capital light way for Chevron to increase Venezuela oil exports. Naptha is a diluent that is used to blend with Venezuela heavy oil to make the oil meet export specs. So increasing naptha to Venezuela = increasing Venezuela oil exports. On Thursday, Reuters reported [LINK] Chevron "*has begun supplying fuel to Venezuela's state-run oil company PDVSA under Washington's approval of expanded deals with the South American country, three people familiar with the matter said on Thursday. Chevron and PDVSA previously had stuck to a 2022 agreement to expand some operations that included a swap of Venezuelan crude for Chevron-provided diluents to their joint ventures and for repayment of debts owned by Venezuela. Last month, Washington broadly eased sanctions on the country's oil sector, paving the way for wider sets of exchanges. Under terms that imply an expansion of the previous swap deal, Chevron has begun supplying PDVSA with fuel including naphtha and gasoline blend stock, one of the people said. The first vessel under the arrangement arrived in Venezuela's Jose port this week carrying 450,000 barrels of heavy naphtha for PDVSA, according to tanker tracking data and a document see by Reuters. A second tanker was being chartered this week to transport some 240,000 barrels of gasoline blend stock for November delivery, two of the sources added.*" Our Supplemental Documents package includes the Reuters report.

More Venezuela oil into Gulf Coast means less Cdn oil to Gulf Coast in 2023

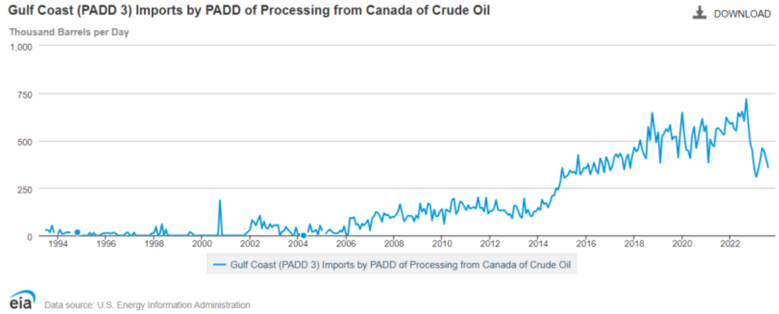
Chevron's increasing Venezuela oil production is expected to come to the US Gulf Coast. A year ago, our Nov 26, 2022 tweet on Chevron getting it new license tin Venezuela reminded that more Venezuela oil to the Gulf Coast is a negative to Cdn oil differentials. Our tweet included the below EIA crude oil imports in PADD 3 (Gulf Coast) graphs, which remind how Cdn heavy/medium crude was able to penetrate PADD 3 (Gulf Coast) because there was a need with declining Mexico and Venezuela crude oil. Conversely, if Venezuela increases, it will mean more Venezuela crude to the Gulf Coast and less need/increased pressure on Cdn differentials. And we are already seeing the impact in 2023. As Chevron imports more Venezuela oil into the Gulf Coast, Canadian oil into the Gulf Coast has gone down. US, Of course, the good thing is that in 2023 the start up of the 590,000 b/d TMX should more than offset any increased Venezuela oil into the Gulf Coast.

Figure 37: Gulf Coast PADD 3 Crude Oil Imports From Venezuela



Source: EIA

Figure 38: Gulf Coast PADD 3 Crude Oil Imports From Canada



Source: EIA

Argus, Venezuela oil exports also hurts Cdn heavy oil to China and Colombia

Here is what we wrote in last week's (Nov 12, 2023) Energy TGidbits memo. "*We have been highlighting how increasing Venezuela oil exports to the US Gulf Coast but Argus reminded this week, they will also hurt Cdn heavy oil exports to China and Colombia. On Thursday, Argus wrote [LINK] "Venezuela could displace Canadian crude re-exports Two key buyers of Canadian heavy crude exports from the US Gulf coast are poised to increase receipts of Venezuelan crude following a temporary lifting of sanctions, which could displace Canadian supplies. PetroChina's 400,000 b/d Jieyang refinery in south China's Guangdong province accounted for 23.1pc of Cold Lake, Access Western Blend, and Christina Dilbit exports from the US Gulf coast in January-August this year, according to analytics firm Vortexa. Repsol's 220,000 b/d Cartagena refinery in Spain accounted for 17.5pc. Both refineries have been in discussions to increase loadings of similar-quality heavy Venezuelan crude after the US temporarily lifted some sanctions targeting the oil and gas industry for six months ending on 18 April. PetroChina is likely to buy around 260,000-300,000 b/d of crude from Venezuela's state-owned PdV, according to traders, which could displace nearly all of the 319,000 b/d of Canadian heavy crude purchases that the Jieyang efinery averaged in the first eight months of this year." Our Supplemental Documents package includes the Argus report."*

Oil: Finally, Biden Admin says all VEN sanctions are on the table if Maduro reneges

Biden Admin warns Maduro about reneging

It's taken almost four weeks for the US to finally come out with some public statements on its relief from sanction on Venezuela. Over three weeks ago, Bloomberg reported that Venezuela Supreme Justice Tribunal announced it had suspended the results of the opposition primary vote on Oct 22 that elected primary's winner Maria Corina Machado. Venezuela voiding the election of the opposition winner looks like a pretty clear violation. On Friday, Bloomberg reported "*The Biden administration is prepared to revoke all licenses recently awarded to Venezuela if Nicolás Maduro doesn't present a path toward fairer elections by the end of November. US Assistant Secretary of State for Western Hemisphere Affairs Brian Nichols said "everything is on the table," including revoking recently issued licenses allowing the export of Venezuelan oil and gas. The gesture of goodwill came as response to the signing of an electoral roadmap agreement between the Maduro government and the opposition. "If they don't take the agreed steps, we will remove the licenses we've awarded," Nichols said in an interview Thursday on the sidelines of the Asia-Pacific Economic Cooperation forum in San Francisco. Among the agreed steps was to define a process to allow all opposition candidates to run in the 2024 presidential election. The winner of Venezuela's Oct. 22 primaries, María Corina Machado, remains banned from participating by Maduro's government. Despite his comments on the potential for sanctions to return if the Maduro regime fails to comply, Nichols said that he's "confident" that the government will live up to the deal and create a way for Machado to run.*"

Oil: No surprise, Russia cancels temporary gasoline export ban

Russia cancels temp gasoline export ban

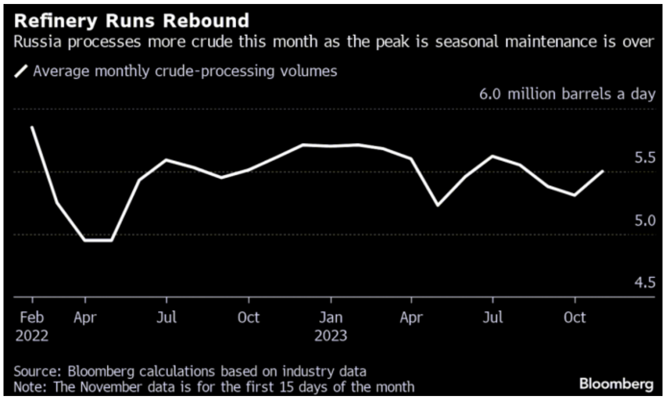
No one should be surprised that, on Friday, TASS reported [LINK] Russia has cancelled its temporary gasoline export ban from Nov 17. No question that the ban introduced on Sept 21 kept more gasoline in Russia. But there was less gasoline to export as refineries were going into fall maintenance so consuming less oil and producing less product. But, as noted below, refineries are coming out of maintenance and refining more oil and producing more gasoline. So this is why no one should be surprised to see the export ban lifted. We expect this to lead to increased exports of gasoline because there will be more gasoline being produced by refineries as they are coming out of seasonal maintenance and refining more oil. Its Refining 101. So less oil will be available for export, but more gasoline will be available for export as more is being produced.

Oil: Russia refineries processing more oil so less "oil" for export

Russia refineries coming out of maintenance

Please note that this comment is with respect to Russia's export of "oil" and, as noted above, Russia should be able to increase its gasoline exports with the gasoline export ban being lifted and Russia refineries producing more gasoline. All refineries go thru seasonal maintenance. As expected, Russian oil refineries are coming out of maintenance and that means their refineries are processing more oil and therefore there is less oil for export. The seasonal maintenance isn't finished so oil processing should be increasing for the next month. On Friday, we tweeted [LINK] "*Russian oil refineries processing more oil = less #Oil for export. Russia refinery processed 5.55 mmb/d for Nov 9-15, +84,000 b/d vs early Nov. Still not finished seasonal maintenance so oil processing volumes should go higher in Dec. Thx @ja_herron. #OOTT.*" On Friday, Bloomberg reported "*Russia's oil-processing rates in the week to Nov. 15 have jumped to the highest in 12 weeks as the nation's refiners have returned most of their capacity online after seasonal maintenance. The country processed* *nearly 5.55 million barrels a day between Nov. 9-15, according to a person with knowledge of the matter. These are the highest daily processing rates since late August, and the volumes are almost 84,000 barrels a day more than the average for the first days of November, Bloomberg calculations based on historic data show."* Bloomberg also wrote "*Completion of seasonal maintenance this month may bring Russia's oil-processing rates in December back to 5.8 million barrels per day, the level last seen in early April, according to estimates of market intelligence firm Kpler."* Our Supplemental Documents package includes the Bloomberg report.

Figure 39: Russia refinery crude oil processing volumes

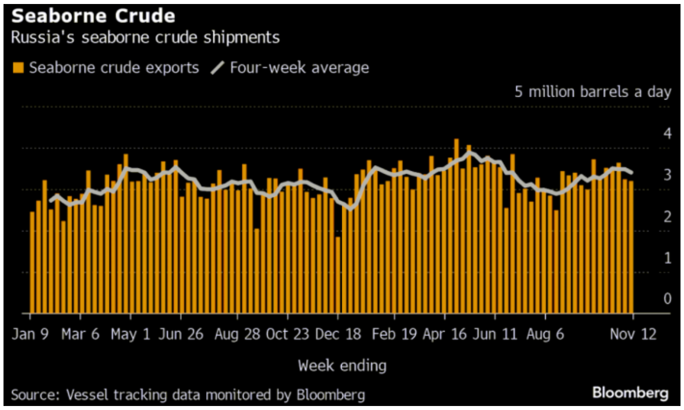


Source: Bloomberg

Russia oil shipments over commitment

Oil: Russia crude oil shipments down but still over commitment to cut 300,000 b/d
As expected, Russia's crude oil shipments were down this week as Russian refineries have come out of fall maintenance ie. are processing more oil so less oil to export. Russia oil shipments for the Nov 12 week met its commitment to cut, but the 4-week average was still 120,000 b/d above their commitment. On Tuesday, we tweeted [LINK] "*Russia #Oil shipments. 11/12 wk: -40,000 b/d to 3.2 mmb/d. But 4-wk average still 3.4 mmb/d so still over commitment of ~3.28 mmb/d. Increasing refinery runs means less oil for export. Thx @JLeeEnergy #OOTT."* Bloomberg wrote "*Russia's seaborne crude shipments eased slightly ahead of a meeting of OPEC+ oil minsters later this month, bringing flows back below the level pledged by Moscow. The move comes after exports surged in October. About 3.2 million barrels a day of crude was shipped from Russian ports in the week to Nov. 12, tanker-tracking data monitored by Bloomberg show. That was down by 40,000 barrels a day from the period to Nov. 5, but still 700,000 barrels a day above the levels seen in August. Moscow said in early August that it would prolong export restrictions at a reduced rate of 300,000 barrels a day below their May-June average level until the end of the year, a policy confirmed earlier this month. That would imply seaborne shipments of 3.28 million barrels a day if the burden falls entirely on crude."* And "*The less volatile four-week average flow fell to 3.4 million barrels a day, down by about 80,000 barrels a day from the period to Nov. 5. That was the lowest in four weeks, but still more than 500,000 barrels a day above shipments in the period to Aug. 20, when Moscow's crude export cuts were at their deepest."* Our Supplemental Documents package includes the Bloomberg report.

Figure 40: Russia's seaborne crude shipments thru Nov 12 week



Source: Bloomberg

Oil: OPEC MOMR: only minor changes to demand/supply forecasts

OPEC Monthly Oil Market Report

On Monday at 5am MT, OPEC released its Monthly Oil Market Report. (i) We thought the takeaway was neutral and possibly slightly negative. But markets thought different as Brent was $81.56 at release and closed at $82.52. There were only minor changes to demand and non-OPEC supply forecasts but OPEC production continues to increase. (ii) Minor increase to 2023 demand at +2.46 mmb/d to 102.11 mmb/d (was +2.44 to 102.06). (iii) Quarterly demand changes for 2023. Q1/23 decreased slightly to 101.58 mmb/d (was 101.59). Q2/23 increased to 101.47 mmb/d (was 101.35). Q3/23 decreased to 102.11 mmb/d (was 102.17 mmb/d). Q4/23 increased to 103.28 mmb/d (was 103.13). (iv) No change to 2024 demand growth but a higher total due to higher starting point. Nov MOMR is +2.25 mmb/d to 104.36 mmb/d (was +2.25 to 104.31). (v) OPEC still forecasts increasing oil demand for OECD countries at +0.26 mmb/d YoY to 46.09 mmb/d ie not reaching peak oil demand. Note IEA is still forecasting peak oil demand for OECD countries to be reached in 2024. (vi) Non-OECD is forecast +1.99 mmb/d YoY to 58.27 mmb/d (was 58.24 mmb/d) with the largest growth being China +0.58 mmb/d YoY to 16.67 mmb/d and the Middle East +0.38 mmb/d YoY to 9.02 mmb/d. Other Asia non-OECD +0.31 mmb/d YoY to 9.57 mmb/d. India +0.22 mmb/d YoY to 5.59 mmb/d (was 5.60 mmb/d). (vii) Non-OPEC supply was slightly increased for 2023 to +1.78 mmb/d YoY (was +1.68 mmb/d, higher due to higher 2023 starting point) and full year average of 67.59 mmb/d (was 67.49 mmb/d). For 2024, OPEC forecasts non-OPEC supply at +1.38 mmb/d YoY to 68.97 mmb/d (from 68.88 mmb/d). Key YoY non-OPEC growth areas for 2024 are US +0.61 mmb/d (unchanged), Canada +0.24 mmb/d (unchanged), Guyana at +0.16 mmb/d (was +0.15 mmb/d). (viii) OPEC Secondary Sources for October were +80,000 b/d MoM to 27.900 mmb/d. The major changes were Angola up +51,000 b/d MoM to 1.172 mmb/d Iran up +46,000 b/d MoM to 3.115 mmb/d. (ix) Direct Communications (what the OPEC countries report). There were a few items to note vs what countries directly reported vs Secondary Sources estimates: Iran does not provide production numbers. Iraq does its norm and says it produced less at 4.189 mmb/d in Oct vs. Secondary Sources of 4.329 mmb/d, and Venezuela does its norm and says it produced more at 786,000 b/d vs. Secondary Sources of 751,000 b/d. (x) Our Supplemental Documents package includes excerpts from the November OPEC MOMR.

