

Energy Tidbits

September 10, 2023

Produced by: Dan Tsubouchi

G20 “critical to assess ... macroeconomic impact of both the physical impact of climate change and transition policies, including on growth, inflation, & unemployment”

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. G20 leaders today “critical to assess & account for the short, medium & long-term macroeconomic impact of both the physical impact of climate change and transition policies, including on growth, inflation, & unemployment” ([Click Here](#))
2. Orsted CEO it's “inevitable” that electricity prices have to go higher, “and if they don't, neither we nor any of our colleagues are going to more offshore” in US ([Click Here](#))
3. World Nuclear Association forecasts global reactor requirements for uranium to basically double by 2040 ([Click Here](#))
4. Vortexa crude oil floating storage was <85 mmb for 3rd consecutive week, down ~50 mmb since recent June 23, 2023 peak ([Click Here](#))
5. Reminder this week on how the No Frack Cdn oil plays like Clearwater have way stronger economics than the Top Quartile Permian Delaware Wolfcamp A ([Click Here](#))
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

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Natural Gas: +33 bcf build in US gas storage; now +462 bcf YoY surplus

It was another week of hot weather leading to seasonally lower gas injections into storage. For the week of September 1, the EIA reported a +33 bcf build (above the expectations of a +41 bcf build), and a big YoY decrease compared to the +54 bcf build reported for the week of September 2, 2022. This is the same as last week’s build of +32 bcf, and down vs the 5-year average build of +60 bcf. Total storage is now 3.148 tcf, representing a surplus of +462 bcf YoY compared to a surplus of +484 bcf last week. Total storage is +222 bcf above the 5-year average, down from the +249 bcf surplus last week. Below is the EIA’s storage table from its Weekly Natural Gas Storage report [\[LINK\]](#).

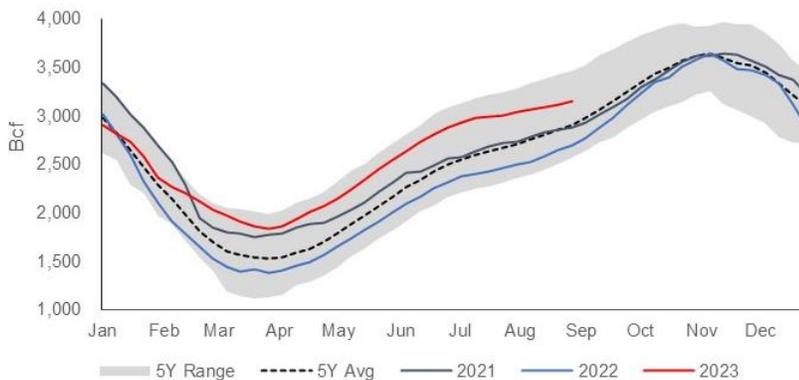
US gas storage +462 bcf YoY surplus

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Year ago (09/01/22)		5-year average (2018-22)	
	09/01/23	08/25/23	net change	implied flow	Bcf	% change	Bcf	% change
East	766	751	15	15	632	21.2	702	9.1
Midwest	877	853	24	24	772	13.6	818	7.2
Mountain	218	213	5	5	159	37.1	181	20.4
Pacific	252	248	4	4	238	5.9	262	-3.8
South Central	1,035	1,050	-15	-15	886	16.8	963	7.5
Salt	241	249	-8	-8	182	32.4	221	9.0
Nonsalt	795	801	-6	-6	704	12.9	742	7.1
Total	3,148	3,115	33	33	2,686	17.2	2,926	7.6

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



Source: EIA, SAF

Natural Gas: NOAA 8-14 day temperature outlook moving to normal in the East

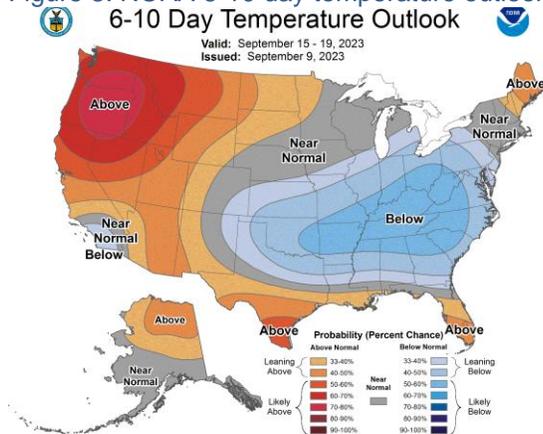
NOAA posts daily, around 1pm MT, an updated 6-10 day and 8-14 day temperature probability outlook. Yesterday, we tweeted [\[LINK\]](#) “Today’s @NOAA updated 6-10 & 8-14 day temperature outlook covering Sept 15-23. Next few days are hot most everywhere but then turning to normal temps in the east. Even Texas to move from crazy hot to just hot. Won’t do much for #NatGas. #OOTT.” The NOAA 6-10 day doesn’t kick in until Sept 15 but we checked AccuWeather daily temperatures for the next few days and it still looks to be hot

NOAA 8-14 day outlook

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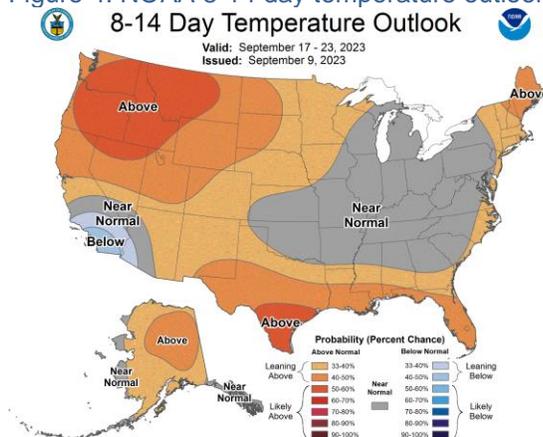
across most of the US. But then NOAA expects it to move to more normal temperatures for most of the east. And NOAA expects Texas to move away from the really hot temperatures to just hot temperatures. Yesterday's NOAA 6-10 day [LINK](#) and 8-14 day outlook [LINK](#) are for the period Sept 15-23.

Figure 3: NOAA 6-10 day temperature outlook Sept 15-19



Source: NOAA

Figure 4: NOAA 8-14 day temperature outlook Sept 17-23



Source: NOAA

Natural Gas: Sounds like LNG Canada Phase 2 FID is a 2024 not a 2023 event

Going back to my years as a sellside analyst, I always got the best insights when taking an oil and gas company for a day or two of one-on-one meetings with institutional investors or when hosting a meeting with a group of institutional investors. Hearing mgmt. answer a wide range of questions and often the same question tends to reveal insights. I found it's even better than the Q&A of earnings calls as the setting tends to get more fulsome answers. That appears to be the case with RBC's Biraj Borkhataria who hosted a session with Shell last week. We have been highlighting for years the positive comments by new Shell CEO on

LNG Canada 1.8 bcf/d Phase 2

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LNG Canda including Phase 2 and our expectation for Shell to FID the browntfield LNG Canada 1.8 bcf/d Phase 2 and the only question is when. Borkhataria's insights point to an FID not likely in 2023. Borkhataria wrote "As it relates to sanctioning Phase 2, Shell highlighted that while some technical de-risking still needs to be completed, the key question to answer is around the emissions profile and level of electrification required., regarding which the JV partners continues to engage with the BC government and expect to work towards a decision. Based on our understanding of the project and speaking to our local colleagues, the challenge is the significant energy requirements needed in a particularly remote area, and the choice of power source determining the emissions profile of the projectd. The second phase is likely to require new transmission infrastructure, which may take some time to come to fruition. Zoe also mentioned that the administration in the country was also looking to manage what new green/lower carbon electrons are utilized for, whether it be local development or energy export projects. In our eyes, the sanctioning of Phase 2 appears less straightforward than what we might have previously anticipated." So the JV partners still expect to work towards a FID decision, it sounds like BC isn't yet on side with the chatter that they would look to sign off on Phase 2 starting using natural gas for power with the commitment to switch to electricity when available.

Natural Gas: Baker Hughes expects 1.6 bcf/d FIDs in H2/23 & a further 8.6 bcf/d in 2024

Baker Hughes CEO Simonelli reiterated their bullish view on LNG FIDs for 2023 and 2024, as well as giving their public comments on more FIDs for 2025/26. As a reminder, Baker Hughes is probably the most plugged in of any company of what is coming down the pipe for LNG projects. They are involved in most existing LNG export projects and are called by most, if not all, LNG developers as they look to move to FID on a brownfield or greenfield project. So we believe it is always worth listening to what Baker Hughes CEO Simonelli says on what he expects for near term FIDs for new LNG export projects. (i) On Wednesday, we tweeted [\[LINK\]](#) "#BakerHughes CEO Simonelli reaffirms 07/22 Q2 bullish outlook for #LNG FIDs over next 18 mths and added expectations for 25/26. FIDs.. 2023: 8.6 bcf/d. 2024: 8.6 bcf/d. 2025 & 2026: 3.95 to 7.90 bcf/d. Surely #LNGCanada brownfield 1.8 bcf/d Phase 2 is part of next 18 mths. #OOTT." Our tweet referenced Simonelli's comments at a US sell side conference on Wednesday. (ii) 2023 and 2024 FIDs. Simonelli reinforced his bullish views for LNG FIDs in 2023 and 2024, the same as he made in the Q2 call on July 22. Simonelli said "And as you've seen LNG is going through a multiyear upcycle. We see another 65 MTPA this year, we see another 65 MTPA next year." This is equal to 8.6 bcf/d of FIDs in 2023 and another 8.6 bcf/d of FIDs in 2024. (iii) 2025 and 2026. Simonelli also gave his first comments on 2025 and 2026, which were "and even after that another 30 to 60 for '25 and '26." We assume he meant for the two years and, if so, that would mean 3.95 to 7.0 bcf/d.

Another 10 bcf/d of LNG FIDs in next 18 months

Same as Q2 outlook for 1.6 bcf/d FIDs in H2/23 & a further 8.6 bcf/d in 2024

Simonelli's outlook for LNG FIDs for 2023 and 2024 is the same as he gave in the Q2 on July 22. Here is part of what we wrote in our July 26, 2023 Energy Tidbits memo on his comments. "He sees another 10 bcf/d of FIDs for LNG export projects in the next 18 months including 1.6 bcf/d in H2/23 and a further 8.6 bcf/d in 2024.

Yesterday, we tweeted [\[LINK\]](#) ">10 bcf/d LNG FIDs in next 18 mths. \$BKR CEO @simonelli_1 : 7.0 bcf/d #LNG FIDs so far in 2023. Expects another 1.6 bcf/d FIDs in 2023 and a further 8.6 bcf/d FIDs in 2024. Surely #LNGCanada brownfield 1.8 bcf/d Phase 2 will be part of this >10 bcf/d in next 18 mths. #OOTT #NatGas." On the Q2

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call, Simonelli said *“The continued strength in long-term LNG contracts has been a key driver of the momentum in industry FIDs, which have now totaled 53 MTPA so far this year. This includes the recent FIDs for Phase 1 of Next Decade’s 17.6 MTPA Rio Grande project and QatarEnergy’s 16 MTPA North Field South project. Based on the continued development of the LNG project pipeline, we still expect the market to exceed 65 MTPA of FIDs this year and should see a similar level of activity in 2024. We continue to see the potential for this LNG cycle to extend for several years with a pipeline of new international opportunities expanding project visibility out to 2026 and beyond.”*

Surely LNG Canada brownfield 1.8 bcf/d Phase 2 FID is in Simonelli’s outlook

Our Baker Hughes tweet on Wednesday also said *“Surely #LNGCanada brownfield 1.8 bcf/d Phase 2 will be part of this >10 bcf/d in next 18 mths.”* It’s been quiet on the LNG Canada Phase 2 FID front and it was surprisingly quiet in the recent Shell June investor day. We still expect an FID sooner than later especially as Phase 1 approaches its completion. We have to give LNG Canada credit as they seem to have put a pretty clear no official comment on Phase 2 from their contractors on Phase 1. But it does seem like some of them plan to be in Canada for more than the next year or two. We still expect to see Phase 2 but, as noted above, it is more likely a 2024 FID than a late 2023 FID.

Natural Gas: ADNOC signs undisclosed term & volumes LNG deal with PetroChina

Unfortunately, we couldn’t find any mention of term and volumes for the Thursday announced ADNOC Gas signs \$50-550 million LNG supply deal with PetroChina. There was no mention of term or volume and we could not find any reports or even tweets on term and volumes. So while we expect it is a long-term (>10 year) deal, we could not confirm it is a long-term LNG deal and include it in our running table of long-term LNG deals. Our Supplemental Documents package includes the ADNOC Gas release. [\[LINK\]](#)

Long-term LNG deal

Natural Gas: WMO Sep/Oct/Nov forecast, a warm lead-in and start to winter

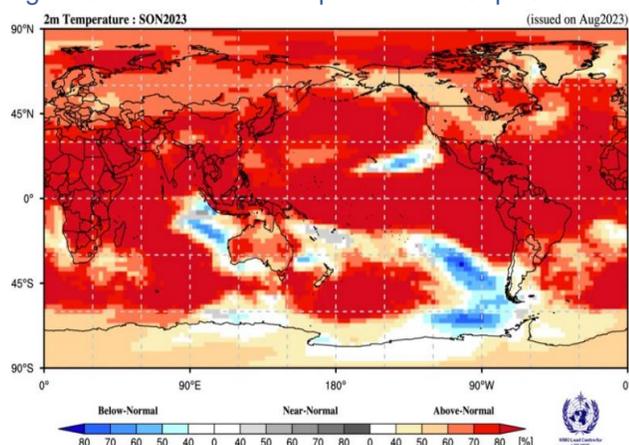
We have been highlighting the likely holdback to near-term natural gas and LNG prices is the expectations for a warm start to winter in all key natural gas consuming regions. Our primary concern for natural gas prices is always winter. If it’s a warm winter, it normally leads to a weak natural gas price year. And the other aspect about winter is that if it’s hot to start winter, it’s hard to catch up. It’s why we always focus on both winter and the start to winter. The WMO new forecast doesn’t include Dec, but does include Nov, which is the first start of winter natural gas months. And normally Nov gives an indication to Dec. On Aug 24, the WMO posted its *“Global Seasonal Climate Update: Target season: September-October-November 2023”*. WMO calls for a warm start to winter across almost all of the major natural gas consuming countries. This should continue to be a holdback on natural gas and LNG prices until the outlook turns to more normal temperatures for Dec. The WMO wrote *“there is widespread prediction of above-normal temperatures over almost all land areas. Positive temperature anomalies are expected over almost the entire Northern Hemisphere except for a maritime area off the south-west coast of North America that extends into the central Pacific at about 20° N. The largest increase in probabilities for above-normal temperatures in the Northern Hemisphere is predicted generally south of about 40° N, and also over parts of Central and East Asia, north-eastern parts of North America. Elsewhere in the Northern*

A warm lead-in & start to winter

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Hemisphere, including Europe, Greenland, Asia north of about 45° N, and in North America north of about 30° N, the probabilities for above-normal temperature are moderately increased.” Our Supplemental Documents package includes excerpts from the WMO forecast. [LINK](#)

Figure 5: Probabilistic Temperature for Sept/Oct/Nov 2023



Source: WMO

Natural Gas: Industrial action started on Friday at Chevron Gorgon & Wheatstone LNG

As of our 7am MT news cut off, we have not seen any statement from Chevron if there is any impact on LNG production at its 2.1 bcf/d Gorgon LNG and 1.2 bcf/d Wheatstone LNG following the start of industrial action on Friday after no deal was reached. Prior to the actual start of industrial action, Chevron said “We will continue to take steps to maintain safe and reliable operations in the event of disruption at our facilities.” We recognize that Chevron had been using their ability to maintain operations at their Richmond refinery in the US during a strike as an example, but we just think it will be tough for them to maintain operations at Gorgon LNG with replacement workers and other workers within Chevron.

Chevron LNG industrial action started

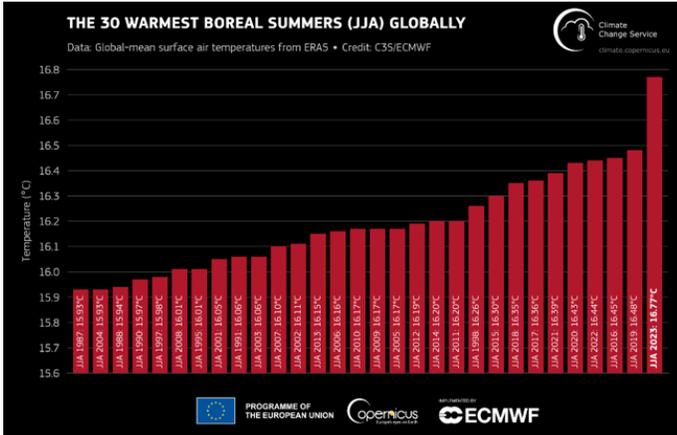
Natural Gas: Warmest Jun/Jul/Aug for the world on record

There was a good reminder this summer on how the most important weather issue for natural gas and LNG is winter, not summer. Yes, it was very hot this summer and it supported prices but summer heat has nowhere the impact as a cold winter or a hot winter. But a hot summer is supportive of natural gas prices. On Thursday, Copernicus posted its “August 2023, second warmest month closes the warmest summer”. [LINK](#). Copernicus wrote “August 2023 is the warmest month of August in the ERA5 data record, as well as the second warmest month after July 2023. Global sea surface temperature (SST) continued to rise, Antarctica saw unprecedented low sea ice levels for this time of year, and the boreal summer (June, July, August) was the warmest on record by a large margin, according to the latest monthly bulletin of the Copernicus Climate Change Service (C3S). The global-mean surface air temperature during August 2023 was 16.82°C, 0.71°C warmer than the 1991-2020 average for August, and 0.31°C warmer than the previous warmest August, in 2016.” Our Supplemental Documents package includes the Copernicus recap.

Warmest JJA on record

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Figure 6: the 30 warmest boreal summers (JJA) globally



Source: Copernicus

Natural Gas: Forecast well above normal temperatures through Sept in Japan

It has been really hot in Japan this summer and it looks like the hot weather will continue into the fall season. Every Thursday, the Japan Meteorological Agency updates its 30-day outlook [\[LINK\]](#). The September 7 update calls for much warmer than typical temperatures for the Sept 9 – Oct 8 period. The well above average temperatures are forecasted through the whole country, with the Japanese mainland having the highest probability-level of warm temperatures, and the southern islands slightly cooler. The warm weather should keep air conditioning demand high and continue to pull on LNG stocks. Below is the JMA's 30-day temperature probability forecast for Sep 9 to Oct 8.

Japan's 30-day temperature forecast

Figure 7: JMA Sep 9 – Oct 8 Temperature Probability Forecast



Source: Japan Meteorological Agency

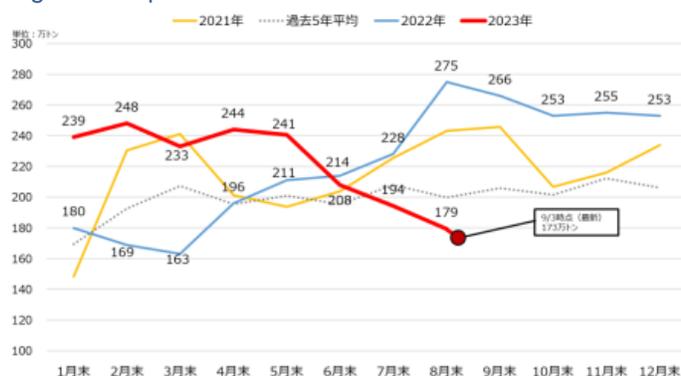
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Natural Gas: Japan's LNG stocks remain below 2022 and 5-year average levels

It's been hot in Japan, and Japan has been drawing on its LNG stocks for power generation for the past few weeks and have taken LNG stocks below year ago and the 5-yr average. It means that Japan will be starting to get some LNG cargos to increase LNG stocks before the winter. But that was not the case this week as we observed a large draw, keeping Japan LNG stocks well below 2022 average levels and the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [\[LINK\]](#). LNG stocks on Sept 3 were 83.1 bcf and are down +13.9% WoW from August 27 of 96.5 bcf, and below the 5-year average of 98.9 bcf. METI did not comment on the MoM increase. Below is the Japanese LNG stocks graph from the METI weekly report.

Japan LNG stocks down -13.9% WoW

Figure 8: Japan LNG Stocks



Source: METI

Natural Gas: China natural gas imports +22.7% YoY in Aug

On Thursday, Bloomberg reported on the summary data of China's oil and natural gas imports for Aug based on China's General Administration of Customs website. It is only summary data so, as of our 7am MT news cut off, we have seen any detailed splits for natural gas imports between LNG and pipeline imports. And we haven't yet seen the China natural gas production data. But on the summary data, China's natural gas imports (LNG and pipeline gas) was +22.7% YoY to 10.858 tons in Aug 2023, and was +9.4% YoY to 77.707 tons for YTD Aug 31, 2023. We should see the Aug data for domestic natural gas production and a split between natural gas imports via pipeline vs LNG.

China natural gas imports

Natural Gas: Europe storage ~94% full, so should go into winter full or close to full

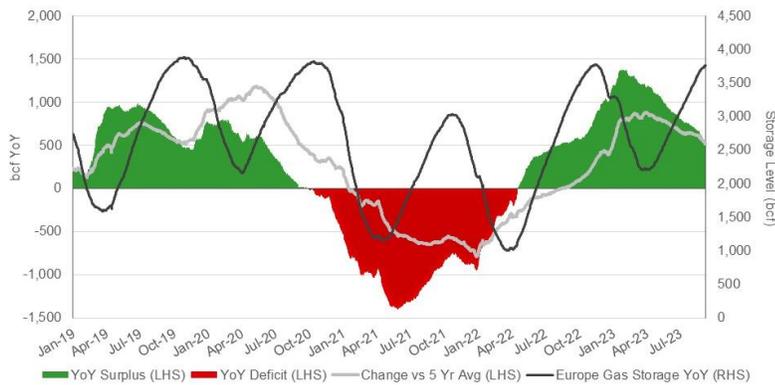
Europe storage hit the 90% full level in August and continues to increase this week. So, Europe should be able to go into winter at full or close to full levels. Over the past several weeks, the hot weather and relatively low natural gas prices have led to a modest narrowing of the gas storage surplus relative to last year and the 5-year average. Plus there is also the impact that some storage areas are effectively full. Europe is in about as good shape as possible for natural gas to start winter. This week, Europe storage increased by +1.02% WoW to 93.94% on September 7. Storage is now +11.29% greater than last year levels of 82.65% and is +11.34% above the 5-year average of 82.60%. The current storage is within

Europe gas storage

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the 5-year range, albeit at the top end of the range. Below is our graph of Europe Gas Storage Level.

Figure 9: European Gas Storage Level



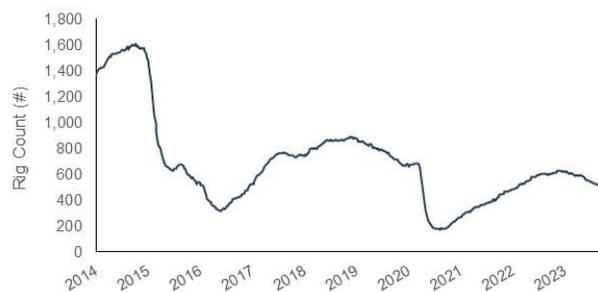
Source: Bloomberg, SAF

Oil: US oil rigs +1 WoW at 513 rigs on September 8, US gas rigs -1 WoW to 113 rigs

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) Total US oil rigs were +1 WoW at 513 total rigs, and are -78 rigs YoY for the week of September 8. This is up +32 rigs from the 2022 low of 481 rigs in January. On a per basin basis, there were only minor +/- one rig WoW changes in the major US basins for the week of September 8. The Permian was up +1 rigs WoW to 317 rigs, Cana Woodford was flat WoW at 17 rigs, and Eagle Ford decreased -1 rigs WoW to a total of 47 rigs. DJ Niobrara was down -1 rigs WoW at 14 total rigs. Others were +3 oil rigs WoW to 84 rigs. The Permian is now at its lowest level since March 18, 2022 and is down -40 rigs from its recent high of 357 rigs on April 28, 2023. (ii) Gas rigs were down -1 rigs WoW at total of 113 rigs and have now decreased -53 rigs YoY. On a per basin basis, Marcellus decreased -1 rig WoW to 29 rigs. Haynesville was flat WoW at 41 rigs. Below is our graph of total US oil rigs.