OPEC Oct production +399,000 b/d since Aug, Iraq/UAE over quota

We thought the OPEC MOMR Nov was slightly negative because it reinforced one of the oil market concerns – increasing OPEC production in the face of no change in quotas. On Monday, we tweeted [LINK] "*Time for The Man, KSA Energy Minister Abdulaziz to remind others to get back in line. #OPEC production keeps sneaking up. OPEC Oct of 27.9 mmb/d was +399,000 b/d vs Aug. Iraq now +109,000 b/d vs quota. UAE now +52,000 b/d vs quota. Highlighted by @Jamie__Ingram. #OOTT".* OPEC production in Oct was 27.900 mmb/d, which was +80,000 b/d MoM, but +399,000 b/d vs Aug of 27.501 mmb/d. We were listening to the Gulf Intelligence Daily Podcast held hours before the OPEC MOMR and MEES Jamie Ingram had noted his look ahead to the next OPEC meeting and he expected one of the messaging items would have to be that members would be getting back in line on compliance to quota. It's why it jumped out at us that Iraq Oct production was 109,000 b/d over quota and UAE was 52,000 b/d over quota.

Oil: Oil demand, IEA raises oil demand for 2024 by 0.1 mmb/d to 102.9 mmb/d

IEA Oil Market Report

On Tuesday, the IEA released its monthly Oil Market Report for November at 2am MT. They only release very limited public info, but Bloomberg provided detailed tables and added color from the report. (i) New record oil demand in 2024. The IEA continues to highlight the big drop in growth rates for oil demand but also sees 2024 as another year of record demand. And they increased their 2024 oil demand forecast by 0.2 mmb/d to 102.9 mmb/d, which is another new record for oil consumption. The IEA slightly raised its oil YoY demand growth rates as well as its 2023 demand forecast such that total 2023 oil demand is up 0.1 mmb/d to 102.0 mmb/d (was 101.9 mmb/d) and up in 2024 to a new record 102.9 mmb/d (was 102.7 mmb/d). (ii) Nov OMR keeps what we saw in the Oct OMR in that the IEA walked back what stood out to us as an unusual assumption for their Q1/24 oil demand. In their June OMR, the IEA had a massive -2.0 mmb/d QoQ drop in Q1/24 vs Q4/23. The normal seasonal pattern is for Q1 to be down sequentially QoQ vs the prior year Q4. But the 2.0 mmb/d QoQ drop was way higher than normal. They walked that QoQ decline to -1.9 mmb/d in July OMR, then -1.6 mmb/d QoQ in Aug OMR, then -1.4 mmb/d QoQ in the Sept OMR , then -1.3 mmb/d QoQ in the Oct OMR and now the same -1.3 mmb/d QoQ in the Nov OMR. Five months ago, we looked at some of the older pre-Covid OMR reports and didn't see any QoQ forecasts this big, rather it was more like 1 mmb/d QoQ. The reason why we highlight this is if Q1/24 is low, it probably means the rest of 2024 is low. (ii) IEA kept increased non-OPEC supply. For 2023, Nov OMR is now +1.7 mmb/d YoY to 67.7 mmb/d. For 2024, non-OPEC supply, up to +1.2 mmb/d YoY to 68.9 mmb/d (was +1.2 mmb/d YoY to 68.8 mmb/d). (iv) OECD stocks are still low due to a massive draw in Q3, despite a small build in Sept. The IEA wrote "*Global observed crude oil inventories fell by a massive 140 mb over the third quarter to a fresh low, according to the available data, as refineries boosted activity ahead of seasonal maintenance…Global observed inventories rose by 9.9 mb in September but remain near historical lows. Oil on water rebounded by 25.3 mb and OECD stocks inched up by 2.9 mb while non-OECD inventories declined by 18.3 mb. In 3Q23, crude oil stocks plunged by a massive 141.4 mb and oil product built by 112.7 mb as supply cuts by OPEC+ countries coincided with increased refinery activity."* Our Supplemental documents package includes the IEA release and the Bloomberg reports.

Figure 41: IEA Global Demand Forecast by OMR Report

mmb/d	2022	Q1/23	Q2/23	Q3/23	Q4/23	2023	23-22	Q1/24	Q2/24	Q3/24	Q4/24	2024	24-23
Nov23	99.6	100.3	101.7	103.0	102.8	102.0	2.4	101.5	102.4	103.5	104.1	102.9	0.9
Oct 23	99.6	100.4	101.8	102.7	102.6	101.9	2.3	101.3	102.2	103.5	103.9	102.7	0.8
Sep 23	99.6	100.4	101.7	102.6	102.5	101.8	2.2	101.1	102.6	104.0	103.5	102.8	1.0
Aug 23	100.0	100.6	102.0	102.9	103.1	102.2	2.2	101.5	102.6	104.2	104.3	103.2	1.0
July 23	99.9	100.5	101.4	103.1	103.3	102.1	2.2	101.4	102.6	104.3	104.5	103.2	1.1
June 23	99.9	100.5	101.6	103.4	103.5	102.3	2.4	101.5	102.5	104.1	104.4	103.1	0.8
May 23	99.9	100.5	101.3	103.0	103.1	102.0	2.1						
Apr 23	99.9	100.4	101.2	103.1	103.0	101.9	2.0						
Mar 23	99.9	100.7	101.3	101.9	101.9	101.5	1.6						
Feb 23	100.0	100.1	101.1	102.9	103.5	101.9	1.9						
Jan 23	99.9	99.6	100.8	102.9	103.5	101.7	1.8						
Dec 22	99.9	99.7	100.6	102.7	103.4	101.6	1.7						
Nov 22	99.8	99.6	100.5	102.3	103.0	101.4	1.6						

Source: IEA, Bloomberg, SAF

Oil: US destroyer shoots down Houthi drone heading toward it in Red Sea

US shot down Houthi drone

We continue to be surprised that there doesn't appear to be risk concerns on shipping in the Red Sea and Bab el Mandeb. This week, there more missiles and drones shot down in the Red Sea. (i) On Wed, US Central Command tweeted [LINK] "*On November 15th, while transiting the international waters of the Red Sea, the crew of the USS Thomas Hudner engaged a drone that originated from Yemen and was heading in the direction of the ship. The Hudner's crew engaged and shot down the drone to ensure the safety of U.S. personnel. There were no U.S. casualties or any damage to the ship*." The Houthis shot a drone at the US destroyer. (ii) On Friday, Defense Secretary Austin was specifically asked if conflict with the Houthis represents an expansion into a regional conflict for the US. The Bloomberg transcript was "*There have been incidents of – of Iranian proxies or Houthis launching weapons or munitions at – at various -- at various times, but I wouldn't describe that as a -- a wider regional conflict. They're -- they're incidents certainly that -- that we continue to see and you'll probably -- you'll probably see them going forward, but I don't think that's reached the threshold of a -- of -- of wider regional conflict at this point, so. QUESTION: What would reach that threshold? AUSTIN: I'm sorry? QUESTION: What would reach that threshold for you? AUSTIN: Well, I mean, if you -- if -- if you saw us in a fight with Iran or if you saw us in a fight with the Houthis, an all-out fight, I think that's -- that's a regional conflict."* (iii) On Tuesday, Israel intercepted a Houthi ballistic missile somewhere over the Red Sea. The missile was heading towards Eliat in southern Israel. (iv) The point that doesn't' seem to bother people is that drones and missiles are being shot down over the Red Sea, which is the major sea transit for all ships/tankers that go thru the Suez Canal. We believe that if the level of military action that has happened in the Red Sea had been happening in the Persian Gulf, oil prices would be way higher. We recognize that others don't share this concern. But we just have to think there is added risk to ships in the Red Sea when there are more missiles being launched and shot down. We certainly don't dispute that the Strait of Hormuz is the most important potential shipping chokepoint for oil and LNG transit and that continues to be the primary worry/focus for most wondering if the Israel/Hamas war expands to a regional war involving Iran. But the reality so far is that there is increasing military action in the Red Sea thanks to the Houthis. We say Suez Canal 101 because people overlook that every tanker or cargo ship that goes thru the Suez Canal has to also go thru the Red Sea and Bab el Mandeb.

Houthis have only warned on Israel ships and not goods carrying to/from Israel

If we were looking for a reason why people aren't worried about sea transit thru the Red Sea and Bab el Mandeb despite missiles and drones being shot down is that they must believe the shooting can be limited to US navy ships and Israel flagged/owned ships. So far, the Houthis have only warned on Israel flagged and owned ships and not ships that are carrying goods to and from Israel. People must be comfortable that this targeting limits can be done without impacting any other shipping thru the Red Sea and Bab el Mandeb.

Over 6 mmb/d of oil & products is tankered thru the Bab el-Mandeb

Here is what we wrote in our Aug 1, 2021 Energy Tidbits memo. "*The Bab el-Mandeb is one of the world's most significant chokepoints for moving oil and petroleum products. The EIA Aug 27, 2019 brief "The Bab el-Mandeb Strait is a strategic route for oil and natural gas shipments" reminds "The Bab el-Mandeb Strait is a sea route chokepoint between the Horn of Africa and the Middle East, connecting the Red Sea to the Gulf of Aden and Arabian Sea. Most exports of petroleum and natural gas from the Persian Gulf that transit the Suez Canal or the SUMED Pipeline pass through both the Bab el-Mandeb and the Strait of Hormuz." And the EIA estimates "In 2018, an estimated 6.2 million barrels per day (b/d) of crude oil, condensate, and refined petroleum products flowed through the Bab el-Mandeb Strait toward Europe, the United States, and Asia, an increase from 5.1 million b/d in 2014. Total petroleum flows through the Bab el-Mandeb Strait accounted for about 9% of total seaborne-traded petroleum (crude oil and refined petroleum products) in 2017. About 3.6 million b/d moved north toward Europe; another 2.6 million b/d flowed in the opposite direction mainly to Asian markets such as Singapore, China, and India". Our Supplemental Documents package includes the EIA brief [LINK].*

Figure 42: Bab el-Mandeb Strait, a world oil chokepoint

Source: EIA

Oil: We still don't expect Saudi to add back oil to physical markets until Q2/24

The next meeting of the OPEC+ JMMC meeting is on Nov 26. It has been interesting to see more oil market commentators start to move to the potential for Saudi Arabia and Russia to

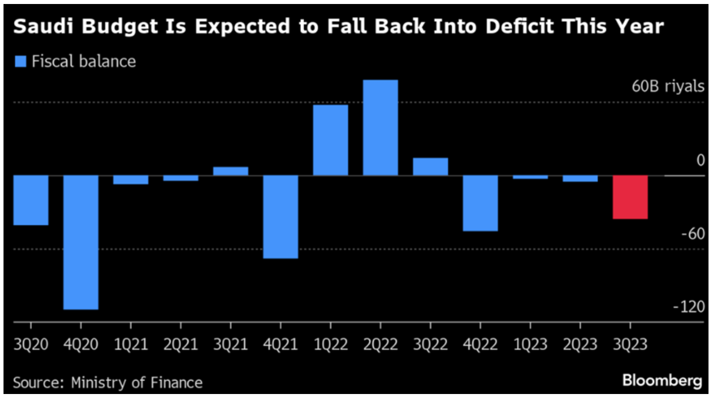
Saudi voluntary oil cuts

extend their voluntary cuts past Dec 31, 2023. We certainly don't have their global contacts. Rather, our position has been and continues to be that we don't see why Saudi would want to add the voluntary oil barrels back into physical markets in Q1/23 when Q1 oil demand is normally seasonally lower than the preceding Q4. Ie. why would they add barrels into a lower demand period. Here is what we wrote in our Nov 5, 2023 Energy Tidbits before the Saudi and Russia announcements of extending the cuts. "*We heard a number of oil watchers comment this week on when will Saudi add back its voluntary 1 mmb/d cuts that, as of now, are only in place until the end of Dec. It seemed like more are moving to the cuts continuing past Dec 31. No one knows, but our view is unchanged – absent a major oil supply interruption, we don't see Saudi Arabia adding back oil to physical markets until Q2/24. Saudi Arabia knows that oil demand is seasonally lower in Q1 each year vs the preceding Q4. And Saudi Arabia knows China oil stocks are high and refinery margins are low. Our latest tweet on this was on Oct 6 [LINK] "Beyond headlines, see paragraph 3 "Still, Saudi negotiators emphasized that market conditions would guide any action on production". Hard to see Saudi adding #Oil in early Q1, the seasonally low demand period . But a Q1 decision to add Oil into physical markets in Q2 for seasonal increasing demand could make sense. #OOTT."*

No question it gets tougher financially for Saudi to hold

Here is another item from our Nov 5, 2023 Energy Tidbits memo. *"There is no question it is tougher for Saudi to keep the voluntary 1 mmb/d off the market as it is hurting their financial position. On Thursday, Bloomberg reported "Saudi Budget Deficit Blows Out to $9.5 Billion as Revenues Slip. Saudi Arabia posted a budget deficit in the third quarter that was almost seven times larger than in the previous three months, as the world's biggest crude exporter endured a decline in both energy and non-oil income. The government's shortfall came in at 35.8 billion riyals ($9.5 billion) in the three months ended in September, according to a budget report from the Ministry of Finance published late Wednesday. An 8% decline in expenditure to about $78 billion was outpaced by an almost 18% decrease in revenues that were $69 billion, largely due to lower receipts from oil and taxes. The quarterly deficit was more than twice as large as in the same period of 2022."*