**US oil rigs up
WoW**

Figure 10: Baker Hughes Total US Oil Rigs



Source: Baker Hughes, SAF

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Oil: US frac spreads +8 to 252 frac spreads for the week ending Sept 8

It was great to see on Friday night that Mark Rossano (C6 Capital Holdings) weekly US frac spread recap for the week ending Sept 8 on the Primary Vision network was publicly available. YouTube video is at [LINK](#). For the week ending Sept 8, US frac spreads at the high point in the week were +8 to 252 spreads. Rossano thinks the US has seen the bottom and frac spreads will continue to ramp up. This week, there were additions in the Permian, small additions in the Appalachia and some in the western Gulf. He expects to see the Permian “*ramp up a little bit as well as the western Gulf, but not a huge amount*”. Rossano doesn’t expect spreads to get back to 285 spreads. [Note frac spreads were 287 at the end of Aug 2022] He sees the increasing in Sept/Oct but reminded that then there will be the normal slowdown that happens starting around US Thanksgiving and continuing past Xmas.

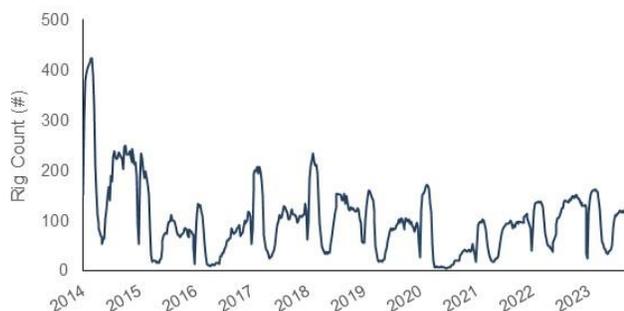
**Frac spreads +8
to 252**

Oil: Total Cdn rigs down -5 rig WoW to 182 total rigs

For the week of September 8, total Cdn rigs were down -5 rigs WoW to 182 rigs. We expect that the decline was associated with changing Alberta and BC wildfires last week. BC was -1 rigs WoW, at a total of 18 rigs and Alberta was down -4 rigs to a total 125 rigs. In contrast, Saskatchewan increased +1 rig WoW for a total of 35 rigs and Newfoundland Offshore rigs decreased -1 to 0 active rigs. Cdn oil rigs were down -2 WoW to 113 rigs, and Cdn gas rigs decreased -3 rigs to 69 rigs. Cdn oil rigs are down -27 rigs YoY, while gas rigs are up +4 rigs YoY. Below is our graph of total Cdn oil rigs.

**Cdn total rigs
down WoW**

Figure 11: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

Oil: Precision’s Cdn activity outlook looks unchanged vs its 07/27 outlook

Precision Drilling posted an investor deck to start the month and before its CWC acquisition announcement this week. Their Cdn activity outlook looks the same as in the recent July 27 Q2 release. However, Cdn industry rig activity is lower YoY. Sept outlook “*Q2/23 industry rig activity ~10% higher than Q2/22. Industry Super-Spec rigs nearly fully utilized. PD Super Triple & Super Single pad capable fleets fully utilized; expect demand to exceed supply into 2024. Drilling & completions momentum building as Trans Mountain and Coastal GasLink pipelines nearing completion.*” Their 07/27 Q2 outlook “*Our Super Triple fleet is currently fully utilized and we expect customer demand to continue to exceed supply, driving higher daily operating margins and longer-term take-or-pay contracts.*”

**Precision’s Cdn
activity outlook**

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US oil production flat WoW

Oil: US weekly oil production estimates flat WoW at 12.8 mmb/d

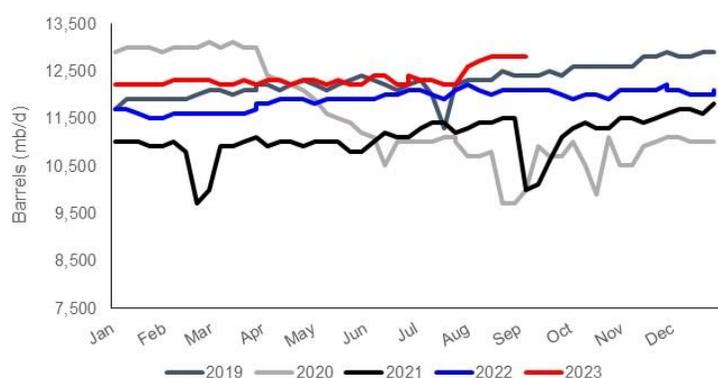
Our Aug 13, 2023 Energy Tidbits memo highlighted the EIA increased their weekly US oil production estimates by +0.4 mmb/d and how we had been expecting such a big increase to the weekly estimates. For months, we highlighted how the US weekly estimates were well below the EIA’s actuals as per its monthly Form 914. As a result, the weekly estimates now seem more or less in line with the monthly actuals. The production estimates have continued to increase in August and has reached another post-pandemic high. This week, the EIA’s production estimates were flat WoW at 12.8 mmb/d for the week ended September 1 [\[LINK\]](#). The Lower 48 was also flat WoW at 12.4 mmb/d, and Alaska was flat at 0.402 mmb/d. Below is a table of the EIA’s weekly oil production estimates.

Figure 12: EIA’s Estimated Weekly US Field Oil Production

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	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								

Source: EIA

Figure 13: EIA’s Estimated Weekly US Oil Production



Source: EIA, SAF

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EIA Form 914 – US June oil actuals +1.044 mmb/d YoY

Here is what we wrote in last week’s (Sept 3, 2023) Energy Tidbits memo. “The reason why we highlighted for months the shortfall in the EIA weekly oil production estimates vs the EIA monthly actuals is that they understated the strong YoY growth in US oil production, which is >1 mmb/d YoY. As noted above, the EIA made a big +0.4 mmb/d increase adjustment to the Aug 4 week as a catch up to what has been a big difference between the monthly actuals and weekly estimates. So the big shortfall of the weekly estimates vs the monthly actuals will continue for the next month. On Thursday, the EIA released its Form 914 data [LINK](#), which is the EIA’s “actuals” for June US oil and natural gas production. The Form 914 actuals for June have production at 12.844 mmb/d, which is +524,000 b/d vs the EIA weekly estimates of 12.320 mmb/d. And because of this significant difference, the Form 914 May production is +1.044 mmb/d YoY. The actuals paint a picture of much stronger than expected YoY growth in US oil production.

Figure 14: EIA Form 914 US Oil Production (thousands b/d)

(thousands b/d)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	12,568	12,532	12,770	12,650	12,637	12,844						
2022	11,480	11,258	11,806	11,770	11,734	11,800	11,834	11,985	12,325	12,378	12,376	12,138
2021	11,137	9,916	11,351	11,318	11,390	11,366	11,392	11,276	10,921	11,564	11,782	11,678
2020	12,850	12,844	12,795	11,911	9,714	10,446	11,004	10,579	10,926	10,456	11,196	11,172
2019	11,871	11,652	11,911	12,145	12,153	12,216	11,896	12,479	12,584	12,805	13,000	12,980
2018	10,000	10,262	10,466	10,499	10,434	10,640	10,896	11,391	11,443	11,508	11,885	11,944
2017	8,874	9,094	9,164	9,101	9,185	9,110	9,246	9,250	9,516	9,668	10,085	9,983

Source: EIA

Figure 15: EIA Form 914 US Oil Production vs Weekly Estimates1



Source: EIA, SAF

Oil: Great graph on “Permian productivity dropping? Peak rates say yes”

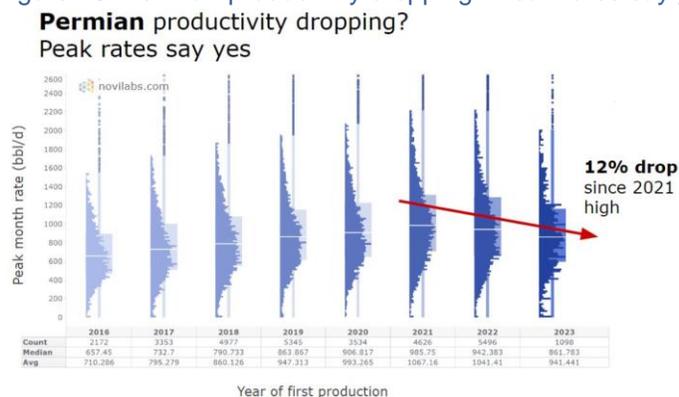
We aren’t saying the Permian can’t or won’t grow but, it is doing so in the face of declining well productivity. Maybe industry will turn it around but we have seen a range of well results tracking that show the same point – it looks like Permian well rates peaked in 2021. We have noted this in multiple memos this year and recently from the Dallas Fed and Raymond James. But on Friday, we saw our favorite graph of this data in a tweet from Ted Cross from novi. [LINK](#) We like the graph because it isn’t a line graph and so you can see the distribution of wells that make up a line graph. Ted Cross wrote “Permian productivity has been a hot topic since well performance dropped last year. That trend looks to be continuing

Declining Permian peak rates

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into 2023. We don't yet have a ton of data on well history (after you factor in reporting delays), but so far, it looks like performance has continued to fall. Looking at peak rates, Permian wells have fallen from an average peak month production of 986 bbl/d in 2021 to 942 bbl/d in 2022 and now 861 bbl/d in 2023. Of course, the 2023 numbers are for a smaller sample size than 2021 and 2022, but this is nevertheless worth watching. And just to preempt the comments: actually, the "peak month" has been falling. In other words, wells are peaking slightly earlier now than they used to. We are calculated an average peak month of 2.6 for 2023, vs. 2.7 in 2021 and 2.8 in 2020. That's a bit of a surprise to me, to be honest!"

Figure 16: Permian productivity dropping? Peak rates say yes.



\Source: Dallas Fed

03/06/23: Pioneer CEO "most companies are drilling Tier 2 and Tier 3 wells"

On multiple occasions this year, we have noted comments from companies that, during the Covid 2020 and 2021 when industry was at a low, producers were forced to drill their best wells as a way to get the most from any dollar in drilling and completion. And those comments were why people shouldn't be surprised to see the data that 2021 wells were generally the peak for well rates. This theme of drilling the best in the Permian was highlighted on March 6, 2023 by then Pioneer CEO Scott Sheffield. Here is what we wrote in our March 12, 2023 Energy Tidbits memo. "We recognize that there are many who believe the US can grow its oil production at strong rates for multiple years. However, the messaging from a wide range of producers and service companies has been caution on that assumption and that US oil growth expectations should be lowered. Another in this camp is Permian player, Pioneer Natural Resources CEO Scott Sheffield. He made a clear statement that "most companies are drilling Tier 2 and Tier 3 wells". On Monday, we tweeted [\[LINK\]](#) "Bullish for #Oil. \$PXDC CEO Sheffield "most companies are drilling Tier 2, Tier 3 inventory now. So we just don't have that potential to grow US production ever again. I think we may get back to 13 mmb/d, probably in ~2.5 to 3 yrs at a very slow pace." Thx @SullyCNBC. #OOTT." Our tweet included the transcript we made of Sheffield's comments. At 2:10 min mark [\[LINK\]](#) "... and secondly, we just don't have, the industry doesn't have the inventory. Most companies are drilling Tier Two, Tier Three inventory now. So we just don't have that potential to grow US production ever again.