Figure 43: Saudi Budget is Expected to Fall Back into Deficit This Year

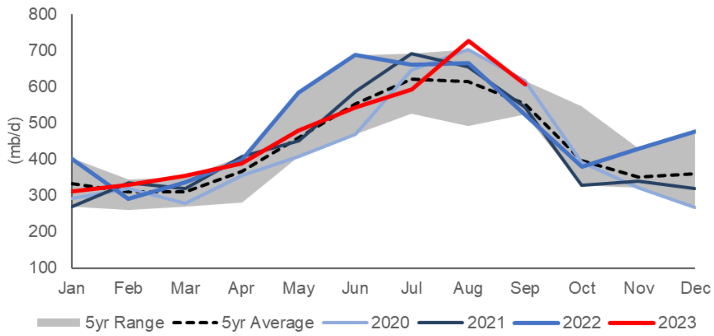


Source: Bloomnberg

Saudi oil use for electricity down in Sept

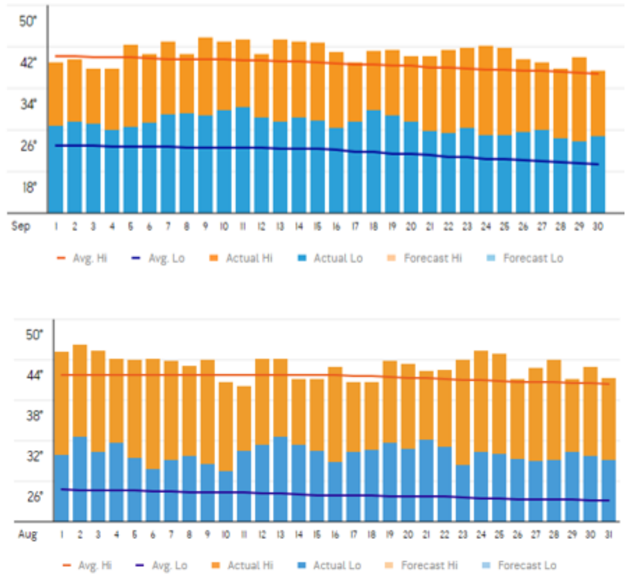
Oil: Saudi use of oil for electricity down big in Sept ie., more oil available for export
The key seasonal theme for Saudi oil exports is that, all things being equal, Saudi can export more oil in winter months as it uses less oil for electricity and, conversely, it would have less oil for export in 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 September [LINK] was updated on Thursday. Saudi used less oil for electricity in September vs August. Both August and September 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 September was 606,000 b/d (vs September 2022 of 522,000 b/d) and August was 726,000 b/d (vs August 2022 of 664,000 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 44: Saudi Arabia Direct Use of Crude Oil for Electricity Generation



Source: JODI, SAF

Figure 45: Riyadh Temperature Recaps for September (top) and August (bottom)

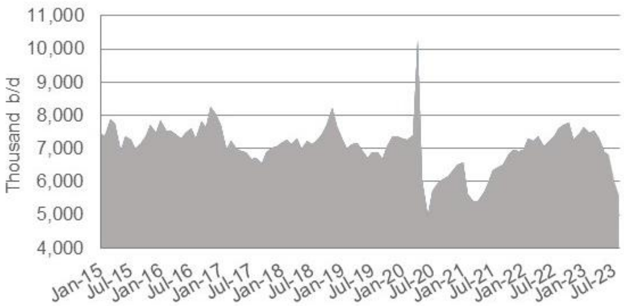


Source: Accuweather

Oil: Saudi oil exports up +170,000 b/d to 5,754 mmb/d in September
The JODI data was that production was up 57,000 b/d MoM to 8.975 mmb/d. Saudi oil exports were up +170,000 b/d MoM to 5.754 mmb/d, which is consistent with the higher production and decreased use of oil for electricity that was down -120,000 b/d MoM. Below is our graph of Saudi Arabia monthly oil exports.

Saudi oil exports up +170,000 b/d MoM

Figure 46: Saudi Arabia Oil Exports (mb/d)



Source: JODI, SAF

11/10/23 Saudi reminds oil exports are seasonal, less in summer/more in winter
Here is what we wrote in last week's (Nov 12, 2023) Energy Tidbits memo. "*We probably should have called it Saudi Oil 101, but we were a little surprised that Saudi Energy Minister felt the need to explain how there is seasonality to Saudi's oil exports because Saudi domestic consumption of oil has a seasonal pattern. So seasonally,*

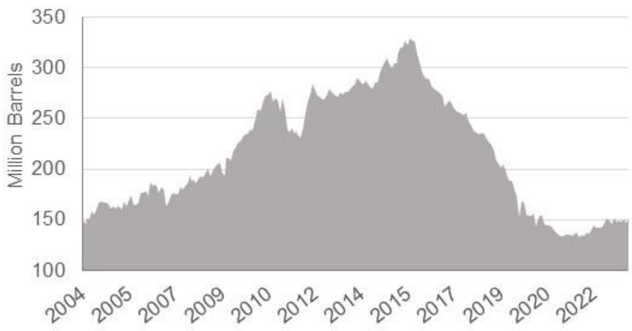
there is more Saudi oil available for export in the fall than in the summer. On Friday, we tweeted [LINK] "Agreed, he is explaining Saudi Oil 101. Summer heat = more #Oil used to generate electricity for A/C ie. less for export. Aug 2023 was 726,000 b/d, +414,000 b/d vs Jan 2023. See 👇SAF 10/22/23 Energy Tidbits graph. Thx @SVakhshouri for flagging. #OOTT." Well known oil strategist Dr. Sara Vakhshouri tweeted "Saudi Energy Minister on #oil price drop: demand is healthy & speculators are to blame for the recent drop. OPEC exports don't indicate increased production. Shipments are seasonal, dipping in summer & rebounding in Sep & Oct; not a sign of output changes." This is the theme we highlight every month when we report on the monthly Saudi oil data for oil to refineries, production, exports, oil for electricity and oil into inventories. Our tweet showed our Oct 22, 2023 Energy Tidbits graph on how Saudi used 414,000 b/d more oil for electricity in Aug than it did in Jan because of the weather. The hot summers always drive up Saudi use of oil for electricity."

Oil: Saudi oil inventories down 4.641 mmb MoM in September

Saudi oil inventory data

There is a missing piece of the math to get to the monthly Saudi oil inventory changes. And if we had to guess, we would suspect the likely missing item is increasing Saudi imports of Russian oil and fuel. JODI data shows inventories were -4.641 mmb MoM, or -155,100 b/d MoM. Looking at the basic components, we would have expected a larger draw on inventory closer to +329,000 b/d MoM or up -9.870 mmb MoM. There should have been a MoM inventory build impact from production being +57,000 b/d MoM and crude oil used for electricity -120,000 b/d MoM. But the offsetting impact for a MoM inventory draw would be for exports being +170,000 b/d MoM and oil intake into refineries being +336,000 b/d MoM. This would mean a draw of -329,000 b/d MoM, but inventories were only down by 155,000 b/d MoM leaving 174,300 b/d unexplained MoM items. There is always some minor unexplained variance, but this was a larger unexplained variance than normal.

Figure 47: Saudi Arabia Oil Inventories (mb/d)



Source: JODI, SAF

Oil: IOCs want to keep Kurdistan PSCs, a big roadblock to a Kurdistan/Iraq deal

Kurdistan oil still shut in

On Friday, we tweeted [LINK] "*Big roadblock for Iraq/Kurdistan deal. APIKUR (Kurd #Oil industry association) condition precedent is Production Sharing Contracts remain in force & governed by English law. Iraq says IOCs must switch to Profit Sharing Contract. #OOTT.*" It looks like there is at least one big roadblock for an Iraq/Kurdistan deal to resume Kurdistan oil exports via Turkey. Iraq has been saying they need to get Kurdistan oil companies to give up their Production Sharing Contracts and move to a Profit Sharing Contracts. On Friday, APIKUR, the industry association for the Kurdistan oil and gas companies, released its statement on what it needs from any Iraq/Kurdistan deal and said a condition precedent to resume full exports includes keeping Production Sharing Contracts. And APIKUR says "*APIKUR members have communicated conditions precedent to resume full oil exports and remain committed to resolve outstanding issues. Production Sharing Contracts (PSCs) remain in-force and are governed by English law with dispute resolution via international arbitration at the London Court of International Arbitration*." This is in direct conflict with Iraq saying that IOCs operating in Kurdistan must switch from Production Sharing Contracts to Profit Sharing Contracts to be in line with Iraq's constitution. This is a big roadblock. Our Supplemental Documents package includes the AKIPUR release. [LINK]

Monday, Iraq said Kurdistan IOCs must switch to Profit Sharing Contracts

On Monday, we tweeted [LINK] "*Easier said than done. Iraq says Kurdistan Production Sharing Contracts with IOCs must be changed to Profit Sharing Contracts to fit within constitution. That doesn't seem to point to a quick return of Kurd #Oil via Turkey. Thx @RudawEnglish #OOTT.*" Before the APIKUR statement, Iraq has been clear that the IOCs operating in Kurdistan would have to switch to Profit Sharing Contracts so that their contracts are in line with the national constitution. Our tweet included the Rudaw (Kurdistan) news report of the Iraq/Kurdistan Sunday/Monday meetings. Rudaw wrote "*Iraq's Oil Minister Hayyan Abdul-Ghani on Monday told Rudaw that both Erbil and Baghdad are working on adjusting the Region's contracts with the International Oil Companies (IOCs) to the Iraqi constitution and expressed optimism about a prompt resumption of Kurdish oil exports. Ghani arrived in Erbil on Sunday accompanied by an Iraqi oil ministry delegation and met with KRG Prime Minister Masrour Barzani and Natural Resources Minister Kamal Muhammad Salih, to discuss the outstanding issues between the Region and Baghdad over the resumption of the Kurdish oil exports. The oil minister told Rudaw's Sangar Abdulrahman that during his meetings with Kurdish officials, the nature of the Region's contracts with the IOCs was discussed, noting that the KRG's natural resources ministry presented a "complete explanation" of the economic model and the details of the contracts. The IOCs and the KRG are bound by Production Sharing Contracts (PSCs), which Ghani noted are against the Iraqi constitution, adding that the Iraqi government licenses companies under Profit Sharing Contracts. "We have a project to adjust those contracts with the laws that are allowed by the Iraqi constitution," Ghani said.*" Our Supplemental Documents package includes the Rudaw report. [LINK]

Iraq is already +109,000 b/d over quota before Kurdistan oil is back on

The OPEC MOMR reminded of why we have been expecting the extended lack of an Iraq/Kurdistan deal to bring b ack the shut-in Kurdistan oil. Iraq is already producing 109,000 b/d over quota even with Kurdistan's ~350,000 b/d being shut-in other than for domestic Kurdistan markets. We have been highlighting that Iraq was producing basically at quota and to bring back Kurdistan oil means Iraq will have to cut back on its non-Kurdistan production. The OPEC MOMR Secondary Sources estimate for Iraq Oct production was 4.329 mmb/d, which is 109,000 b/d over quota of 4.220

mmb/d. On Monday, we tweeted [LINK] "*Why Iraq is slow playing a Kurd deal. See 👇Iraq is already 109,000 b/d over quota. What happens IF Iraq/Kurd reach a deal to bring back ~350,000 b/d of Kurd #Oil. Surely Iraq won't cut back >450,000 b/d of non-Kurd oil to be in line with quota #OOTT.*"

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

As of our 7am MT news cut off, the latest NOC production update was posted on Monday. The Google Translate of the Libya National Oil Corporation tweet [LINK] *"Crude oil production reached 1,220,000 barrels per day, and condensate production reached 53,000 barrels per day during the past 24 hours."* This is unchanged from the ~1.2 mmb/d levels over the past several months.

Libya oil stable at ~1.2 mmb/d

05/19/23: Libya NOC Chair sees production about 1.3 mmb/d by yr-end

Here is what we wrote in our May 21, 2023 Energy Tidbits memo. *"For the past few months, we have been expecting to see some indication from the Libya National Oil Corporation of where they see oil production growth in 2023, especially since we are almost at the end of May. Libya oil production has been steady right around 1.2 mmb/d. On Friday, Bloomberg reported that Libya NOC Chair Farhat Bengdara expects production to reach ~1.3 mmb/d by yr-end 2023 and, with $17b, could reach 2 mmb/d within five years. We have been expecting a higher 2023 exit production rate given the Feb comments from one of the Libya NOC operating companies (see following item) that production to reach 1.5 mmb/d by yr-end 2023. Bloomberg wrote "Libya is aiming to boost oil production by about 8% by December, a level that would catapult it to the highest in a over a decade. North Africa's biggest producer should be able to pump about 1.3 million barrels a day by the end of the year, Farhat Bengdara, chairman of the National Oil Company, said in an interview. Avoiding field closures and steps like improving oil workers' pay already helped boost output by nearly a quarter since January 2022 to 1.2 million barrels a day now, he said. Libya has been dogged by political turmoil ever since the overthrow and killing of leader Moammar Al Qaddafi in 2011, with a political stalemate pitting rival governments and factions against each other." And "Bengdara said that $17 billion of investment across 45 projects would allow the National Oil Corp. to raise production to 2 million barrels a day within five years. If sustained, that would far exceed anything achieved during Qaddafi's rule."*

02/14/23, Libya's AGOCO Chair forecast production to hit 1.5 mmb/d in 2023

As noted above, we have been expecting the Libya NOC to come out with a higher production estimate to end 2023. The Libya National Oil Corporation is really the top level company with various regional operating companies from both the east and west. One of the operating companies is Arabian Gulf Oil Company (AGOCO) that looks like it is producing ~250,000 b/d or about 20% of Libya's oil production. In Feb, the AGOCO Chair forecast Libya oil production would reach 1.5 mmb/d by year-end 2023. Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. "*We have been reporting on how Libya has surprisingly been able to keep oil production steady ~1.2 mmb/d. At the same time, we have always highlighted the big near term upside potential to its oil production if east vs west armed fighting can stay on the sidelines as that will see the return of foreign capital for both natural gas and oil. But even* *before foreign capital, the Libya National Oil Corporation has many low risk development opportunities to increase oil production. On Tuesday, the Libya Herald reported [LINK] on comments from one of Libya NOC's operating companies, Arabian Gulf Oil Company (AGOCO) Chairman Salah Gatrani. The Libya Herald wrote "The continuation of the Arabian Gulf Oil Company's (AGOCO) development operations at this pace will inevitably lead to Libya reaching a production rate of more than 1.5 million barrels of oil per day in 2023, AGOCO chairman Salah Gatrani said in an exclusive statement to Libya Herald. He said this was because of the stability witnessed by the country in general, and by the oil sector in particular. Therefore, he continued, the Gulf Company has developed its own plan within the efforts of the National Oil Corporation (NOC). Libya has been unable to maintain production beyond 1.2 million bpd. Gatrani was commenting to Libya Herald following Sunday's AGOCO's meeting on developing reserves and increasing oil production in the sector companies, attended by relevant AGOCO and NOC management. The AGOCO chairman said that his company has already begun to implement the plan prepared by the NOC to raise production and increase reserves."*

Oil: Vitol, China oil stocks unseasonably high + low crack spreads = less oil imports

China oil softness

For the last two weeks, one of the negative narratives on oil has been a weaker neaqr term outlook for China oil demand by high oil stocks, weak economy and reducing oil imports. Our Nov 5, 2023 Energy Tidbits included comments that morning from Vitol on this very concern. Here is what we wrote in our Nov 5, 2023 memo. "*There was a great reminder this morning from Mike Muiller (Head, Vitol Asia) on a key reason they market sees indicators of softness coming out of China despite solid fuel sales data and China moving into its seasonally high consumption period. Earlier this morning, we tweeted [LINK] "#Oil 101. China fuel sale data not showing signs of weakness. BUT 👇 @michaelwmuller reminds if stock are "unseasonably high", it pushes down prices, refining margins & force runs cuts. Drop in refinery runs = lower appetite for oil imports. @sean_evers @CrystolEnergy #OOTT." Muller reminded of what we called Oil 101 basics and why we track crack spreads although we have trouble finding current data on China crack spreads. As we write each week, we look at crack spreads as good indicators if refineries will want more or less crude oil. This morning, Muller reminded of this indicator. He started that weekly fuel sales data in China wasn't showing signs of economic weakness. But then he highlighted the forward looking indicators that oil stocks were "unseasonably high" and that refinery margins were to lowest levels that they haven't seen in a long time. Mulller concluded his comments "China will either need to continue running its refineries and building stock at low margins or that there will be a drop in runs and that will manifest itself into lower appetite for crude. And that's highly visible since China is such a significant global importer of crude oil. I think those are the signs of softness that the market's been detecting." Our Supplemental Documents package includes the transcript we made of his comments.*

Oil: Xi makes the case to CEOs to invest in China as "*the "next China" is still China*".

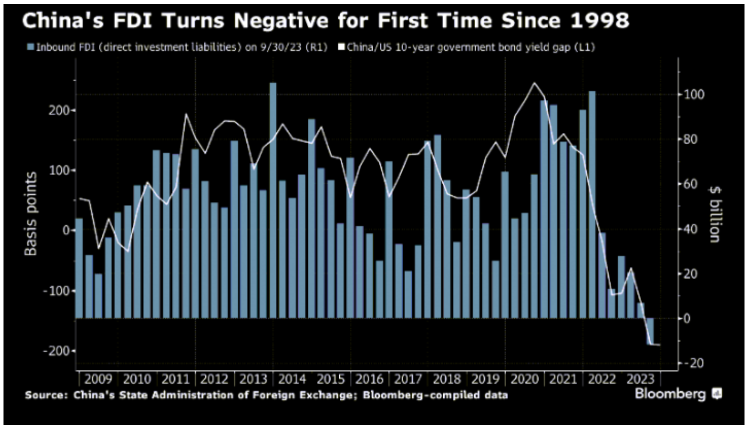
Xi's pitch to CEOs

It will take some time to see if US CEOs will start to reinvest capital in China but the consensus of the reporting on Xi's dinner with US CEO was that he put forward a better than expected commentary that laid out how China works on its relationships with other countries, its respect for laws governing economic development, how China's economy has recovered, how China's economy isstill the engine for global growth and that it's the right time for companies to invest in China – he laid out the case for capital to return to China. We tweeted [LINK] *“"... the “next China” is still China. We invite friends from business communities across the world to invest and deepen your footprint in China" Xi. Xi realizes has to reverse outflows of foreign direct investment. See 👇11/08 tweet. worth a read! #OOTT [LINK].”* The big Xi statement was “*This year, China’s economy has been steadily recovering and turning for the better. Its growth rate is among the highest among major economies of the world. And solid gains have been made in our pursuit of high-quality development. China remains the most powerful engine of global growth, and will generate one-third of global growth this year. Just as some leaders of the business community have said, China has become a synonym of the best investment destination, and that the “next China” is still China. We invite friends from business communities across the world to invest and deepen your footprint in China*.” Our Supplemental Documents package includes the transcript of Xi’s speech.

Xi trying to reverse 1st outflow of net foreign direct investment in China

On Monday morning, CNBC’s Eunice Yoon (Beijing based) was speaking on the CEO dinner with CEOs and that it would be interesting to see if US companies would start to reinvest in China without further policy changes. On Monday, we tweeted [LINK] “*Xi's key challenge is 👇stopping outflow of investment in China. Will Xi's $2,000 a plate dinner with US CEOs in San Fran drum up confidence to invest in China without any meaningful change in policy? Thx @onlyyoontv @SquawkCNBC #OOTT.”* Our tweet included a chart from last week’s (Nov 12, 2023) Energy Tidbits memo on how China just saw just the 1st net outflow of net foreign direct investment in China. Here is what we wrote in las week’s (Nov 12, 2023) Energy Tidbits memo. “*1st net outflow of net foreign direct investment in China. There is a big negative to the China recovery that we haven’t been tracking – the net inflow or outflow of foreign direct investment in China. And likely because it never got much attention because there has always been a net inflow. FDI is significant as foreign companies disproportionately contribute to trade, generated more tax revenue and urban employment. But this week, we saw the first ever net outflow of FDI since records have been kept in 1998. On Wednesday, we tweeted [LINK] “Here's why China recovery is slow. Huge exodus in foreign direct investment in China & more FDI flowing out for 1st time. Q3/23 saw $11.8b outflow, vs recent $101b in Q1/22. Foreign co's drive disproportionate trade, tax revenue & urban employment. Thx @business #OOTT.” Bloomberg wrote “China is struggling in its attempt to lure foreigners back as data shows more direct investment flowing out of the country than coming in, suggesting companies may be diversifying their supply chains to reduce risks. Direct investment liabilities in the country’s balance of payments have been slowing in the last two years. After hitting a near-peak value of more than $101 billion in the first quarter of 2022, the gauge has weakened nearly every quarter since. It fell $11.8 billion in the July-to-September period, marking the first contraction since records started in 1998.” Our Supplemental Documents package includes the Bloomberg report.”*

Figure 48: Foreign Direct Investment in China



Source: Bloomberg

Oil: China new and existing home sale prices down big MoM

China home sale prices

One of the biggest, if not the biggest, domestic economic problem is real estate. It's not just the Evergrande and Country Garden crashes, but how real estate wins have been the big boost to many citizens. And,real estate prices still keep going lower. On Thursday, we tweeted [LINK] "*No move yet off the bottom for China home prices. China new and existing home prices keep going lower and not yet found a bottom. Thx @business Ailing Tan #OOTT.*" Bloomberg reported on the National Bureau of Statistics data that showed new home prices declined 0.4% MoM in Oct, which is the largest MoM drop since Feb 2015. And existing home prices declined 0.6% MoM in Oct, which was the largest MoM drop in nine years. Market Insider wrote "*Private ownership of property makes up a quarter of China's total Gross Domestic Product and nearly 70% of all household wealth, according to data from the Cato Institute*."

Figure 49: New and existing home sale price changes

	Oct. 2023	Sept. 2023	Aug. 2023	July 2023	June 2023	May 2023	April 2023	March 2023	Feb. 2023	Jan. 2023
	Number of Cities on Yearly Change in Price									
New home										
Increase	23	25	25	26	27	26	22	18	14	15
Unchanged	-	-	1	-	1	1	-	1	1	-
Decrease	47	45	44	44	42	43	48	51	55	55
Existing home										
Increase	3	3	3	5	6	9	9	8	7	6
Unchanged	-	-	1	-	-	-	-	2	-	-
Decrease	67	67	66	65	64	61	61	60	63	64
	Number of Cities on Monthly Change in Price									
New home										
Increase	11	15	17	20	31	46	62	64	55	36
Unchanged	3	1	1	1	1	-	1	1	2	1
Decrease	56	54	52	49	38	24	7	5	13	33
Existing home										
Increase	2	4	3	6	7	15	36	57	40	13
Unchanged	1	1	1	1	-	-	-	-	-	-
Decrease	67	65	66	63	63	55	34	13	30	57

Source: National Bureau of Statistics

Source: Bloomberg

Figure 50: China new home price changes

Source: Bloomberg

Oil: China recovery losing momentum was the Bloomberg TV theme on Monday nighty

China recovery losing momentum

We were watching Bloomberg Daybreak Asia on Monday night (Tues morning Asia time) and the theme was clearly on the China recovery losing theme and the need for the central government to add more stimulus. There were a range of graphics. We tweeted [LINK] "*This plus other charts/comments on China recovery losing momentum is the theme on Bloomberg Daybreak Asia right now. #OOTT*." The graph was "*China Mortgage Lending Remains Subdued: Proxy for loans related to housing market remains low*." Don't forget the YoY comp is to when China was still under Covid restrictions.

Figure 51: China Mortgage Lending Remains Subdued

Source: Bloomberg

Oil: China scheduled domestic flights back to March 21-27 levels

China scheduled domestic flights

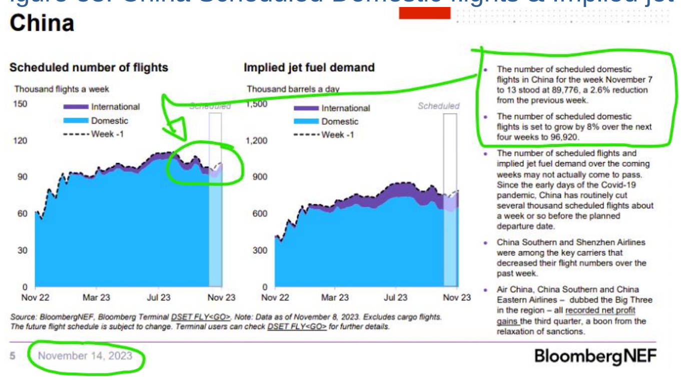
On Tuesday, we tweeted [LINK] "*Negative. China scheduled domestic flights down -2.6% WoW to 89,776 flights. Haven't been below 90,000 since Mar 21-27 levels. Thx @BloombergNEF Claudio Lubis #OOTT.*" (i) On Tuesday morning, BloombergNEF posted its Aviation Indicators Weekly Nov 14. (ii) Negative. We thought last week's report was negative as it was a return to June 6-12 week levels, but this week was worse with a return to March 21-27 levels. Scheduled domestic flights were down to 89,776 fights, which was the first time below 90,000 flights since March 21-27 levels. Plus the look ahead to the next four weeks is 96,920 flights and that is down huge from the Oct 23 report that was then expected next four weeks flights of 129,038. (iii) China scheduled domestic flights were -2.6% WoW to 89.776 flights for the Nov 7-13 week, which followed three basically flat weeks just over 92,000 flights post the drop after the 12-day national holiday travel that peaked at 101,120 flights for the Oct 3-9 week. Domestic flights haven't been under 90,000 since March 21-2 This is a big retracement and more that expected considering China has been putting a lot of stimulus and international flights have been increasing. (iv) The look ahead to the next four weeks is relatively unchanged but still hugely below what was scheduled three weeks ago. This week's update says "*The number of scheduled domestic flights is set to grow by 8% over the next four weeks to 96,920*." This is up small vs Nov 6 report look ahead of 96,510 for the then next four weeks, but hugely below the Oct 23 report that said "*the number of scheduled domestic flights is set to grow by 39.3% over the next four weeks to 129,038*". It makes sense that the look ahead is up but that is likely mostly due to the increasing international flights as more international flights means more need for domestic feeder flights. Today's report says the combined number of international flights out of China for seven major airlines "*will rise by more than 385 a week to around 3,310 by the second week of December.*" This is even higher than last week's report that called for 3,160 international flights by the first week of December. Below is our running WoW changes from the prior BloombergNEF reports and the BloombergNEF charts from the Nov 14 report.

Figure 52: China scheduled domestic flights from BNEF Aviation Indicators Weekly reports

Nov 7-13: -2.6% WoW to 89,776 flights
Oct 31-Nov 6: -0.2% WoW to 92,146 flights
Oct 24-30: -0.3% WoW to 92,361
Oct 17-23: -6.9% WoW to 92,638
Oct 10-16: -1.6% WoW to 99,490
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
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

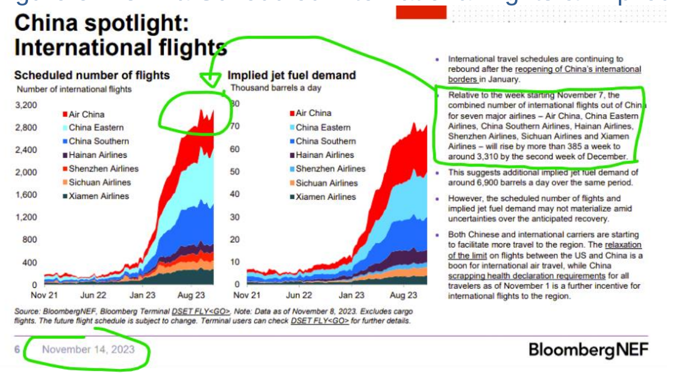
Source: BloombergNEF

Figure 53: China Scheduled Domestic flights & Implied jet fuel demand Nov 7-13



Source: BloombergNEF

Figure 54: China Scheduled International flights & Implied jet fuel demand Nov 7-13



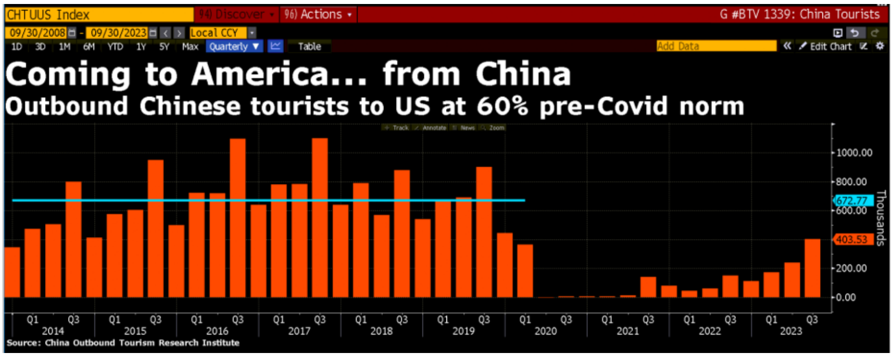
Source: BloombergNEF

Oil: Outbound Chinese tourists to US at 60% of pre-Covid

More China/US flights

On Wednesday night, Bloomberg TV had the below chart that highlighted outbound Chinese tourists to the US had rebounded to 60% of pre-Covid levels. This is a positive indicator for Chinese domestic flights as more international flights means the need for more domestic feeder flights. Our Oct 29, 2023 Energy Tidbits memo highlighted a key reason for why Chinese domestic flights should ramp up in Nov – the US approved more China/US flights. On Oct 28, we tweeted [LINK] "*Approved increase in China flights to/from US. More international flights = more domestic feeder flights. @USDOT approved # of weekly round trips, in aggregate, for major China airlines. Today: 18 wkly round trips. Oct 29: 24. Nov 9: 35. Thx @AirEVthingTRNSP @luzdingyu. #OOTT*." On Oct 27, the US Dept of Transportation posted its order [LINK] that approved new increases, in aggregate, for the China major airlines in weekly round trips between China and the US. The weekly round trips, in aggregate for the major China airlines went from 18 the other day to 24 as of today and then up to 35 on Nov 9. And as we always remind – more international flights means the need for more domestic feeder flights.