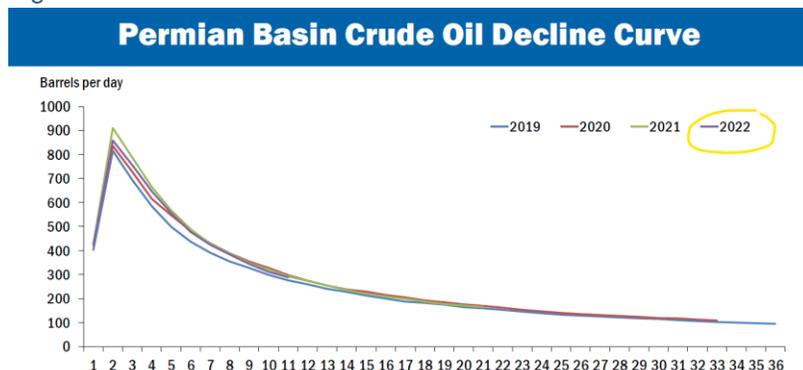
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I think we may get back to 13 million barrels a day, probably in about 2 and a half to 3 years, at a very slow pace."

Dallas Fed, lower productivity Permian 2022 wells than 2021 and 2020 wells

Here is what we wrote in our Aug 27, 2023 Energy Tidbits memo. "On Friday, we tweeted [\[LINK\]](#) "ICYMI. @DallasFed Permian #Oil decline curve updated 07/28. Fits maturing Permian thesis ie. industry generally drilled their best wells in 2020/21 when cash flows were squeezed. 2022 wells. Less than 2021 wells. Start little higher vs 2020 but cross over lower ~6 mths. #OOTT." The Dallas Fed posts an Energy Slideshow, and the current release was on August 18. [\[LINK\]](#). One fo the key charts is their "Permian Basin Crude Oil Decline Curve", which has data updated as of July 28. The data is updated on a semi-annual basis and the prior data update was Feb 21, 2023. The graph plots the Permian Basin wells from 2019, 2020, 2021 and 2022. The takeaway and narrative is unchanged from the last data update. The best Permian wells were drilled in 2021 when cash flows and capital access were squeezed. The 2022 wells are less than the 2021 wells. The 2022 wells start a little higher vs the 2020 wells, but they converge around 6 months and then 2022 wells are slightly lesser than 2020 wells. There is no data on 2023 wells."

Figure 17: Permian Basin Crude Oil Decline Curve



Federal Reserve Bank of Dallas

NOTES: Depicts average crude oil production per well and is based off first production date. Last updated 7/28/23, chart is updated semi-annually. SOURCE: WellData.com

Source: Dallas Fed

More Raymond James data supporting a maturing Permian Delaware Basin

Here is what we wrote in our June 25, 2023 Energy Tidbits memo. "Yesterday, we tweeted [\[LINK\]](#) "Must read #Permian#DelawareBasin report by @RaymondJames John Freeman. "remaining core inventory (~8 yrs) continues to fall at a rapid rate" "Well productivity finally rolled over last year (down 6%), after improving at a 9% CAGR the prior 5 years" Combined with 📌 06/05/23 Midland Basin report, "Permian Basin well productivity declined 3% overall last year (first decline for the basin" Maturing Permian Basin = less US supply growth potential = positive for 2020s #Oil outlook. #OOTT." (i) On Thursday, Raymond James posted a big report "Delaware Basin Deep Dive: Well Productivity & Remaining Core Inventory", where they "focus

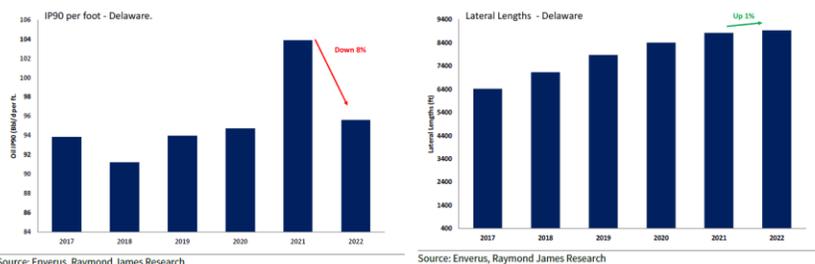
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on two important topics within the Delaware Basin: 1) How much core acreage remains and 2) What are the well productivity trends in the basin.” This is the follow up report to its June 5 report “Midland Basin Deep Dive: Well Productivity & Remaining Core Inventory”. (ii) This was a “deep dive” and the data takeaways were clear – core inventory “continues to fall at a rapid rate”, and “well productivity finally rolled over last year (down 6%), after improving at a 9% CAGR the prior 5 years.” (iv) RJ concludes “The Delaware Basin deep-dive reveals that remaining core inventory (~8 yrs.) continues to fall at a rapid rate and robust M&A recently leaves public operators with few remaining opportunities to acquire meaningful core inventory. The gap between public (~9 yrs.) and private (~3 yrs.) operators when it comes to remaining core inventory is considerable. Going forward, we anticipate an increasing interest in non-core acreage (Tier 1 and Tier 2 inventory) that can be acquired cheaply today, but will be worth considerably more in the future when core inventory exhaustion has been reached. We anticipate private equity being the main acquirer of that non-core acreage. Well productivity finally rolled over last year (down 6%), after improving at a 9% CAGR the prior 5 years. The declining well productivity was driven primarily by a shift in well mix as the industry moved more towards full-stack development (i.e. less Wolfcamp) and secondarily a jump in the percentage of child wells (33%) drilled last year.” This is a must-read report that will have to be accessed via Raymond James.”

Figure 18: Delaware Basin posts first decline in well productivity

Delaware Basin Posts First Decline in Well Productivity

Similar to our approach in the Midland, we are choosing to focus on per well 6 month production volumes. We are doing this even though there seems to be fewer constraints around high initial production rates, with both IP90 and 6 month volumes falling a similar amount year-over-year. We still believe 6-month volumes provides a cleaner picture and based on that data the Delaware Basin saw its first decline (6%) in well productivity occur last year. The prior 5 years the basin increased well productivity at a ~9% CAGR.

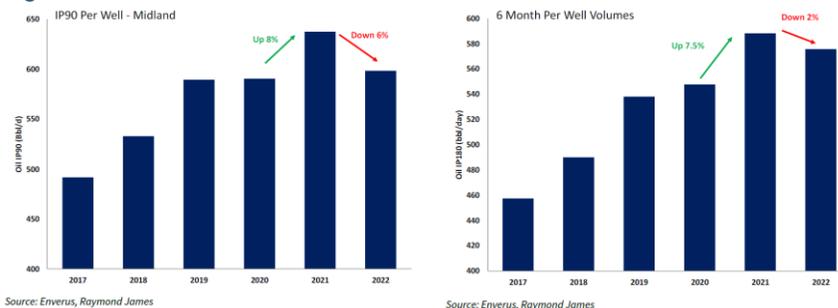


Source: Enverus, Raymond James Research

Source: Enverus, Raymond James Research

Source: Raymond James

Figure 19: Midland Basin: IP90 Per Well, 6 Month Per Well Volumes



Source: Enverus, Raymond James

Source: Enverus, Raymond James

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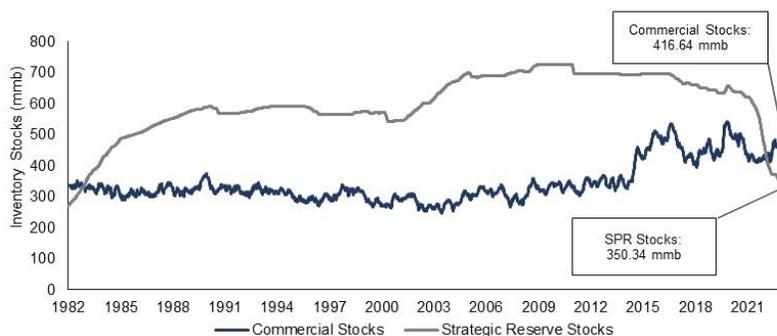
Source: Raymond James

Oil: US SPR reserves now -66.297 mmb lower than commercial crude oil reserves

US SPR reserves

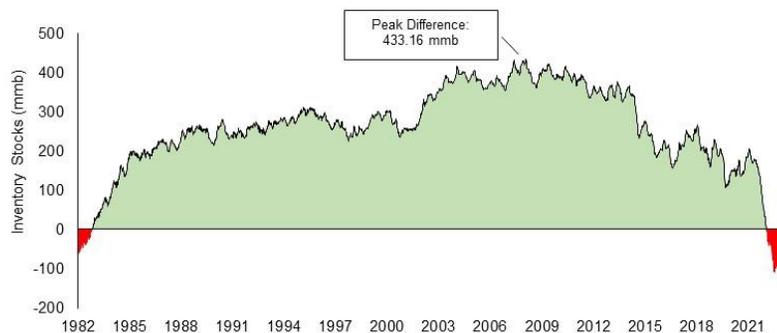
Oil in the US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sept 16, 2022 week. This deficit narrowed this week after a big draw in commercial oil stocks of -6.307 mmb, which puts commercial stocks at their lowest level since January. The EIA's weekly oil data for September 1 [\[LINK\]](#) saw the SPR reserves up +0.798 mmb WoW with the US DOE repurchases increasing SPR reserves to 350.340 mmb, while commercial crude oil reserves decreased -6.307mmb to 416.637 mmb. There is now a -66.297 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 20: US Oil Inventories: Commercial & SPR



Source: EIA, SAF

Figure 21: US Oil Inventories: SPR Less Commercial



Source: EIA, SAF

Oil: US gasoline prices flat this week at \$3.82, \$0.08 higher YoY

US gasoline prices

AAA reported that US national average gasoline prices were \$3.82 yesterday, which was flat WoW for the second week in a row, but are now \$0.08 higher YoY vs \$3.74 on Sept 9, 2022. Remember that US natural gas prices caused a panic in March 2022, when US gasoline

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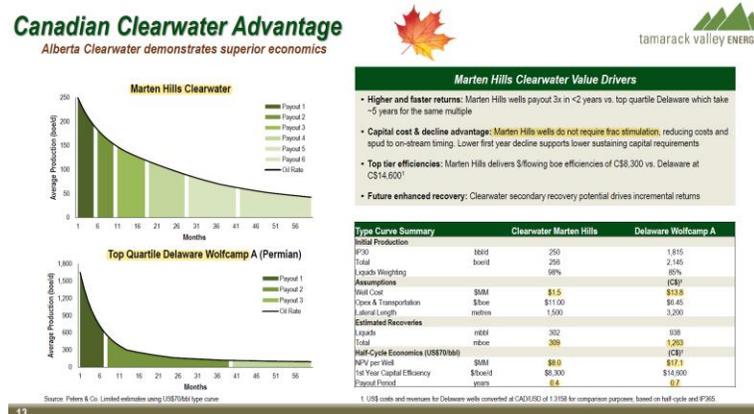
prices went over \$4 with eight months to go before the midterms. US gas prices went over \$5 by the end of June before easing below \$4 in Aug. Even at \$3.82, US gasoline prices are now looming over Biden with 14 months to go before the 2024 election especially since he doesn't have the SPR to drain to put pressure on oil prices and gasoline prices.

Oil – No frack & no contest in Clearwater vs Permian Delaware economics

We recognize there isn't as much sizzle in the Cdn No Frack oil plays vs the Permian oil plays because the initial production rates in Canada are nowhere near the initial production rates in the Permian especially as the big Permian players drill longer and longer wells. That means the hugely superior economics of the Cdn No Frack plays are overlooked. (i) Yesterday, we tweeted [LINK](#) "Here's why Cdn No Frack #Oil plays are big. Looks like \$TVE CEO showing 📄 slide. No Frack Clearwater vs top quartile Permian Delaware Wolfcamp. Faster payout: 0.4 yrs vs 0.7. NPV is 5.3x vs well cost vs 1.2x. more reserves per \$, secondary recovery potential, etc. #OOTT." (ii) We forwarded a Friday night tweet from Sohaib Abbas @sohaibab9 on his Friday event with Tamarack Valley CEO Brian Schmidt that included a clip of Schmidt showing the below slide from his July presentation comparing the economics of the Clearwater vs the Top Quartile Permian Delaware Wolfcamp A wells. The economics are hugely better for the Clearwater especially the Clearwater NPV per well being \$8.0 mm vs a well cost of \$1.5 mm ie. NPV is 5.3x the well cost. This compares to the Delaware Wolfcamp A NPV of \$17.1 mm but vs a well cost of \$13.8 mm or a NPV of only 1.2x the well cost.