Figure 55: Outbound Chinese tourists to US



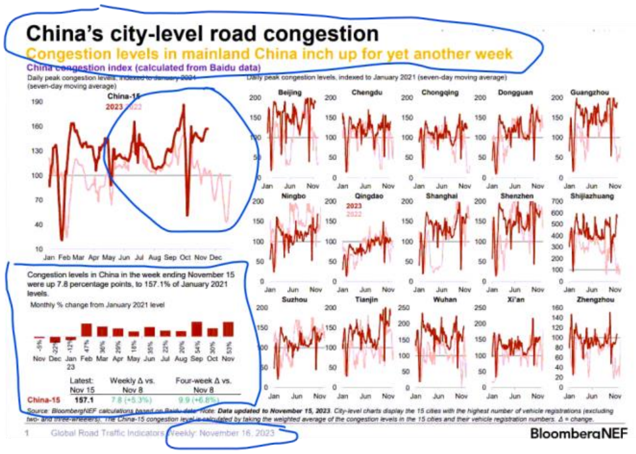
Source: Bloomberg

Oil: Baidu China city-level road congestion Nov MTD at 131% of Nov 2021 levels

China city-level traffic congestion

On Thursday, we tweeted [LINK] "*China Baidu city-level road congestion for Nov MTD 2023 Top 15 cities are 131% of Nov 2021 levels. Nov 2022 was 81% of Nov 2021 levels. Positive but still a way to go. 1st Chinese New Year post Covid restrictions Feb 2023 was 240% of Feb 2021. Thx @BloombergNEF. #OOTT.*" (i) BloombergNEF posted its Road Traffic Indicators Nov 16, which includes the China Baidu city-level road congestion data for week ended Nov 15. (ii) BNEF's headlines were "*Congestion levels in mainland China inch up for yet another week*" and "*Traffic levels in November continue to grow*". (iii) For the week ended Nov 15, Baidu data for China city-level road congestion was +5.3% WoW to 157.1 of Jan 2021 levels. For Nov MTD, China city-level road congestion was up strongly YoY and also up strongly vs Nov 2021. But China was under Covid restrictions a year ago. For Nov 2023 MTD, the Top 15 cities in aggregate were 131% of Nov 2021 levels vs Nov 2022 that was 81% of Nov 2021 levels. So a big increase in city-level congestion YoY but China was still in Covid recovery in Q4/22. Nov 2023 is the best month relative to the same month in 2021 other than Feb 2023 that was the first Chinese New Year without Covid restrictions in China city-level congestion was 240% of Feb 2021 levels. Feb 2023 being 240% of Feb 2019. (iv) As noted above, the Baidu data is for the first half (15 days) of Nov. Remember China was still under Covid restrictions a year ago. For the Top 15 cities in aggregate, MTD to Nov 2023 is 131% of Nov 2021 levels vs Nov 2022 that was 81% of Nov 2021 levels. Twelve of the top 15 cities are higher YoY and three are lower. The 3 lower YoY cities are Ningbo (10 mm population, port city ~220 km south of Shanghai), Shenzhen (18 mm population, adjacent to Hong Kong), and Suzhou ((13 mm population, right to the west of Shanghai). All but one of the top 15 cities in Nov 2023 are higher than Nov 2021. The exception being Dongguan (11 mm population, industrial city in Pear River Delta ie. just north of Hong Kong). Our tweet included the below two charts from the BloombergNEF Road Traffic Indicators Nov 16 weekly report.

Figure 56: China city-level road congestion fr the week ended Nov 15



Source: BloombergNEF

Figure 57: China city-level road congestion for the week ended Nov 15.

China's city-level road congestion
Traffic levels in November continue to grow

- 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

	Oct 22	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
China-15	107	99	81	90	154	145	136	124	140	128	127	158	138	160
Beijing	107	78	59	107	172	164	150	138	151	138	137	179	163	185
Chengdu	104	94	93	83	134	126	131	110	131	109	115	130	124	129
Chongqing	86	31	52	81	125	111	110	98	116	105	88	124	114	129
Dongguan	120	135	92	47	128	130	109	114	127	117	101	143	134	140
Guangzhou	110	56	58	81	169	172	154	137	158	151	149	181	164	183
Ningbo	124	144	112	63	134	125	104	99	117	114	115	124	120	153
Qingdao	96	80	53	45	82	75	80	73	86	96	105	102	93	102
Shanghai	110	166	87	74	147	149	129	124	131	121	123	161	130	159
Shenzhen	140	175	109	79	167	166	138	130	165	143	146	180	155	169
Shijiazhuang	285	107	179	317	507	430	450	383	427	375	440	468	349	514
Suzhou	119	145	87	69	132	121	105	97	114	107	109	130	110	129
Tianjin	138	124	78	97	141	141	136	122	130	110	114	170	153	182
Wuhan	72	83	85	110	191	185	170	150	169	148	136	183	146	170
Xi'an	90	112	101	115	147	128	131	122	136	122	111	144	137	155
Zhengzhou	47	33	66	93	113	96	95	89	94	88	92	100	82	100

Indexed to same month in 2021 = 100

	Oct 22	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
China-15	90	81	60	90	240	100	93	97	117	109	116	97	116	131
Beijing	83	67	36	107	263	105	91	96	101	104	118	89	128	159
Chengdu	102	96	75	83	239	89	90	92	109	101	107	94	[illegible]	132
Chongqing	83	29	43	81	200	103	94	88	104	96	95	85	[illegible]	123
Dongguan	97	96	82	47	283	104	75	81	127	98	80	95	104	99
Guangzhou	85	48	45	81	357	130	106	107	186	128	111	111	[illegible]	154
Ningbo	97	102	82	63	245	88	79	84	105	95	84	83	94	108
Qingdao	104	79	55	45	163	64	59	63	75	84	106	76	101	100
Shanghai	97	125	67	74	241	102	95	104	111	113	110	101	115	119
Shenzhen	103	113	70	79	287	117	94	100	133	109	99	101	114	109
Shijiazhuang	96	44	44	317	210	104	129	133	153	146	190	117	118	213
Suzhou	108	127	65	69	224	93	87	86	102	111	117	103	99	113
Tianjin	112	88	57	97	202	99	102	98	104	105	106	98	124	129
Wuhan	63	72	63	110	333	114	116	120	131	134	159	107	127	148
Xi'an	83	92	109	115	196	76	75	90	107	113	115	97	126	127
Zhengzhou	51	40	60	93	181	85	88	105	108	76	171	83	88	122

Source: BloombergNEF calculations based on Baidu data. Note: Data updated to ***November 15, 2023. Values for the latest month are month-to-date.*** *China-15 is the 15 cities with the highest number of vehicle registrations (excluding two- and three-wheelers). 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.*

2 Global Road Traffic Indicators Weekly: November 16, 2023 BloombergNEF

Source: BloombergNEF

Oil: China "experts warn of small spike in Covid-19 in winter"

China Covid update

We check China state media (Global Times, Xinhua and People's Daily) multiple times each week and there hasn't been much at all on Covid reporting. But last Sunday night, Global Times (China state media) reported "*Experts warn of 'small spike' in COVID-19 in winter*" [LINK]. And "*Medical experts warned of a potential spike in COVID-19 infections in the coming winter season. While this could pose a threat to the elderly and vulnerable populations, experts assured the public that medical facilities were sufficient to handle the situation so there is no reason to panic. China's top respiratory disease expert Zhong Nanshan warned of a small COVID-19 spike in the winter and reminded the elderly and vulnerable populations to get vaccinated as soon as possible during the 3rd Guangdong-Hong Kong-Macao Greater Bay Area (GBA) Health Cooperation Conference held in Guangzhou, South China's Guangdong Province, on Friday. He also detailed the future transmissibility of COVID-19 and its increased ability to escape antibodies. Zhong stated that the elderly and people with weakened immune systems should receive second-generation vaccines as soon as possible. Statistics from the Chinese Center for Disease Control and Prevention (Chinese CDC) show that a total of 209 new severe COVID-19 cases and 24 deaths caused by COVID-19 were reported across the country in October, with the prevalent strains all being XBB variants. The virus is undergoing mutations, while the general population's ability to fight off the disease is declining because their antibody levels are lowering as time passes, Lu Hongzhou, head of the Third People's Hospital of Shenzhen, told the Global Times on Sunday."* Covid doesn't seem to have been a big issue in China. When we check China media, we also look for reports on hospitalizations and we have not seen any reports raising a concern on Covid and hospitalizations. But, it's flu season so now is the time for an escalation if it is to happen. Our Supplemental Documents package includes the Global Times report.

Oil: Vortexa's team specializes in tracking the "*so-called dark fleet*" ie Iran

Vortexa tracks dark fleet

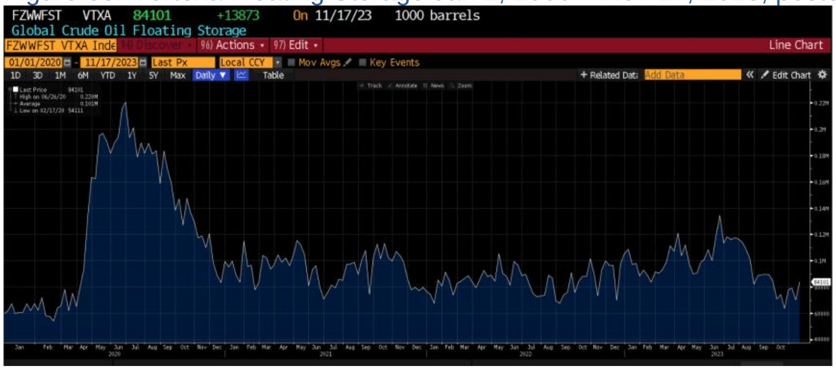
We do not have access to Kpler floating oil storage data but report weekly on Vortexa floating oil storage data posted on the Bloomberg terminal. The question is always does Vortexa pick up dark tankers from Iran and Russia in their floating storage estimates especially when we saw a big upward revision to the Nov 10 data. The answer is Yes, they say they specialize in tracking the "*so-called dark fleet*". Here is what we wrote in our March 12, 2023 Energy Tidbits memo. "There was a great commentary on Friday from Vortexa's Senior Market Analyst Pamela Munger on how Vortexa has focused on tracking the growing dark fleet of tankers who turn off transponders. The dark fleet has had a huge growth with Russian sanctions adding to Iran dark fleet and others. And Vortexa has focused on tracking this dark fleet. We tweeted [LINK] "*Why we like & follow @Vortexa weekly crude oil floating storage! "we do a lot of tracking for the so-called dark fleet" "we have a great team that specializes in analyzing signals & gaps in the signals & where vessels appear" @Vortexa Pamela Munger on @gulf_intel podcast. #OOTT."* Our tweet included the transcript we made of Munger's comments on the Gulf Intelligence PODCAST: Daily Energy Markets – March 10th. [LINK]. At 24:30 min mark, Munger *"… we do a lot of tracking for the so-called dark fleet, if you want to call it. There is a certain set of vessels that we have noticed patterns where they turn off their transponders. And we do have special sets of technology on the back end where we analyze. We have a great team that specializes in analyzing signals and gaps in the signals and where vessels reappear*."

Oil: Vortexa crude oil floating storage est 84.10 mmb at Nov 17, +13.87 mmb WoW

Vortexa floating storage

We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Nov 11 at 9am MT. (i) Yesterday, we tweeted [LINK] "*Too good to be true. Last wk's floating #Oil storage 53.77 mmb was only wk <60 since Covid. Was revised +16.46 to still low 70.23. 11/17 was then +13.67 WoW to 84.10 mmb. Back in 80s after 6 wks in 70s. Thx @Vortexa @business #OOTT."* (ii) Last week's initial estimate of 53.77 mmb was the only week below 60 mmb since Covid. But it was revised +13.87 mmb. So that means there have only been 4 weeks since Covid in the 60s. We look at 70s as good and 80's as okay. (iii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Nov 17 at 84.10 mmb, which is +13.87 mmb WoW vs revised up big Nov 10 of of 70.23 mmb. Note Nov 10 was revised up +16.46 mmb vs 53.77 mmb originally posted at 9am on Nov 11. (iii) Revisions. There was the big upward revision to Nov 10and mostly smaller upward revisions. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am MT on Nov 11 are as follows: Nov 10 revised +16.46 mmb. Nov 3 revised +3.14 mmb. Oct 27 revised +1.35 mmb. Oct 20 revised -0.80 mmb. Oct 13 revised 3.03 mmb. Oct 6 revised +0.68 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 74.32 mmb vs last week's then seven-week average of 71.36. The increase is due to the big upward revision to Nov 10 and the smaller upward revisions. (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) Nov 17 estimate of 84.10 mmb is -8.28 mmb YoY vs Nov 18, 2022 of 92.38 mmb. (viii) Nov 17 estimate of 84.10 mmb is -136.21 mmb vs the Covid peak of 220.31 mmb on June 26, 2020. (ix) Nov 3 estimate of 84.10 mmb is +18.49 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 Nov 18, 9am MT Nov 11, and 9am MT Nov 4.

Figure 58: Vortexa Floating Storage Jan 1, 2000 – Nov 17, 2023, posted Nov 18 at 9am MT



Source: Bloomberg, Vortexa

Figure 59: Vortexa Estimates Posted 9am MT on Nov 18, Nov 11, and Nov 4

Posted Nov 18, 9am MT		Nov 11, 9am MT		Nov 4, 9am MT	
FZWWFST VTXA Index 01/01/2020 - 11/17/2023		FZWWFST VTXA Index 01/01/2020 - 11/10/2023		FZWWFST VTXA Index 01/01/2020 - 11/03/2023	
Date	Last Px	Date	Last Px	Date	Last Px
Fr 11/17/2023	84101	Fr 11/10/2023	53767	Fr 11/03/2023	68141
Fr 11/10/2023	70228	Fr 11/03/2023	76043	Fr 10/27/2023	75439
Fr 11/03/2023	79175	Fr 10/27/2023	76680	Fr 10/20/2023	67737
Fr 10/27/2023	78027	Fr 10/20/2023	64379	Fr 10/13/2023	68664
Fr 10/20/2023	63582	Fr 10/13/2023	71140	Fr 10/06/2023	68333
Fr 10/13/2023	74171	Fr 10/06/2023	70262	Fr 09/29/2023	84961
Fr 10/06/2023	70940	Fr 09/29/2023	87254	Fr 09/22/2023	90856
Fr 09/29/2023	84410	Fr 09/22/2023	91102	Fr 09/15/2023	90070
Fr 09/22/2023	89165	Fr 09/15/2023	91086	Fr 09/08/2023	92060
Fr 09/15/2023	89655	Fr 09/08/2023	93361	Fr 09/01/2023	90638
Fr 09/08/2023	89374	Fr 09/01/2023	91137	Fr 08/25/2023	85753

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) As noted above, Nov 10, in total, was revised up big, +16.46 mmb. The main revisions in a region vs the originally posted (as of 9am Nov 11) floating oil storage for Nov 10 were Asia revised +9.42 mmb and Middle East revised +5.04 mmb. (iii) The major WoW changes by region were Other +4.77 mmb WoW, Europe +4.46 mmb WoW, Asia +3.14 mmb WoW and West Africa +3.05 mmb WoW. (iv) Nov 17 of 84.10 mmb is still down a huge 50.15 mmb vs the recent June 23, 2023 peak of 134.25 mmb. The major changes by region vs the recent June 23 peak are Asia -31.42 mmb and Oher -21.09 mmb. (iv) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for Nov 10 that was posted on Bloomberg at 9am MT on Nov 11.

Figure 60: Vortexa crude oil floating by region

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Nov 17/23	Nov 10/23	WoW	Nov 10/23	Jun 23/23	Nov 17 vs Jun 23
Asia	42.33	39.19	3.14	29.77	73.75	-31.42
Europe	7.58	3.12	4.46	3.07	6.47	1.11
Middle East	7.96	9.05	-1.09	4.01	7.17	0.79
West Africa	7.97	4.92	3.05	4.92	8.04	-0.07
US Gulf Coast	1.50	1.96	-0.46	2.02	0.97	0.53
Other	16.76	11.99	4.77	9.98	37.85	-21.09
Global Total	84.10	70.23	13.87	53.77	134.25	-50.15
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Nov 18						

Source: Bloomberg, Vortexa

Bloomberg oil demand monitor

Oil: Bloomberg Oil Demand Monitor "Europe's Economic Woes hit Fuels Outlook"

We recommend reading the Bloomberg Terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. Major themes in this month's report include evidence of demand destruction for gasoline in Europe, combining with sufficient global supply, have begun to undercut future prices. Europe's economy has begun to slow with sales of diesel shrinking YoY, notably in Spain, the UK, Italy and France. OECD data predicts that diesel consumption will continue to decline throughout the year as the US harvest season comes to an end, amplifying the negative outlook for global diesel demand. The outlook for gasoline markets is also weak with US demand for road fuel per capita expected to reach multi decade lows due to persistent inflation and sustained higher gasoline prices. In terms of air travel, global flights continued to track comfortably above both 2022 and 2019 levels during the week of Nov 6 but dipped on a MoM basis. US passenger throughput at domestic airports also slipped by 6% MoM, though was still up 7% YoY. China's air passenger traffic dropped 16% in September, the first MoM decline this year. As of Nov 6, road congestion was above pre-pandemic levels in only 2 of the 13 major global cities tracked by TomTom mobility data. Just London and Berlin topped pre-Covid levels, compared to 6 cities that surpassed the marker last month. Refinery utilization in the US as of Oct 27 was down -1.9% MoM to 85.4% and also down -5.2% YoY. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Global road traffic indicators

Oil: No BloombergNEF TomTom mobility indicators for EU, NA, Asia Pacific

We don't have our normal weekly recap of BloombergNEF Tom Tom mobility indicator data for Europe, North America and Asia Pacific excl China this week. Bloomberg's report this week was "*Road Traffic Indicators"* and not the normal "*Global Road Traffic Indicators*" as BloombergNEF wrote "*due to data limitations, BNEF could not include the road traffic indicators for Europe, North America and the rest of Asia Pacific for this week*".

US motor vehicle travel

Oil: DOT estimates US vehicle miles continue above pre-covid

The US continues to see strong roadway usage against pre-pandemic levels. The US Department of Transportation released its September 2023 traffic road volume trends [LINK]. Based on preliminary reports from State Highway Agencies, travel during September increased by 0.9% MoM at 275.5 billion vehicle miles and cumulative vehicle miles travelled increased 2.2% MoM to 2.4 trillion miles travelled so far in 2023. Compared to the equivalent month in 2019, September is +0.9% vs 273.1 billion vehicle miles travelled. September data included 87.1 billion miles travelled on rural roads and 188.4 billion miles travelled on urban roadways and streets. Comparing against September 2022 roadway travel by systems: Rural

Interstate was up 0.7% YoY at 22.8 billion miles, Rural Arterial was up 1.1% YoY to 34.0 billion miles, Other Rural was up 0.4% YoY to 30.4 billion miles, Urban Interstate was up 0.9% to 47.8 billion miles, Urban Arterial was up 0.9% YoY to 95.1 billion miles, and Other Urban was up 45.5 billion miles.

Figure 61: Estimated US Individual Monthly Motor Vehicle Travel

System	Month											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2022 Individual Monthly Vehicle-Miles of Travel in Billions												
Rural Interstate	18.7	18.0	22.3	20.6	23.6	23.7	24.9	23.8	22.6	23.3	21.9	21.6
Rural Other Arterial	27.6	27.0	32.1	30.6	33.9	33.8	34.9	34.7	33.6	34.0	30.8	30.4
Other Rural	24.4	23.9	28.2	27.5	30.9	30.4	31.7	31.4	30.3	30.5	27.5	26.6
Urban Interstate	41.4	40.7	48.3	45.2	48.6	48.2	48.4	48.3	47.4	48.6	45.4	45.4
Urban Other Arterial	82.7	81.6	94.2	89.3	96.6	94.4	95.2	98.4	94.3	96.7	89.2	89.8
Other Urban	39.3	38.2	44.5	42.8	46.6	44.1	44.2	45.0	45.0	45.1	42.3	42.7
All Systems	234.1	229.3	269.6	255.8	280.2	274.6	279.3	281.6	273.1	278.1	257.0	256.5
2023 Individual Monthly Vehicle-Miles of Travel in Billions												
Rural Interstate	19.7	18.2	22.4	20.6	24.0	24.6	25.5	24.3	22.8			
Rural Other Arterial	29.1	27.6	32.3	30.7	34.9	35.1	36.1	35.7	34.0			
Other Rural	25.8	24.4	28.4	27.6	31.8	31.4	32.6	32.0	30.4			
Urban Interstate	44.0	41.6	48.9	45.1	49.6	49.3	49.7	49.6	47.8			
Urban Other Arterial	87.6	83.2	94.6	89.4	99.0	97.1	97.9	100.5	95.1			
Other Urban	41.2	38.9	44.9	42.7	47.8	45.4	45.4	46.2	45.5			
All Systems	247.5	233.8	271.5	256.1	287.2	283.0	287.3	288.3	275.6			

Source: DOT

Oil: Thanksgiving holiday travel expected to be up 2.3% YoY, 3rd highest since 2000

Thanksgiving holiday travel expected up

The AAA Travel released their 2023 Thanksgiving Holiday Travel Forecast [LINK] on November 13. They expect 55.4mm Americans to travel this Thanksgiving, which is a YoY increase of 2.3%, bringing volumes higher than pre-pandemic levels. Share of car travel is up 1.7% from 2022 levels to 49.1mm people or 88.7% of total. Don't forget, airfares are also up, but most would have booked Thanksgiving weekend air travel months ago before the recent big airfare price increases. Air travel volumes will hit the highest level since 2005 with an increase of 290,000 travelers expected to take to the skies Thanksgiving weekend, which is a 6.6% YoY increase. Our Supplemental Documents package includes the AAA release.

AAA sees Mexico as top international destination for US Thanksgiving

We can't say specifically about Cancun and Mexico City but, if US Thanksgiving 2022 is an indicator, another big holiday travel for Americans will the Los Cabos region (Cabo San Lucas and San Jose del Cabo) at the tip of the Baja Peninsula. Last year was packed with American tourists and the top restaurants were full. So if you are going down to that region, we recommend trying to lock up your dinner reservations ASAP.

Figure 62: Top international destinations for US Thanksgiving

INTERNATIONAL
Cancun, Mexico
Mexico City, Mexico
Punta Cana, Dominican Republic
Bahrain
Rome, Italy
Montego Bay, Jamaica
Nassau, Bahamas
Bali & Papua New Guinea
Paris, France
London, England

Source: AAA

Oil & Natural Gas: Small declines in Alberta and BC wildfires

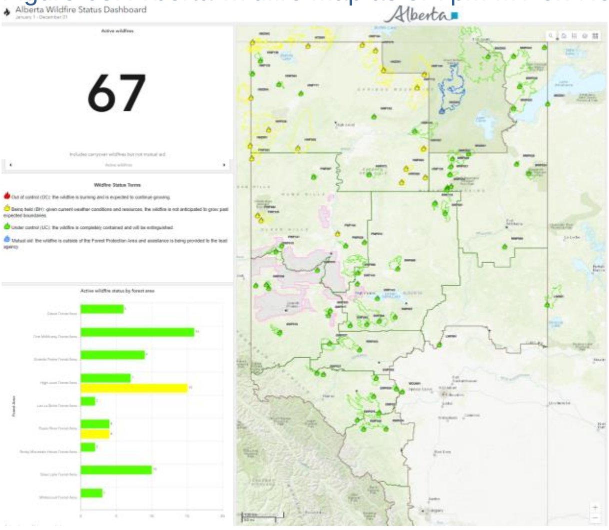
BC and Alberta Wildfires

We still can't believe its almost the end of Nov and there are still so many wildfires. There were declines in both Alberta and BC wildfires. As of 7pm MT last night, there were 67 Albera wildfires and zero Out of Control, which compares to a week ago at 69 Alberta wildfires including zero Out of Control. As of 7pm MT last night, there were 176 BC wildfires including 25 Out of control, which compares to a week ago at 193 wildfires including 29 Out of Control.

Links to Alberta and BC wildfire status maps

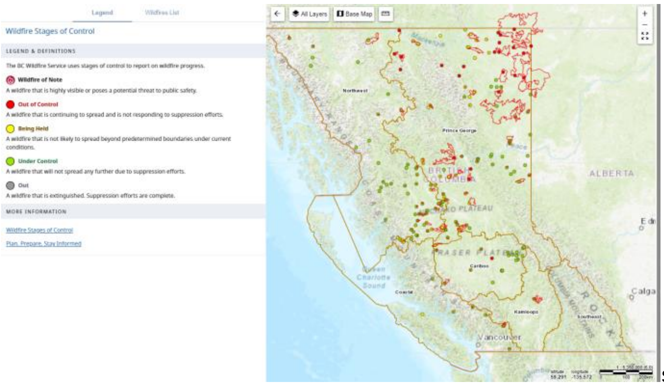
We recommend bookmarking the starting points for wildfire information are the Alberta Wildfire Status interactive map [LINK] and the BC Active Wildfires interactive map [LINK]. Please note these links have changed over the past few years. Both maps are interactive and open up for the information on any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

Figure 63: Alberta wildfire map as of 7pm MT on Nov 18



Source: Alberta Wildfire Status Dashboard

Figure 64: BC wildfire map as of 7pm MT on Nov 18



Source: BC Wildfire Service

Oil & Natural Gas: EIA China country brief

EIA's country brief on China

We continue to recommend adding the EIA's country analysis briefs to reference libraries as good quick references, in this case its new EIA country executive summary [LINK] on China. China was the most populous country in 2022 though it noted a declining population for the first time in 2023 according to UN estimates. Economic slowdowns associated with their zero-tolerance policy during the Covid-19 pandemic saw their total GDP slow to 3% growth in 2022 and severely impacted their energy demand. In 2021 China was a global leader in both energy production and consumption, with their primary energy production increasing by 6% across new energy sources; the fastest growing energy sources year-over-year were nuclear (11%), renewables (9%), and natural gas (8%) while Energy consumption grew by almost 6%; natural gas (12%), nuclear (11%), and renewables (8%) grew the most. China was the fifth higher petroleum producer in 2022 with a record crude and condensate production of 5.1

mmb/d (80% liquids). Increases in capex by China's national oil companies (CNOOC, Sinopec and PetroChina) prompted by the government's emphasis on increasing energy security aided a 0.13 mmb/d production increase during 2022. China was the second highest consumer of petroleum and liquids in 2022 (behind India), though consumption fell by 0.12 mmb/d throughout the year, driven mainly by lower jet fuel and kerosene demand; the outlook for consumption is an increase in both 2023 and 2024. China's total refinery capacity was 19.8 mmb/d with an additional 1.1 mmb/d to be added by 2026; the Yulong project will be the largest addition and is expected to come on-line in early 2025. China has increased it's natural gas production every year since 1989, and in 2022, production totaled 7.7 tcf, though production growth slowed to 3%. PetroChina accounted for 58% of China's total natural gas production in 2022 and targets 4.9 tcf in 2023. China's natural gas consumption peaked in 2021 at 12.8 tcf, though it saw a 1% decrease in 2022 due to slow demand recovery. China's 14th iteration of it's 5-year plan sets a target for LNG and natural gas storage capacity to reach ~2.1 tcf by 2025, more than double the storage capacity available at the start of 2023. Saudi Arabia and Russia serve as the two leading sources of crude oil imports to China, accounting for 18% of crude imports. Russia has recently become the leading exporter to China as a result of crude sanctions levied against Russian production leading to large discounts. Imports for petroleum products from the US, China's main source, increased by 15% in 2021. China's LNG imports decreased by 20% in 2022, moving China to the second-highest global LNG importer, behind Japan. Our supplemental documents package includes the EIA's Country Analysis Brief.