Clearwater vs Permian Delaware Wolfcamp A

Figure 22: Clearwater vs Permian Delaware Wolfcamp A economics



Source: Tamarack Valley

Upside to many Cdn oil plays with CPG tightly spaced multi leg no frac wells

The Clearwater is probably the best known no frack Cdn oil play. But, as investors have found out over the past year, there are many Cdn oil plays that are having this success. Here is what we wrote in our Oct 30, 2022 Energy Tidbits memo. "We think its worth noting this "technology" development from that is applicable to a wide range of oil plays for a wide range of Cdn oil producers. This should provide upside to many Cdn oil and gas oil plays. On Wednesday, we tweeted [LINK](#) "It's Working! Upside is

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applicable to many Cdn #Oil plays by small/big producers. See 📌 \$CPG tightly spaced multi-leg horizontal wells without need for fracking cost/execution. Works in Viewfield, looking at Shaunavon & "see if "can apply it throughout our other assets". #OOTT". Crescent Point held its Q3 call on Wednesday. This seems straightforward and not any proprietary technology. It's a simple drilling concept and the reality of the world is, it's the part of drilling a well (the horizontal section) that would seem difficult to not execute. Afterall, industry has been drilling horizontal wells, especially in SE Sask, since the late 80s. This can be copied easily by any company especially small ones that are disadvantaged by not being able to access the frac spreads. Technology advancements are on plays that we have called for years crappy conventional oil zones that became way better with multi stage frac wells. We don't think the math will work as well for true shale plays, but, the reality is that most of the "new" oil plays over the past decade are crappy conventional oil zones in Canada and the US. This should make more of any potential recoverable oil reserves economic, extend the recovery factor of these pools by sweeping up more of the pool edges. This will add to reserve values as it makes previously uneconomic oil reserves economic. The concept is drilling multi-leg horizontal wells on a tight spacing without fracking. So it is a drilling cost play. And not a fracking play. Crescent Point is doing it in the Viewfield Bakken and say also the Shaunavon, but there is no reason why the concept shouldn't work in the other crappy conventional plays. And they also note that they are looking to apply it "throughout our other assets". Here is what CPG said in the opening statement, and then in the Q&A where they explained it. It's not huge but we suspect the payouts are very quick. And the other advantage is that it becomes impossible to screw up a well, which could happen with a bad frac job. This is drilling several legs so each leg is an independent well bore. "For example, in our Viewfield Bakken play, we drilled our first multilateral open horizontal well and are now drilling a second based on the success of the first. By adopting a new well design, we have removed the need for fracture stimulation in these multilateral horizontals, expanding the economic boundaries of the play. We also continue advancing our decline mitigation projects throughout our Saskatchewan operations to enhance secondary recoveries and moderate future capital requirements" "Yeah, thanks for the question, Michael. So this is something that our teams have been looking at. Trying to figure out how to expand the economic boundaries of the play as you step out from the core. So with this, I think drilling has -- the drilling technology has gotten so good that -- it's a little bit cheaper now to attack some of the areas in this play with just drilling instead of having to frac. So these multilaterals are obviously tighter space than our frac wells and if you look at total recovery and initial production from a section under these multilateral wells versus our conventional frac well, you get higher production and higher reserves potentially for lower capital. So we're pretty excited about it. It's early days, 125 plus boe per day per well, and if our production hangs in and it hits our UR estimates, we probably have over 100 or more locations to go and incorporate that into our five-year plan in Viewfield. And we are looking at other areas in our portfolio i.e. like Shaunavon, obviously this area and Viewfield has a little bit better porosity permeability maybe then say Shaunavon does. So early days still, but we will to see if we can apply it throughout our other assets." There was nothing specific in the slide deck."

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Oil: CNQ sees TMX start “delayed into Q2 or later in 2024”

No one should have been surprised to see Canadian Natural Resources filing with the CER on the Trans Mountain TMX expansion include CNQ’s view that there the TMX startup will be delayed. On Thursday, we tweeted [LINK](#) “CNQ expects #TMX delay. CER filing “Although \$CNQ hopes for an earlier Commencement Date, unfortunately, it is probable that the Commencement Date will be delayed into Q2 or later in 2024”. Fits 📌 08/30/23 tweet on Trans Mountain changed language on TMX start. #OOTT.” CNQ’s CER filing had a clear statement “Although Canadian Natural hopes for an earlier Commencement Date, unfortunately, it is probable that the Commencement Date will be delayed into Q2 or later in 2024.” The part that is a little worrisome is the “or later in 2024” if it doesn’t start in Q2. Our Supplemental Documents package includes an excerpt from the CNQ CER filing.

CNQ sees TMX delays**Fits that Trans Mountain seemed to signal to a delay in its TMX expansion**

Here is what we wrote in last week’s (Sept 3, 2023) Energy Tidbits memo. “Trans Mountain hasn’t advised of any delay in the TMX expansion but, we believe they pointed to a delay after reading their Q2 release on Aug 30. Our Thursday tweet on CNQ linked to our Aug 30 tweet [LINK](#) “Hmmm! Note 📌 Trans Mountain’s new Q2 language on #TMX start vs Q1 & Q4. Q2. “We are currently planning and targeting the commencement” Q1 & Q4, didn’t use “currently”, just “expected to ...” Hinting a new start date is coming given 📌 08/23 tweet challenge? #OOTT.” Trans Mountain released its Q2 on Aug 29 and it included an update on its TMX expansion project. Given the sensitivity on TMX cost and timing, we like to check to see if Trans Mountain is changing what they said. And, as noted in our tweet, they did change their description. And that makes it seem that there is a change in timing that is coming. Trans Mountain used the exact same language in its Q4 and Q1 releases. In the Q1/23, Trans Mountain said “Trans Mountain anticipates mechanical completion of the Project to occur at the end of 2023 with commercial service expected to occur in the first quarter of 2024.” In the Q4/22 release, Trans Mountain said “Trans Mountain anticipates mechanical completion of the Project to occur at the end of 2023 with commercial service expected to occur in the first quarter of 2024.” It’s not just the timing is the same, its also the wording doesn’t include any caveats. Whereas the Q2/23 used different words and added the key caveat “currently” and introduces the concept that the startup date is their “target” date. Trans Mountain wrote “We are currently planning and targeting the commencement of service on the expanded pipeline system near the end of the first quarter of 2024.” When see “currently” and “target” as opposed to expected to, it seems like Trans Mountain is setting the stage for a delay. Our Supplemental Documents package includes the Trans Mountain comments on the TMX expansion from the Q2/23, Q1/23 and Q4/22 releases.”

Oil: CNQ previously noted 5 million barrel line fill will needed ahead of TMX start

Whether the TMX start up is in Q2/24 or possibly later, we believe the start up is happening in 2024. And that means there will be western Canadian oil moved west and, ahead of the start up, there will be a need for 5 million barrels of oil for lie fill. Here is what we wrote in our Aug 6, 2023 Energy Tidbits memo. “On Thursday, Canadian Natural Resources held its Q2 call

TMX line fill

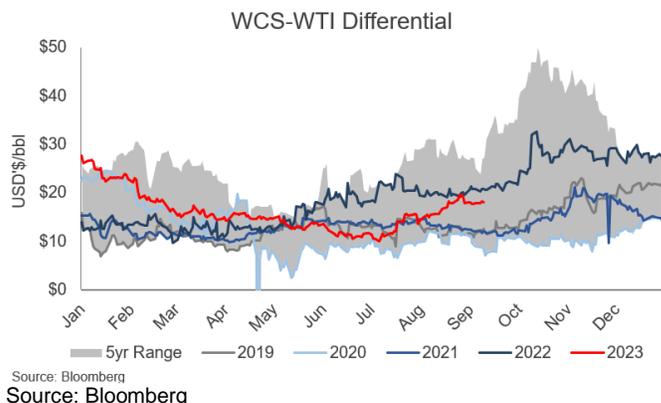
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and there was a huge surprise when mgmt. stated they thought Trans Mountain could call for line fill any time now. And CNQ reminded that there would be 5 million barrels of oil needed for the line fill (line pack). This surprised everyone. Whether the line fill starts in Oct, Nov or Dec, or in early 2024, CNQ's comments are a reminder that line fill is soon to come. And when it does, that means there will be a need for 5 million barrels of oil for line pack before the pipeline can be operational. Trans Mountain should be releasing Q2 in late August and there will be a formal construction update. Their last formal update was in their Q1 report on May 30 [LINK](#) said "Trans Mountain anticipates mechanical completion of the Project to occur at the end of 2023 with commercial service expected to occur in the first quarter of 2024." The Bloomberg transcript of CNQ mgmt. comments in the Q&A was "Sure. As far as the apportionment, we don't see it being an issue. From all indications TMX is -- will be making a call for line fill here in the fall here, August, September, October. So from that aspect. I look at it as a very positive and very constructive for Canada's oil WCS. Because you can appreciate one you'll have the line fill and I believe it's up around 5 million barrels of line fill for that line. And then on top of it heavy oil capacity, I believe is a little over 500,000 barrels a day. So it's going to take 500,000 barrels a day of heavy to a different market. So to me, I find that the WCS piece will be very constructive here. Obviously typically, historically the winter months it does widen a bit. B mean, let's face it's 20% that is still very strong on a relative basis."

A Q2 startup of TMX should impact WCS-WTI differentials

We don't know when the new delayed start up time for TMX will be but it should impact WCS less WTI differentials. Especially if it is to start up early in Q2 Because Feb/March is normally when WCS less WTI differentials start to seasonally narrow. We warn every year ahead of the normal seasonal narrowing in differentials. Here is what we wrote in our Jan 29, 2023 Energy Tidbits on this normal seasonal narrowing. "Unfortunately, there are often items like Keystone pipeline outage that impact Cdn heavy oil differentials. It's not just unplanned events, but there are many items that impact Cdn heavy oil differentials, but we remind that we are just moving into the time of the year that normally sees Cdn heavy oil differentials narrow. This is the time of year, when refineries tend to maximize production of asphalt ahead of the annual summer paving season. As is said in Canada, there are two seasons in Canada – winter and paving season." Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials from Feb thru May.

Figure 23: WCS less WTI oil differentials



WCS less WTI differentials

Oil: Cdn WCS less WTI differentials widened \$0.30 to close at \$18.05 on Sept 8

It was a great May thru mid Aug for WCS less WTI differentials that were much narrower than normal. Normally WCS less WTI differentials start to seasonally widen in mid-May. But that didn't happen this year. WCS less WTI differentials were \$14.15 on March 31, which was the Friday before the Sun Apr 2 reports that OPEC+ was going to cut production effective May 1. The WCS less WTI differential was up and down but closed at \$14.65 on Apr 28, then narrowed in May to 13.50 on May 31, narrowed in June to \$11.25 on June 30, widened in July to \$13.75 on July 31. But that changed in August, widening to \$15.50 on Aug 11, then widening to close at \$19.50 on Aug 25 before narrowing to close at \$17.75 on Aug 31. This week, WCS less WTI differentials were mostly unchanged, widening \$0.30 to close at \$18.05 on Sept 8. This is not the norm and is linked to the global medium sour tightness and, in the US, the reducing Saudi oil exports to the Gulf Coast. The normal seasonal trend for WCS less WTI differentials that normally widen starting in mid-May. For perspective, a year ago, the WCS-WTI differentials last year were \$20.50 on Sept 8, 2022. Below is Bloomberg's current WCS-WTI differential as of Sept 8, 2023 close.

Figure 24: WCS less WTI oil differentials including Sept 8 close



Source: Bloomberg

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Oil: Crack spreads increased to \$33.05, expect to weaken with turnarounds to start

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, there was an increase in US 321 crack spreads to \$33.05 to close on Sept 8, which was up from \$30.49 on Sept 1. Crack spreads at ~\$33 are higher than more normal pre-Covid that was more like \$15-\$20. There is still money to be made by refiners but we expect to see spreads narrow as industry moves into turnaround season for winter fuels.

**Crack spreads
down this week**

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 \$33.05 as of the Friday Sept 8, 2023 close.