Energy Transition: Looks like UAE COP 28 President is winning

EU to focuses on methane emissions

On Tuesday, we tweeted [LINK] "*Is UAE Al Jaber The Climate Man? Criticized for wanting impact/practical COP28 actions ie. 03/06 #Oil #NatGas methane emissions to net zero by 2030. Now EU to prioritize methane emissions "we want to do something that's really meaningful for the climate" Thx @johnainger #OOTT.*" The climate change side and western governments aren't going to come out and say UAE COP28 President Al Jaber was right after all, but the actions being portrayed as wins now are really what Al Jaber tried to get people to join in several months ago. Our tweet included the National UAE March 7, 2023 report on how Al Jaber was pushing the need to get the oil and gas industry to reach net zero methane emissions by 2030. At that time, the climate change side didn't want to jump on board as they wanted the to get rid of fossil fuels and not focus on reducing methane emissions. Al Jaber has been working on the basis that focus for Paris has been to reduce emissions. The report that led to our tweet was that the EU has reached an agreement to focus on energy companies reducing methane emissions – basically Al Jaber's March priority. Our tweet also noted how the EU climate leaders bragging that this was so they were going to do something really meaningful to the climate. Bloomberg wrote *"A key comment here is "We're watching you," Jutta Paulus, the Green lawmaker who is parliament's lead negotiator, said in a message to fossil fuel companies outside of the bloc. "We want to do something that's really meaningful for the climate."* We have always said methane is the worst for the enivronment but reducing methane emissions from oil and gas has been done for at least a decade in the Cdn oil patch going back to when the one of our friends was the group leader for the then big company (PanCanadian) in capturing methane emissions from pneumatic deviices and compressors, etc and he then explained to us how it was easy to do. It's why the E&P companies are quick to sign on to reducing methane emissions. .So when we see the european leader talk about how this is doing something really meaningful for the climate seems to be positioning for COP28 and this would fit one of the UAE COP28 president areas of focus. Our SupplementalDocuments package includes the Bloomberg report.

Energy Transition: Do western leaders have to go along with UAE COP28 approach?
The EU highlighting methane emissions from the energy industry reinforces our view on COP28. Here is what we wrote in our Nov 5, 2023 Energy Tidbits memo. "*This isn't what anyone on the climate change side including the western government leaders would ever say, but when we read the UAE COP28 President Al Jaber comments on Monday, at the pre-COP meeting, we can't help but wonder if Al Jaber knows western leaders have no choice but to go along with his approach. We recognize that the climate change side never wanted UAE's Al Jaber as COP28 President or they are probably still mad that UAE was even made the host of COP28. We divide the climate change side at COP28 into two parts: those on the climate change side that are the rank and file delegates. And then there are government leaders (ie the politicians and the senior bureaucrats) that have led theEnergy Transitiuon and Net Zero push. The delegates will never be happy because Al Jaber is an oil and gas guy from the #2 OPEC producer and they are trying to get rid of oil and gas. They may not say this as the primary directive as the that is to reduce emissions, but the focus for the COPs to date have been on replacing and getting rid of coal, oil and natural gas as the key to the solution. So they can't be happy if Al Jaber focuses on methane reduction because he knows that is doable and can be successful and done so quickly. But that isn't a get rid of oil and gas approach. However, we continue to think the government leaders know (even if they don't want to directly say so) that they are far behind so are going to be trying to salvage something at COP28. And that mean they need to come out of COP28 with some plan that they can sell to some degree as being keeping them on track or at least giving the world a chance at 1.5C. We think the timing may be right for Al Jaber. And we think Al Jaber knows this. It's why we think he says what he says. We think he knows that the western leaders have to give in to some degree. And he is making it clear to them that this is the best they are going to get from COP28 under his leadership and that they can message they are staying on track to 1.5c. So they will ultimately have to agree with his approach to include oil and gas as part of "all", COP28 has to take a "pragmatic" approach and come up with "solid" solutions. The climate change side hasn't said this but the part that will be one of Al Jaber's biggest accomplishments is that seems to have got the oil and gas industry as part of the "all" in COP28 negotiations. And the second part is that he is able to try to direct the negotiation to a "pragmatic" type conclusion and not the normal aspiration negotiation. Here is is one of his key quotes "We need solid solutions for a 43 percent cut in emissions by 2030 because that is exactly what the science tells us," Dr. Al Jaber said. On the issue of fossil fuels, he said, "I know there are strong views about the idea of including language on fossil fuels and renewables in the negotiated text. I need you to work together to come forward with solutions that can achieve alignment, common ground and consensus between all parties. We must be responsible. We must be pragmatic. And we must leave no-one behind." Our Supplemental Documents package includes the Emirates News Agency report "COP28 President says world must unite on climate action". [LINK]* "

Two weeks to COP28

Fits our 2022 Prediction, leaders forced to admit energy transition isn't working
Our above comment on western leaders fits out expectation that we don't expect to see many western leaders come out and directly say the energy transition isn't

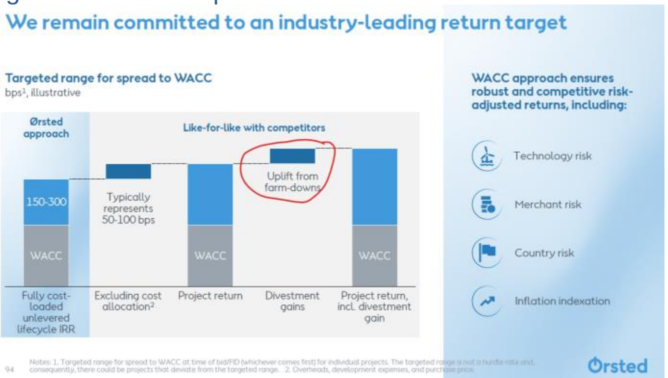
working but we do expect to see their actions reflect that conclusion. Our #1 prediction for 2022 was on this concept. We were probably 6 to 12 months early but it is unfolding. Here is what we wrote in our Dec 12, 2021 Energy Tidbits memo. "*Its December and so analysts will soon be coming out with 2022 predictions, so we thought we would beat them with one of our main 2022 predictions. On Thursday, we tweeted [LINK] "Time for #2022Predictions. My #1 is more #EnergyTransition #NetZero leaders come out of closet, have a #MacronMoment ie. have "transition" not self inflicted shortage so 2021 energy crisis isn't every year. A return to #EnergySecurity = #Oil #NatGas #LNG strong thru 2030. #OOTT." This should not surprise readers as we have been noting the start of energy transition leaders starting to admit, in a politician's manner, that the energy transition isn't working as per aspirations and energy costs will be a lot higher than aspired. We have said for years that the energy transition will happen, but it will take longer, be bumpy road and cost more than the aspirations. Last week's (Dec 5, 2021) Energy Tidbits wrote on the ADNOC CEO speech There was much more in the speech, which is why we tweeted [LINK] "If more leaders have a "Macron Moment" in 2022, maybe COP28 UAE in 2023 can be catalyst for getting down to work on practical, commercial, sustainable energy solutions: pro climate/pro growth? See SAF Group transcript of @SultanAhmedalj8 #ADIPEC keynote. #EnergyTransition #OOTT." We do wonder if we will see more world leaders accept that the energy transition isn't working according to their aspirations and that there is an increasing risk of a decade of energy crisis like seen in Europe in H2/21 unless the world puts in an achievable energy transition plan." We think COP26 will turn out to be turning point, but a turning point to force energy transition leaders into changing their plan. It why we think we will more of the energy transition leaders come out of the closet and admit this in 2022. But what got us to tweet this week was after seeing Saudi Aramco CEO Nasser speech at the WPC in Houston. Nasser said "There is one more thing that can no longer remain unsaid. A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private. They should say it publicly too. I understand their dilemma. Publicly admitting that oil and gas will play an essential and significant role, during the transition and beyond, will be hard for some." So our #1 2022 Prediction is that we will see leaders come out of the close and admit, in a politician's way, that the energy transition plan needs to be changed. The key result will be that fossil fuels are needed for way longer and the outlook for oil, natural gas and LNG will be stronger thru 2030 and beyond.*

Energy Transition: Orsted reminds of challenge to attract capital for offshore wind

UK to get EVs to pay a fairer share

One of the must have's for many of the major wind developers is that they need to be able to farm down (promote a third party) to get to their desired returns for offshore wind projects. Orsted was in the offshore wind news this week for pulling out of the Norway offshore wind consortium and for letting go its CFO and COO. But, when we saw Orsted pull out of the consortium, our concern for offshore wind development was the increasing challenge to attract capital for offshore wind projects. Reuters wrote ""*Orsted has informed us that due to a prioritisation of investments in the portfolio, it will withdraw from pursuing participation in offshore wind developments in Norway, and therefore their participation in the partnership will discontinue," Norway's Bonheur ASA (BONHR.OL) said in a statement. Orsted said in an* *email to Reuters that it has decided not to prioritize offshore wind development in Norway for now as it seeks to adjust its business development and bidding activities, particularly in some new markets."* Adjusting its bidding means the economics are skinny at best if they don't lower their bid prices. On Tuesday, we tweeted [LINK] "*If offshore wind projects have skinny, at best, starting base IRRs, how can they, or others, attract required farm down capital? Orsted pulls out of offshore Norway consortium as it adjusts its bidding activities. #NatGas will be needed for longer. Thx @ReutersNerijusA. #OOTT."* Our big concern for Orsted, BP, TotalEnergies and others is how skinny are the economics because how they get to target returns depends on their ability to be early and then farm down. If the returns are skinnier now, their potential to farm down has to be down big time. And that points to delays in attracting capital for offshore wind development.

Figure 65: Orsted uplift to returns from farm downs



Source: Orsted Capital Markets Day June 8, 2023

Energy Transition: UK raising price paid for offshore wind by >50%

UK raising price paid for offshore wind

One of our big concerns for the Energy Transition has been how the western leaders haven't really told the story on how much more energy will cost under the energy transition. We have noted for years how they didn't want to provide estimates of the trillions needed for the energy transition and that the aspiration was sold on the basis that energy would cost less and energy would be available on a 24/7 basis. The world is on an energy transition path and our warning is that energy will cost a lot more. That was reinforced by the BBC Thursday report [LINK] that the "*The price paid to generate electricity by offshore wind farms has been raised by more than 50% as the government tries to entice energy firms to invest. It comes after an auction for offshore wind projects failed to attract any bids, with firms arguing the price set for electricity generated was too low. The government has lifted the amount it pays from £44 per MWh to a price up to £73. It is hoped that more offshore wind capacity will lead to cheaper bills. Companies have said that the cost of building wind farms has soared because of rising inflation and interest rates, while the maximum price they can charge for the electricity they generate has been relatively low. Energy firms have told the BBC that electricity produced out at sea would remain cheaper and less prone to shock increases compared with power derived from gas-fired power stations. The UK is a world leader in offshore wind and is home to the world's four largest farms, supporting tens of thousands of jobs, which provided 13.8% of the UK's electricity generation last year, according to* *government statistics. But when the government revealed in September that no companies had bid for project contracts, plans to nearly quadruple offshore wind capacity from 13 gigawatts to 50 by 2030 - enough to power every home in the UK - were dealt a heavy blow."* Our Supplemental Documents package includes the BBC report.

Energy Transition: Mercedes US says EV adoption not as fast as initially planned

Mercedes US on EV adoption

We are big believers that EVs will continue to show strong growth in new EV sales 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. Merecedes USA CEO Dimitris Psillakis was on CNBC Squawk Box on Thursday and highlighted that EV adoptions rates are not as fast as planned and that they are still at the beginning of a long, long road. On Wednesday, we tweeted [LINK] ""*I wouldn't say the speed of [EV] adoption has slowed down, but it's not as initially planned. One thing is clear, electric vehicle adoption is not a sprint, it's a marathon. And we're still at the beginning of this long, long run" Mercedes US CEO. Oil is needed for longer #OOTT."*

Mercedes still hears customer worries on EV range and charging

The Mercedes USA CEO was on CNBC Squawk Box on the opening of their fast charging station in Atlanta. He was asked on customer frustration on charging vehicles outside the home and Psillakis highlighted the same concerns – range, charge times and charge point access. We made a transcript of his comments. CNBC's Phil Lebeau "*do you hear back from customers that they're frustrated when it comes to charging their vehicles outside of their homes, on the network or whatever public station they may want to try to recharge at*?" Mercedes Benz USA CEO Dimitris Psillakis "*the customers want to go electric but they have hesitations. They have worries. There is the worry of range, how far can my vehicle go and how fast can my vehicle charge, or where can I charge my vehicle*".

Capital Markets: Ray Dalio's five major forces as he looks about the world ahead

Ray Dalio's 5 major forces

Bridgewater Founder Ray Dalio was one of the few to sit at Xi's table this week so, no surprise, the first question to him from CNBC Squawk Box on Friday morning was on the dinner. However, Dalio wanted to first talk about his big concerns as he looked at the world ahead. One of the reasons we tweeted the video of his comments is that it was short and sweet and highlighted some very big issues over the coming years. It brings perspective. We should note that these aren't necessarily new items and Dalio's approach is normally to go back and start with his overview concerns. On Friday, we tweeted [LINK] "d*oesn't look like smooth sailing! #RayDalio's 5 main forces on the world ahead. 1. debt money economic force. 2. internal conflicts particular left/right populism. 3. geopolitical, most importantly US/China. 4. "then of course, there's climate & its cost". 5. Technology. #OOTT."* Our tweet included the video clip of Dalio's comments.