Figure 25: Cushing Crude Oil 321 Crack Spread Sept 8, 2013 to Sept 8, 2023



Source: Bloomberg

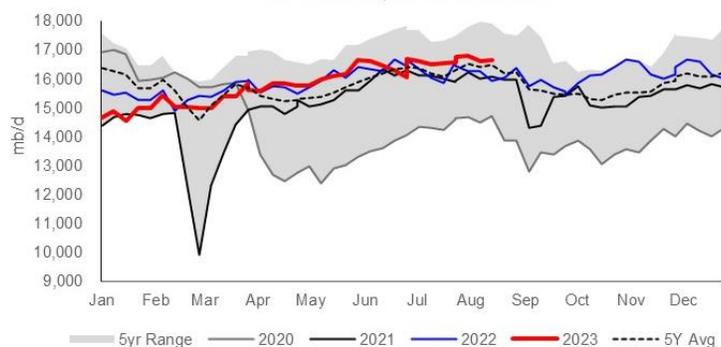
Oil: Refinery inputs up +0.020 mmb/d WoW to 16.623 mmb/d

There are always unplanned issues that impact crude oil inputs into refineries, but refineries around the world follow seasonal patterns for their maintenance. We'll normally see refineries come out of turnarounds in late March/early April to start their ramp up in refining of summer blend fuels, which typically peaks in Aug/early Sept. So we should be starting to see a seasonal decline in crude oil inputs into refineries as refiners turnaround to prepare to shift to more winter fuel blends.. On Thursday, the EIA released its estimated crude oil input to refinery data for the week ended September 1 [\[LINK\]](#). The EIA reported crude inputs to refineries were up +0.020 mmb/d this week to 16.623 mmb/d and are up +0.694 mmb/d YoY. Refinery utilization was down -0.2% WoW to 93.1%, which is +2.2% YoY. We are likely hitting the seasonal peak in refining in the next few weeks.

**Refinery inputs
+0.02 mmb/d WoW**

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Figure 26: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: Something still isn't right in the EIA weekly oil imports by country data

The reason why we continue to highlight this error is that no one can tell if it's only the EIA allocating imports incorrectly by country or if the EIA is understating oil imports. But it's the same commentary as the last few months that something doesn't look quite right in the EIA weekly oil imports by country data. It looks like something is off in the EIA's estimates of weekly oil imports by country data but, the reason we highlight this is that we just don't know if the total US crude oil imports are wrong or if it's just that the EIA has incorrectly allocated import volumes to the wrong country. Perhaps this is part of the reason for the big weekly plug in its oil supply and demand estimates. (i) For some reason, the EIA weekly data does not include any oil imports from Venezuela in their weekly reporting of US oil imports by country. Yet we have seen Chevron importing oil from Venezuela into its and other PADD 3 Gulf Coast refineries starting in Jan. What we don't know if the EIA has just allocated to some other country. We have been highlighting how Chevron has steadily increasing US Gulf Coast (PADD 3) imports from Venezuela every month in 2023. And the EIA reports oil imports from Venezuela in its monthly data but for reason not in these weekly estimates. (ii) US "NET" imports were down -0.250 mmb/d to 1.838 mmb/d for the September 1 week. US imports were up +0.154 mmb/d to 6.770 mmb/d. US exports were up +0.404 mmb/d to 4.932 mmb/d. The WoW increase in US net imports was driven mostly by "Top 10". The Top 10 was up +0.361 mmb/d. Some items to note on the country data: (i) Canada was up +0.274 mmb/d to 3.679 mmb/d. (ii) Saudi Arabia was up +0.105 mmb/d to 0.567 mmb/d. (iii) Mexico was up +0.262 mmb/d to 0.699 mmb/d. (iv) Colombia was up +0.005 mmb/d to 0.300 mmb/d. (v) Iraq was down -0.132 mmb/d to 0.100 mmb/d. (vi) Ecuador was down -0.229 mmb/d to 0.099 mmb/d. (vii) Nigeria was up +0.076 mmb/d to 0.220 mmb/d.

US net oil imports

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Figure 27: US Weekly Preliminary Imports by Major Country

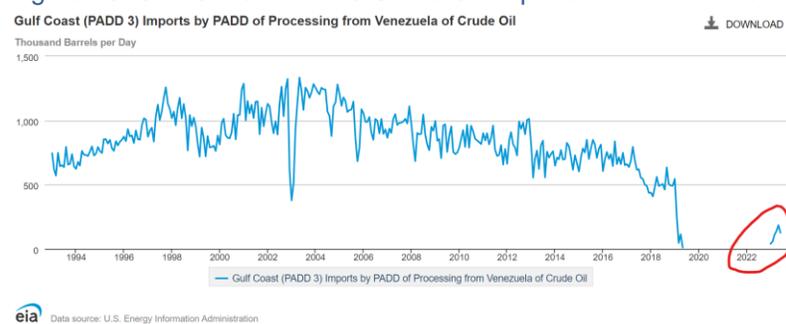
(thousand b/d)	Jun 16/23	Jun 23/23	Jun 30/23	Jul 7/23	Jul 14/23	Jul 21/23	Jul 28/23	Aug 4/23	Aug 11/23	Aug 18/23	Aug 25/23	Sep 1/23	WoW
Canada	3,570	3,776	3,611	3,385	3,698	3,203	3,691	3,466	3,505	3,832	3,405	3,679	274
Saudi Arabia	146	460	313	444	426	242	427	330	285	221	462	567	105
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	808	758	882	526	1,004	830	760	667	901	780	437	699	262
Colombia	148	222	287	153	215	287	290	296	75	290	295	300	5
Iraq	102	216	122	134	259	273	235	305	304	283	232	100	-132
Ecuador	203	67	157	144	207	216	175	142	363	192	328	99	-229
Nigeria	204	96	192	189	91	229	94	237	307	89	144	220	76
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0	0
Top 10	5,181	5,595	5,564	4,975	5,900	5,280	5,672	5,443	5,740	5,687	5,303	5,664	361
Others	980	985	1,474	905	1,274	1,087	996	1,239	1,418	1,246	1,314	1,106	-208
Total US	6,161	6,580	7,038	5,880	7,174	6,367	6,668	6,682	7,158	6,933	6,617	6,770	153

Source: EIA, SAF

EIA shows imports from Venezuela in its monthly import data.

The reason why we have been highlighting the EIA weekly estimates of oil import data by country is that they haven't shown oil imports from Venezuela despite knowing that Chevron has been importing oil from Venezuela starting in Jan. In our May 7, 2023 Energy Tidbits memo, we started to highlight the EIA's monthly actuals starting to show oil imports from Venezuela at then end of April. The EIA posted its monthly actuals for June that continue to show PADD 3 (Gulf Coast) oil imports from Venezuela were 126,000 b/d vs 185,000 b/d in May, 140,000 b/d in April, 109,000 b/d in March, 58,000 b/d in February and 40,000 b/d in Jan.

Figure 28: Gulf Coast PADD 3 Crude Oil Imports From Venezuela to June 30, 2023



Source: EIA, SAF

Oil: Venezuela oil exports down MoM in Aug due to upgrader and diluent issues

On Monday, there was a good reminder that Venezuela still needs basic capital dollars and diluents to keep production going and increasing. That means it needs sanctions relief to really start to crank up production and exports and we believe they can quickly do so once they get that relief. (i) On Monday, we tweeted [LINK](#) "Venezuela needs capital & diluents as it must upgrade its heavy oil to meet export specs. Exports Aug 544,000 b/d vs July 877,000. Upgraders either down or short diluent. #Chevron VEN #Oil into PADD 3 was Aug 147,000 b/d vs July 161,000. Thx @mariannaparraga @MircelyG #OOTT." (ii) On Monday, Reuters reported [LINK](#) Venezuela oil exports were down 38% MoM to 544,000 b/d in Aug from 877,000 b/d in July. This looks to be more of a timing issue as upgraders were down and diluent was short at time. But it reinforces that Venezuela doesn't yet have a smooth flow of

Venezuela oil exports down in Aug

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capital and diluent to keep operations running without operations. (iii) As a reminder, Venezuela needs diluent to blend with its heavy oil to make it export quality. And upgraders were either down or they didn't have enough diluent to blend. Our Supplemental Documents package includes the Reuters report.

Reuters has a good recap of each Venezuelan upgrader

The Reuters story is a good one to bookmark as it gives some color on all the Venezuela upgraders. So can be a good quick starting point in the future when looking for upgrader info. Here is what Reuters wrote "The two crude blending units of the Petrosinovensa project at Venezuela's Orinoco Belt, operated by PDVSA and China National Petroleum Corp (CNPC), suffered outages that halted them last month. One resumed operations on Aug. 16, an internal PDVSA document showed. At the Petropiar crude upgrader, operated by PDVSA and Chevron and that processes extra heavy oil, maintenance affected a vacuum distillation unit. The facility fully resumed operations on Aug. 9, processing some 110,000 bpd since then. The Petromonagas upgrader operated by PDVSA and Russia's Roszarubezhneft ran out of diluents, which took it out of service last month. A fourth Orinoco upgrading facility, Petrocedeno, reduced crude processing due to problems with a boiler, the document showed."

Oil: Novak, Russia extends 300,000 b/d reduction in shipments thru Dec 31

As Russia Deputy PM Novak said last week, Russia and Saudi Arabia announced their plans to keep oil off the market. No surprise, on Tuesday, Russia and Saudi Arabia announced within minutes of each other their plans to continue their cuts thru Dec 31. On Tuesday, we tweeted [\[LINK\]](#) "ICYMI. Brent is \$89.75. "Russia will extend an additional voluntary reduction in oil supplies to world markets by 300,000 barrels per day until the end of December 2023," RUS Deputy PM Novak. #OOTT." Our tweet included the TASS report [\[LINK\]](#) "Russia extends reduction in oil supplies by 300,000 barrels per day by yearend — Novak According to Alexander Novak, the decision is aimed at strengthening the precautionary measures taken by OPEC+ countries in order to maintain stability and balance of oil markets. Russia has decided to extend an additional voluntary reduction in oil supplies by 300,000 barrels per day, which was previously passed for September, until the end of this year, Deputy Prime Minister Alexander Novak told reporters. "Russia will extend an additional voluntary reduction in oil supplies to world markets by 300,000 barrels per day until the end of December 2023," he said. The decision extending the reduction of oil supplies for export by the end of this year "is aimed at strengthening the precautionary measures taken by OPEC+ countries in order to maintain stability and balance of oil markets," Novak added."

Russia extends cuts thru Dec

Oil: Saudi Arabia extends 1 mmb/d voluntary cut thru Dec 31

There was a mild surprise in the Saudi cut announcement. The expected part, as signaled by Novak last week, was that Saudi Arabia extended its 1 mmb/d voluntary cut. But the surprising aspect was that Saudi Arabia extended thru Dec 31 instead of just keeping the market on edge on a month-to-month basis. On Tuesday, the Saudi Press Agency reported [\[LINK\]](#) "Saudi Arabia will extend the voluntary cut of one million barrels per day for three months to include October until the end of December 2023. An official source from the Ministry of Energy announced that the Kingdom of Saudi Arabia will extend the voluntary cut of one million barrels per day, which has gone into implementation in July and was extended

Saudi 1 mmb/d voluntary cuts

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to include August and September, for another three months until the end of December 2023, and in effect, the Kingdom's production for the coming months of October, November, and December will be approximately 9 million barrels per day. The source stated that this voluntary cut decision will be reviewed monthly to consider deepening the cut or increasing production. The source also noted that this cut is in addition to the voluntary cut previously announced by the Kingdom in April 2023, which extends until the end of December 2024. The source confirmed that this additional voluntary comes to reinforce the precautionary efforts made by OPEC Plus countries with the aim of supporting the stability and balance of oil markets."

Oil: Doesn't seem like any Kurdistan/Iraq moves to getting oil resumed via Turkey

There is still no visibility to when Kurdistan/Iraq oil exports might resume Ceyhan terminal in Turkey. And based on this morning's reports, it isn't clear who is holding it up. We have a 7am MT news cut off and one of these reports have only come out just prior to our cut off. We would expect to see more detailed reports later today. (i) Earlier this morning, Sky News Arabia tweeted [LINK](#) "The Iraqi Oil Minister: There has not yet been an agreement with the Turkish side to resume oil exports from the Kurdistan region through the port of Ceyhan." (ii) Just before our cutoff, Kurdistan24 posted a report [LINK](#) "Regarding the resumption of the Kurdistan Region's oil export, the Iraqi Ministry of Oil told Kurdistan 24 on Sunday that the "ball is in Turkey's court." The export has been halted since March 25 at the request of Baghdad after Iraq claimed victory against Ankara at the International Court of Arbitration in Paris for allowing Erbil to independently export its oil via the Turkish Ceyhan port. The resumption is not in the hands of Iraq and Kurdistan Region; "The ball is in Turkey's court", 'Asim Jihad, the spokesperson for the Iraqi Ministry of Oil, told Kurdistan 24 on Sunday on the sidelines of the International exhibition and conference for oil projects and licensing in Baghdad. The export outage has "negatively affected" every side, Jihad said, hoping the process to be resumed soon as it would solve the remaining issues." (iii) Prior to this morning, it seemed like the issue was also between Iraq and Kurdistan on who owes who on financial issues of revenue allocations including on non-oil revenues. Kurdistan is saying Iraq hasn't paid them what they are owed. Iraq says they overpaid. On Friday, the Iraqi New Agency reported [LINK](#) "Government spokesperson Bassem Al-Awadi confirmed on Friday, that the federal government has fully implemented its financial obligations towards Kurdistan region. "The federal government has fully implemented its financial obligations towards the Kurdistan region, and has made the utmost efforts to provide solutions," Al-Awadi said in a post on the "X" platform (formerly Twitter), followed by the Iraqi News Agency (INA)." "Until the end of June, the money owed by the region reached to more than three times the share of the region, according to the actual expenditure of the state, while Kurdistan Region Government-KRG did not deliver oil and non-oil revenues as required by the federal budget law." No surprise, Rudaw reported on Kurdistan's comments on the Iraq statement. [LINK](#) "The Iraqi government has not abided by its agreements with the Kurdistan Region... not only it has not sent the share of the Kurdistan Region, it also did not send the salaries of the public servants... We feel like this is a policy of starvation," Pehsawa Hawramani, the spokesperson of the KRG, said during a televised address in Erbil earlier this week. Meetings between delegations from the KRG and the federal government have been ongoing over the past months, aimed at resolving lingering disputes over the Region's share in the federal budget." Our Supplemental Documents package includes the Kurdistan 24 report, the Iraqi New Agency and Rudaw reports.

**Kurdistan oil
still shut in**

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Kurdistan says Iraq hasn't taken "any practical steps" to get a deal with Turkey

Kurdistan has been accusing Iraq of not taking any practical steps to get a deal with Turkey. Here is what we wrote in last week's (Sept 3, 2023) Energy Tidbits memo. *"There is still no visibility to when Kurdistan/Iraq oil exports might resume Ceyhan terminal in Turkey. And Kurdistan says clearly it is in Iraq's court and Baghdad hasn't taken "any practical steps" to get a deal done. On Tuesday, Rudaw (Iraq news) reported [\[LINK\]](#) on comments from Safeen Dizayee (head of Kurdistan's Department of Foreign Relations). Rudaw wrote ""Turkey supports the resumption of exporting the Kurdistan Region's oil, the Kurdistan Region is definitely very eager, and Baghdad, officially, say they are ready but they have not really taken any practical steps yet," Safeen Dizayee, head of the KRG's Department of Foreign Relations, told reporters on Tuesday." "The arbitration court ordered Turkey to pay a penalty of \$1.5 billion in damages to Baghdad for allowing the KRG to independently export its oil between 2014 and 2018. Dizayee said it was "mathematically illogical" for Baghdad to cost itself and Erbil five billion dollars in protest to not receiving \$1.5 billion from Ankara." Our Supplemental Documents package includes the Rudaw report."*

Will Kurdistan/Iraq agree to Turkey's terms to restart oil exports?

We hadn't seen any specifics on what Turkey wants from Iraq to restart the oil flows until Aug 25. Here is what we wrote in our Aug 27, 2023 Energy Tidbits memo. *"Up until Friday, we haven't seen any specifics on what Turkey wants to allow the restart of Kurdistan/Iraq oil via Ceyhan. But on Friday morning, we saw the first report albeit without naming the Turkish officials, of what Turkey wants in any deal. (i) We tweeted [\[LINK\]](#) "Best reporting what Turkey wants to resume Kurd #Oil export via Ceyhan. Won't pay \$1.5b damages, wants Kurd to pay Baghdad. Contracts to help build out of power plant & other infra. Iraq/Kurd resolve their % oil splits. Exports could resume quickly. Reminder shouldn't be big hit to Oil markets ASSUMING Iraq keeps complying with #OPEC quota. Thx @SelcanHacaoglu @TurkWonk #OOTT." (ii) Our tweet included the Bloomberg report "Turkey Seeks Iraq Revenue-Sharing Deal to Restart Oil Exports." (iii) We noted that a deal to restart shouldn't have any big impact on oil exports to world markets assuming Iraq complies with its OPEC quota as it has been producing close to its quota. (iv) Note that Bloomberg says Turkish officials says oil exports could resume quickly once a deal in place. "The pipeline running from Kirkuk to Turkey's Mediterranean port of Ceyhan remains operational and Iraqi crude exports could start quickly once there is a deal in place, the Turkish officials said, adding that Turkey aims to resolve the conflict as soon as possible." (v) Big one for Turkey. It wants Kurdistan to pay the \$1.5b that Turkey was ordered to pay Iraq. we have been assuming this \$1.5b payment would somehow be reduced in the negotiations with Iraq. But Bloomberg reports it's not a reduction, any payment is a non-issue. Bloomberg writes ""Turkey halted flows through a twin-pipeline in March after an arbitration court ordered it to pay about \$1.5 billion in damages to Iraq for transporting oil without Baghdad's approval. Ankara has no intention of paying the fine and is asking the Kurds to pay it to Baghdad as they were the benefactors, the officials said." (vi) Not a Turkey holdup but a separate issue between Iraq and Kurdistan to resolve is that Turkey wants Iraq and Kurdistan to*

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agree who gets what of the oil revenues split. Bloomberg writes “Baghdad has asked Turkey to collect the money from oil exports and transfer it to Iraq after deducting 12.6% of the share allocated to the KRG, said the officials, speaking on condition of anonymity. The KRG, however, has told Turkey that it wants to claim the entire revenue from exports via its territory, arguing that it has been unable to collect funds from separate Iraqi oil exports, they said.” (vii) One other Turkey negotiating point. It isn’t called a negotiating point but Turkey has been wanting a comprehensive agreement on issues with Iraq and that oil was part of their issues. So we have been assuming the oil deal would be wrapped into other negotiating items. Or the other negotiating items wrapped around the oil deal. One item that comes out of Bloomberg is that “Ankara is offering the Kurdistan Regional Government, or KRG, as well as the central government in Baghdad help in building power plants and other infrastructure.” The offer sounds like Turkey wants some big contracts for its companies. Our Supplemental Documents package includes the Bloomberg report.”

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

On Tuesday, the Libya National Oil Corporation tweeted [\[LINK\]](#) “Crude oil production reached 1 million 206 thousand barrels per day, and condensate production reached 51 thousand barrels per day during the past 24 hours. #libya #NOC #OIL.” The update is right in line with the ~1.2 million barrels per day stable level of production Libya has had for the past several months.

Libya oil stable
at 1.2 mmb/d

Libya NOC says oil production averaged 1.18 mmb/d in Aug

On Friday, the Libya National Oil Corporation tweeted [\[LINK\]](#) “The quantities produced of crude oil, petroleum products and natural gas during the month of August 2023..#NOC #LIBYA #OIL.” The chart shows Libya NOC saying August oil production was 1.18 mmb/d

Figure 29: Libya August production



Source: Libya National Oil Corporation

Oil: Foreign investors return to net selling China after a one day rally

Bloomberg’s below Friday graph noted there was a one-day rally in Chinese markets that brought back some foreign investor capital, but that was only for one-day. And then it returned to foreign investors being net sellers of China stocks. This was what happened in August and that led to big underperformance of China stocks vs benchmarks. Our Aug 31

Foreign
investors net
sellers of China
stocks

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tweet [\[LINK\]](#) “Chinese stocks underperform by big margin as foreign investors have record net outflows in mainland China stocks:” #Oil normally is weaker when Chinese economy & markets are weaker. But Brent is up small for the month. Thx @business. #OOTT.” Our tweet included the below Bloomberg graph “Chinese stocks underperform by big margin. Gauge fell over 8% vs -1.5% for S&P 500 in August.”

Figure 30: Net selling by foreign investors



Source: Bloomberg

Figure 31: Chinese stocks underperform by big margin



Source: Bloomberg

Oil: China scheduled domestic flights start seasonal decline post summer holidays

On Tuesday, we tweeted [\[LINK\]](#) “China schedule domestic flights -1.2% WoW to 103,637 as summer ends & Typhoon Saola. next 4-wks -1.3% to 102,285 BUT @BloombergNEF warns # of scheduled flights is at risk. Since the early days of the pandemic, China has routinely cut several thousand scheduled flights wk or so before departure date. Thx Claudio Lubis. #OOTT.”

(i) On Tuesday, BloombergNEF posted its Aviation Indicators Weekly Sept 5 around 2:30am MT today. (ii) As expected, scheduled domestic flights were down for Aug 29-Sept 4 week due to the end of summer holiday travel, but that was compounded by Typhoon Saola that hit Hong Kong last week. And the lookahead for the next 4-week is for declining flights. And it looks intentional that BloombergNEF is expecting to see a lot of cancelled schedule flights so the lookahead will be even lower than expected. BloombergNEF writes “the number of scheduled flights and implied jet fuel demand over the coming weeks may not materialize. Since the early days of the pandemic, China has routinely cut several thousand scheduled flights about a week or so before the departure date”. Note the pandemic reference as it seems to infer still some of the pandemic type influences and not that pandemic is behind. (iii) Typhoon Saola impacted flights. China scheduled domestic flights were -1.2% WoW to 103,637 flights for Aug 29-Sept 4 week, compared to 104,932 flights for Aug 22-28 week, 104,716 flights for Aug 15-21 week, and 104,823 flights for Aug 8-14.

China scheduled domestic flights

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Domestic flights have declined in Sept as expected, which reflects the end of summer holiday travel season in Aug. At 103,637 flights, flights are back to mid -July levels. But note the qualifier that flights would have been higher if not for Typhoon Saola. BloombergNEF wrote *“hundreds of flights within Hong Kong and the Guangdong area have been canceled in the week starting September 28 due to Typhoon Saola”*. The Sept 28 looks like a typo considering Saola high on Sept 1 so they meant Aug 28. (iv) Note the BloombergNEF warning *“the number of scheduled flights and implied jet fuel demand over the coming weeks may not materialize. Since the early days of the pandemic, China has routinely cut several thousand scheduled flights about a week or so before the departure date”*. This is interesting, they are warning that they expect to see lower numbers materialize. We wonder why they put the linkage to the pandemic as it makes us wonder if they are concerned on pandemic risk? Whether they meant to infer still seeing pandemic factors or it was just meant to be a timeline, they are warning that they expect to see flights canceled and the forecast lower than currently scheduled. BloombergNEF’s updated scheduled domestic flights over the next four weeks is expected to drop by 1.3% to 102,285 flights, which is back to early July levels. (v) Also note how it was clear that the outlook tipped negative right after the March 28 -Feb 3 week with lesser China recovery and the then worries about a new Covid peak to hit China at the end of June. The BloombergNEF March 28 report reported that the March 21-27 weeks flights were 89,513 flights and they forecast massive jump to 119,180 flights over the then next 4-weeks. Then the next week, March 28-Apr 3 week had made a huge WoW jump from 89,513 flights to 95,624 flights, but then the following week was down to 91,567 flights. And scheduled domestic flights didn’t get back to March 21-27 until the end of June. Below is our running WoW changes from the prior BloombergNEF reports and the BloombergNEF charts from Sept 5 and March 28, and our listing of WoW changes from the prior BloombergNEF reports.