09/07/22: A must read Deutsche Bank CEO keynote speech

When we see comments like Dalio's on the look ahead with some major big picture themes, we can't help think of one of the best short speeches we have seen in the past few years – the Sept 7, 2022 Deutsche Bank CEO speech. CEO Sewing warned on this global structural shift. Here is what we wrote in our Sept 11, 2022

Energy Tidbits memo. "*A must-read Deutsche Bank CEO keynote speech. We weren't certain where to put this item, but we believe the Deutsche Bank CEO Christian Sewing views of the world, if correct, will be positive for oil and natural gas thru the 2020s. The headlines on his Wednesday comments were all about his warning a recession is coming for Germany. (i) We tweeted [LINK] "1/2. Must Read @DeutscheBank CEO. RUS/UKR "destroyed a number of certainties on which we build our economic system over the past decades". NEXT UP, "awkward question on how to deal with China" in light of increasing CN/US isolation/tension, reducing China dependency will .. #OOTT", and [LINK] "2/2.."require a change no less fundamental than decoupling from RUS energy". Globalization gone, labor a global bottleneck. Extremely expensive #Electricity #NatGas s a threat to economy. the longer inflation remains high the higher the potential for social unrest, etc. #OOTT.". (ii) As you can see from our tweets, there are many thoughts. We tend to agree with a lot of what he is saying unless there is a social revolt to say enough is enough. (iii) The real theme of his theme of his speech is excellent – the world has changed for the foreseeable future. The norms of the past decades are gone. Globalization gone. China dependency must be reduced. Global value and supply chains disrupted. Workforce a worldwide bottleneck. Electricity/natural gas will be expensive in EU for a long time.. The truth is that 30 years of presumed calm will now be followed by a period of heightened volatility with economic uncertainty, regular crises and geopolitical conflicts that are also likely to drag on for decades. Trouble spots are not cut off from the rest of the world; they impact other regions in a number of ways. (iv) And he doesn't say much about it, but says "But the longer inflation remains high, the greater the strain and the higher the potential for social conflict." We still wonder about social conflict and if there will be Arab Spring type revolt within Germany and other European countries to how people feel they are getting hit by the Russian sanctions. (v) His views are relevant to longer term capital allocation. It's not just Germany has a terrible economic outlook. He raises issues like we have noted about China is the next Russia type target even if they don't invade Taiwan. Germany affects more than itself. And think about it, if Germany can hold the line on Russian sanctions on energy, then it probably says most of Europe can hold the line other than a handful like Hungary, etc. (vi) There is much more in this short viewpoint. Our Supplemental Documents package includes the CEO viewpoint."*

Capital Markets – Can Biden orchestrate a passing of the torch to who he anoints?

Biden turns 81

It's a few weeks early for 2024 predictions but one of my top predictions for 2024 will be that Biden tries to orchestrate a passing of the torch to who he anoints. Just not clear if its Newsom or Harris or someone else, but right now I favor Newsom. Biden turns 81 tomorrow so his age will keep raising as a question mark for him and the Democrats in the 2024 elections. Everyone has their view if Biden will or will not run even though he is saying over and over he is running. I am just surprised that I don't see the political pundits with my view of Biden. With all the political pundits in the world, it must be that I am out in left field. So that is why I thought I would put it out there as one of my top prediction. Maybe it's because I believe he is fundamentally a decent guy is why I don't think he will do something really stupid. But I also believe he is underrated for his wanting to control politics. He is a President and, perhaps other than Jimmy Carter, all Presidents want to control politics. So my prediction is Biden wants to orchestrate who will be the next Democratic nominee. He doesn't want chaos and an unpredictable Democratic nominee, which is why he isn't going to say he isn't running. Rather he keeps running in the primaries, gets the nomination effectively locked up in March given the primary schedule. And sometime in late Q2 or early Q3. I think the timing will depend upon Trump's legal situation. But sometime ahead of the convention in late Aug. he announces he isn't going to run and is throwing his support behind someone who is his anointed candidate asking the Biden delegates to switch to his anointed one. This is as opposed to him saying he won't run soon and therefore taking control away from him as to who is his successor. If Biden runs, gets all the delegates, he more or less controls who will be the nominee even if the delegates won't be bound to vote for his anointed one. Maybe Prediction isn't the right word, but I just think Biden knows he runs a big risk of losing so the best thing for him in controlling politics is to set it up so the Democrats effectively have to go with his anointed pick. If so, will it be Newsom? Or Harris? Or someone else.

Capital Markets: Walmart sharper decline in last 2 weeks of Oct is reason for caution

Walmart cautions on consumer

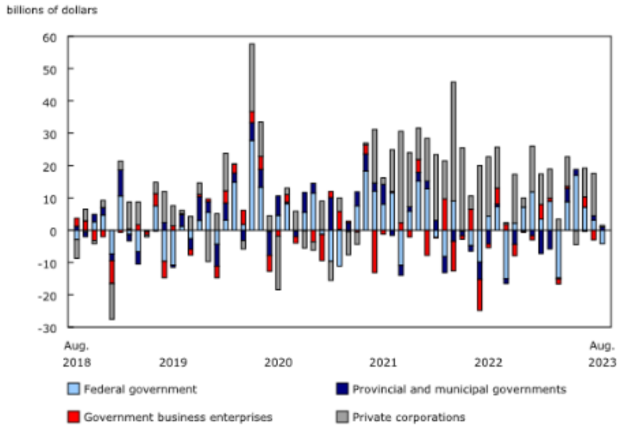
Despite solid Q3 results, Walmart shares were down 8% on lower guidance but also because their comments on caution on the consumer. Prior to the earnings call, CNBC reported on comments of Walmar CFO. We tweeted [LINK] "*Market story this morning. Walmart -7% in pre-market, dragging markets down. See 👇Walmart CFO tells @CourtReagan @SquawkCNBC more cautious on the consumer, in last two weeks of Oct saw sharper decline ..... gave us a reason for or maybe more caution. #OOTT.*" Our tweet included a video clip of the CNBC report that said quoted CFO Rainey "*Consumers are leaning heavily into intense promotional type periods. They're waiting on those larger purchases, and in face some of the periods before and after those events or promotional periods are weaker.*" And "*I am a little more cautious on the consumer because the quarter's trends were consistent until the last two weeks of October when we some off trends or there was a sharper decline, though still positive, relative to the first month in both sales and units. And so that gave us a reason for maybe more caution but, in November, it started off really well. And so it's hard to put our finger what's driving this.*"

Capital Markets: Canadian investors invest $11.6bn in foreign securities

International transactions in Cdn securities

Statistics Canada released Canada's international transactions in securities for September 2023 on Friday [LINK]. Foreign investors divested -$15.1bn of Canadian securities in September with the largest sell-offs occurring in equities. Non-residents divested a net total of -$17.5bn from Canadian bonds in September, led by the retirement of federal government bonds totalling -$20.4bn. Non-resident investors also divested -$15.1bn of Canadian equity securities from their portfolios. Despite the divestitures, non-residents acquired $1.6bn in Canadian shares during September, after nine consecutive months of divestment. Investments in shares of manufacturing combined with the trade and transportation industries were moderated by a divestment in shares of the banking sector. The report stated, *"Foreign investors reduced their holdings of Canadian securities by $15.1 billion in September, mainly due to retirements of bonds. Meanwhile, Canadian investors acquired $11.6 billion of foreign securities, ending the third quarter with the largest investment since the fourth quarter of 2021. Non-resident investors reduced their exposure to Canadian securities by $15.1 billion in September 2023. Overall, retirements of bonds were moderated by foreign acquisitions of equity securities during the month. The reduction in foreign holdings of Canadian bonds totalled $17.5 billion in September with retirements totalling $20.4 billion, the highest amount* *since December 2018. These retirements were in both government and corporate bonds, with the latter mainly composed of instruments backed by mortgages. In September 2023, Canadian long-term interest rates reached the highest level since December 2007. Non-resident investors acquired $1.6 billion of Canadian shares in September 2023, after nine consecutive months of divestment. Investments in shares of the manufacturing as well as the trade and transportation industries were moderated by a divestment in shares of the banking sector. Canadian share prices, as measured by the S&P/TSX index, fell 3.7% in September. Canadian investors added $11.6 billion of foreign securities to their holdings in September, led by a $10.5 billion investment in foreign bonds. The investment in non-US foreign bonds (+$6.7 billion) reached the highest amount in a year and mainly targeted government bonds. In addition, investors acquired $3.8 billion of US bonds in September, after buying $3.7 billion of US bonds in the previous month. US long-term interest rates rose in September, to the highest level since October 2007*". Below is a graph illustrating foreign investment in Canadian debt securities.

Figure 66: Foreign Investment in Canadian debt securities



Source: Statistics Canada

Demographics: Canmore Alberta's living wage is very high

Costly to live in Canmore, AB

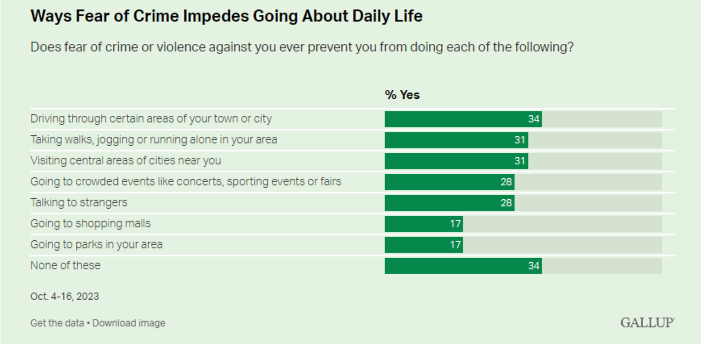
This is basically a repeat of Alberta living wage for 2022 for key cities/towns in that in 2023, Canmore, Alberta is once again a very expensive place to live. We realize that most readers won't know about Canmore, Alberta. It is a popular weekender destination as it's in the Canadian Rockies and only 1 hour from Calgary on the Trans Canada highway so well plowed roads on a divided highway with two lanes each direction. Canmore's rapidly increasing problem is not going to be much different than other similar towns in other provinces. We suspect Canmore Alberta isn't alone in the increasing cost of living crisis for normal income people. We say normal as it isn't only a lower income problem. But Canmore is hurt because it is a desirable weekender place for Calgary and that drives up real estate and other prices. And that means locals suffer, especially those in the service industry. It also means that Canmore has a labour problem that continues to worsen. Over the last couple years, we have restaurants reduce hours due to the challenge to get staff. The Alberta Living Wage Network posted its "*2023 Living Wage Numbers*" [LINK]. Meaghon Reid, Executive Director, said "*This year we have faced affordability challenges like nothing I've* *seen in my career. We have more than a hundred thousand people on the brink of losing their shelter and many people making trade-offs that they never thought they would have to make. But we also saw that the government's affordability payments made a difference – albeit temporarily. It's time for longer-term action that will help people right now.*" Canmore's Living Wage is $38.80 for each parent in a household with 2 children, which is up +18.5% YoY from the 2022 Living Wage of $32.75. This compares to Living Wages of $23.70 in Calgary, $24.90 in Jasper (which is also a comparable mountain town more north in the Rockies) and even more than $24.50 in Fort McMurray. Our Supplemental Documents package includes excerpts from the Living Wage report.

Demographics: Back to the 70s, increasing fear of crimes in the US

US fears of crimes

Unfortunately, we couldn't help think of the fears of crime in cities in the US in the 70s when we saw Gallup's "*Personal Safety Fears at Three-Decade High in U.S.".* [LINK]. Gallup wrote "*Forty percent of Americans, the most in three decades, say they would be afraid to walk alone at night within a mile of their home. This indicator of crime fears last reached this level in 1993, when, during one of the worst crime waves in U.S. history, 43% said they would be afraid. Between that year and 2021, an average of 35% of adults have feared for their safety within a mile of home, with the annual results ranging between 29% and 39%. Gallup has measured Americans' sense of personal safety from crime using this question since 1965, finding a record 48% worried in January 1982. That was toward the end of another high-crime period and as an alarmingly high murder rate in New York City was garnering widespread attention."* We had the opportunity to live in St. Louis in the 70s and travel to major cities like Boston, New York, Chicago on multiple occasions. So when we saw the below graphic, many of these were real concerns for people. You didn't drive thru areas, especially at night. Rather you would drive longer way around to get to a point. You didn't do things like jog alone in places like Central Park and you didn't go at night. And central parts of cities were deserted at night. We really hope the US can turn these fears around. Our Supplemental Documents package includes the Gallup report.

Figure 67: Ways Fear of Crime Impedes Going About Daily LIfe



Source: Gallup

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.

Mackenzie Hughes in the hunt at PGA's RSM Classic

It was a good day yesterday to have to be working as we could have the PGA RSM Classic on TV as there was good coverage of Cdn Mackenzie Hughes as he was going low. We tweeted [LINK] "*Just missed! Cdn @MacHughesGolf just missed a birdie on 18, which would have put him at 59 and the 13th sub-60 round in PGA history. Currently T2 so will be in the hunt tomorrow. Don't forget he won here in 2016 in a 5-man playoff for his 1st PGA win.*" He ended up with a 60 and is going into the final round 3rd at -18, behind Ludvig Aberg -20, and Eric Cole -19. If he had birdied 18, he would have been the 13th to go sub 60 in PGA history. Cdn Adam Hadwin is one of the 12 to date. Looking forward to watching some golf this afternoon.

F1 Las Vegas Grand Prix is racing down the strip

We had an early 10pm MT last night news cut off so it's a couple hours before the start of the Formula 1` Las Vegas Grand Prix, which starts at 10pm PT. We only spoke to one group that was going down to see the race and their only complaint was that they had to fly commercial because they waited too long to book a parking spot for their private jet. But they did say they are looking forward to the race in particular seeing them race up the strip. The main straightaway goes right down the strip in front of most of the big hotels/casinos on the strip. And it looks like the Sphere will get prominent view. We can see why they are racing at night. As everyone knows Vegas does not look like Vegas in the daytime.

Figure 68: Las Vegas Grand Prix 6.2 km F1 street circuit

Source: GP Fans

1st time ever matchup of the Blue Bombers vs Alouettes in Grey Cup

Kick off for the Grey Cup is 6pm ET today. What an upset last week when the Alouettes beat the Argos to reach the Grey Cup today. One Grey Cup tidbit that surprised us was to hear this is the first time ever that the Montreal Alouettes and the Winnipeg Blue Bombers have ever met in the Grey Cup. In such a small league, we figured it was inevitable that all teams have faced each other at one time or another. But in looking back at the prior Grey Cup matchups, it looks like the Alouettes and Blue Bombers were strongest at different times.