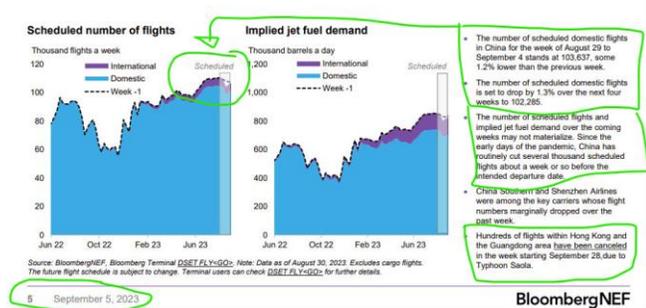
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Figure 32: China scheduled domestic flights from BNEF Aviation Indicators Weekly reports

Aug 29-Sep 4: -1.2% WoW to 103,637 flights
 Aug 22-28: +0.2% WoW to 104,932 flights
 Aug 15-21: -0.1% WoW to 104,716 flights
 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 33: China scheduled domestic air flights as of Sept 5



Source: BloombergNEF

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Figure 34: China scheduled domestic air flights as of March 28



Source: BloombergNEF

Oil: Baidu China city-level road congestion is on continued upward trend

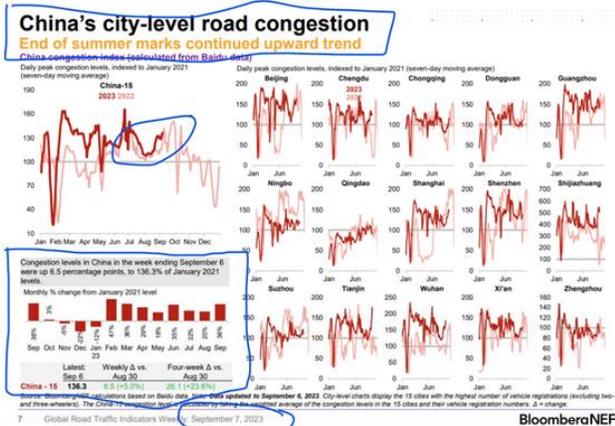
BloombergNEF describes it as “End of summer marks continued upward trend”. (i) On Thursday, we tweeted [\[LINK\]](#) “Summer is over, so 5th consecutive WoW increase in China city-level road congestion. China Baidu city-level road congestion +6.5% WoW to 136.3% of Jan/21 levels. Top 15 cities in aggregate up YoY, but biggest cities Shanghai & Beijing down YoY. Thx @BloombergNEF #OOTT.” (ii) BloombergNEF posted its Global Road Traffic Indicators Sept 7 report, which includes the China Baidu city-level road congestion data for week ended Sept 6. (iii) For the week ended Sept 6, 2023, Baidu data for China city-level road congestion was +6.5% WoW to 136.3% of Jan 2021 levels. It’s the 5h consecutive weekly increase so it supports the expected increase in city-level road congestion with the end of summer holiday season and people are returning to cities and back to work. City-level road congestion is up YoY but, when I look at the top 15 cities, it’s not a broad across the country increase on a YoY basis. Rather the biggest cities Shanghai and Beijing are lower YoY.(iv) The by city road congestion data shows that most of China is relatively unchanged YoY. The numbers in aggregate up but it is mostly driven by a low number of cities that are hugely YoY whereas many of the cities are down a bit YoY. BloombergNEF provided its specific by city numbers for Aug and for the 1st week of Sept, both indexed vs the same month in 2021. For the top 15 cities in aggregate, Aug 2023 was 116% of Aug 2021, whereas Aug 2022 was 106% of Aug 2021. Of the top 15 cities, 8 were up YoY and 7 were down YoY. Note there are two cities that are drove the increase. Shijiazhuang a city of 12 mm about 200 km SW of Beijing that was 190% of Aug 2021 levels vs Aug 2022 that was 109% of Aug 2021 levels. Wuhan, the famous home of Covid was 159% of Aug 2021 levels vs Aug 2022 that was 115% of Aug 2021 levels. Shanghai, the most populous city in China was 110% of Aug 2021 vs Aug 2022 that was 135% of Aug 2021. Beijing, the next most populous was 118% of Aug 2021 vs Aug 2022 that was 125% of Aug 2021. For Sept 2023. This is only for the 1st six days of Sept, but for the top 15 cities in aggregate, Sept 2023 is 88% of Sept 2021, whereas the Sept 2022 was 87% of Sept 2021. Of the top 15 cities, only 4 are up YoY and 11 were down YoY. It’s a similar concept with a few cities being up huge carrying the aggregate whereas Shanghai was 93% of Sept 2021 vs Sept 2022 at 125% of Sept 2021, and Beijing was 81% of Sept 2021 vs Sept 2022 at 85% of Sept 2021. (iii) Hard to tell the impact of Super Typhoon Saola, but the cities that might have been impacted on the mainland by Hong Kong were Guangzhou and Shenzhen and both look down a little bit. Our

China city-level traffic congestion

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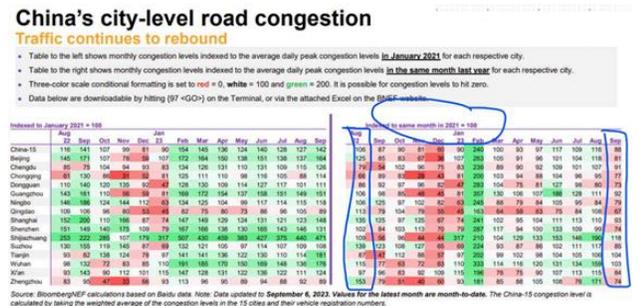
tweet included the below graph and table from the BloombergNEF Global Road Traffic Indicators Sept 7 weekly report.

Figure 35: China city-level road congestion for the week ended Sept 6



Source: BloombergNEF

Figure 36: China city-level road congestion for the week ended Sept 6.



Source: BloombergNEF

Oil: China oil imports 12.5 mmb/d in Aug, near record levels

On Thursday, Bloomberg reported on the summary data of China's oil and natural gas imports for Aug based on China's General Administration of Customs website. It is only summary data and it did not include China's oil production for Aug. But on the summary data, Bloomberg reported "China imported more crude oil in August as private refiners snapped up Iranian shipments, and state-owned processors ramped up operating rates after a period of maintenance work. The nation imported 52.8 million tons of crude oil last month, according to customs data. That's equivalent to 12.5 million barrels a day, its highest since June, or 21% more than July, according to Bloomberg calculations. The monthly volume is near a record set in June 2020. Chinese purchases were driven by a binge on Iranian crude supplies, said Viktor Katona, lead crude analyst with Kpler ahead of data release, as offers from the Persian Gulf producer was "by far the most price-competitive option". Additionally, imports were also driven by Chinese refiners' re-stockpiling activity, he added."

China oil imports 12.5 mmb/d in Aug

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Figure 37: China oil imports (millions tonnes)



Source: Bloomberg

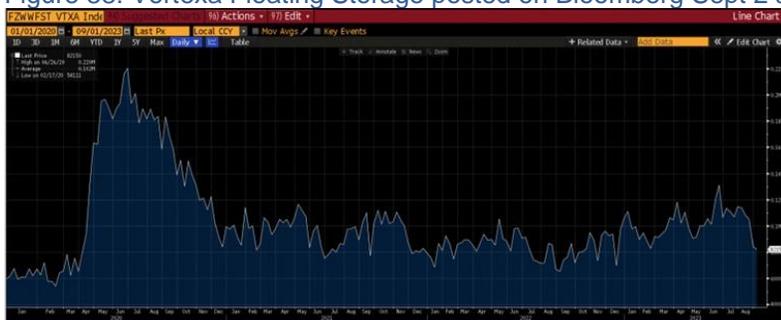
Oil: Vortexa crude oil floating storage at Sept 8 was 80.34 mmb, -4.19 mmb WoW

We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Sept 2 at 9am MT. (i) There have now been three consecutive weeks of floating storage below 85 mmb, which is the first time since last Nov. Also Sept 8 of 80.34 mmb is down a whopping 50.65 mmb vs the recent June 23, 2023 peak of 130.99 mmb. (ii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Sept 8 at 80.34 mmb, which is -4.19 mmb WoW vs upwardly revised Sept 1 of 84.53 mmb. Note Sept 1 of 84.53 mmb was revised +2.38 mmb vs 82.15 mmb originally posted at 9am on Sept 1. (iii) Revisions. Note that most of the past several weeks revisions, other than the +2.38 mmb to Sept 1, were downward revisions. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am MT on Sept 2 are as follows: Sept 1 revised +2.38 mmb. Aug 25 revised +0.30 mmb. Aug 18 revised -4.69 mmb. Aug 11 revised -2.51 mmb. Aug 4 revised -3.30 mmb. July 28 revised -2.3 mmb. July 21 revised -1.08 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 96.86 mmb vs last week's then seven-week average of 102.07 mmb. The drop is due to adding a low 80.34 mmb for Sept 8 to the 7-week average. (v) Also remember Vortexa revises these weekly storage estimates on a regular basis. For example, when most report on the Vortexa data on Monday morning, they will be reporting on different estimates. We do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. Normally we download the Vortexa data as of Saturday mornings around 9am MT. (vi) Note the below graph now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (vii) Sept 8 estimate of 80.34 mmb is -139.97 mmb vs the Covid peak of 220.31 mmb on June 26, 2020. (viii) Sept 8 estimate of 80.34 mmb is +14.73 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (ix) Sept 8 estimate of 80.34 mmb is +6.60 mmb YoY vs Sept 9, 2022 of 73.74 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Sept 9, 9am MT Sept 2, and 9am MT Aug 26.

Vortexa floating storage

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Figure 38: Vortexa Floating Storage posted on Bloomberg Sept 2 at 9am MT



Source: Bloomberg, Vortexa

Figure 39: Vortexa Estimates Posted Sept 2 9am MT, Aug 26 9am MT, Aug 19 9am MT

FZWWFST VTXA Inde 99/500						FZWWFST VTXA Inde 99/50						FZWWFST VTXA Inde 99/50					
01/01/2020 - 09/01/2023						01/01/2020 - 08/25/2023						01/01/2020 - 08/18/2023					
ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y	ID	3D	1M	6M	YTD	1Y
Date						Date						Date					
Last Px						Last Px						Last Px					
Fr 09/01/2023 82150						Fr 08/25/2023 80314						Fr 08/18/2023 95321					
Fr 08/25/2023 84056						Fr 08/18/2023 105.222k						Fr 08/11/2023 110.233k					
Fr 08/18/2023 105.039k						Fr 08/11/2023 109.279k						Fr 08/04/2023 109.534k					
Fr 08/11/2023 108.074k						Fr 08/04/2023 111.806k						Fr 07/28/2023 110.553k					
Fr 08/04/2023 113.596k						Fr 07/28/2023 112.657k						Fr 07/21/2023 102.657k					
Fr 07/28/2023 114.702k						Fr 07/21/2023 105.57k						Fr 07/14/2023 107.813k					
Fr 07/21/2023 106.866k						Fr 07/14/2023 109.817k						Fr 07/07/2023 114.87k					
Fr 07/14/2023 110.974k						Fr 07/07/2023 115.064k						Fr 06/30/2023 104.206k					
Fr 07/07/2023 113.323k						Fr 06/30/2023 106.307k						Fr 06/23/2023 127.016k					
Fr 06/30/2023 106.441k						Fr 06/23/2023 129.814k						Fr 06/16/2023 115.986k					
Fr 06/23/2023 131.033k						Fr 06/16/2023 117.33k						Fr 06/09/2023 98412					

Source: Bloomberg, Vortexa
Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

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, Sept 1, in total, was revised +2.38 mmb. The main revisions in a region vs the originally posted (as of 9am Sept 2) floating oil storage for Sept 1 were Asia revised +4.87 mmb and Middle East revised -3.27 mmb. (ii) Total floating storage was -4.19 mmb WoW. The largest WoW change was Other -3.47 mmb WoW. All other WoW changes were small. (iii) Sept 8 of 80.34 mmb is down a whopping 50.65 mmb vs the recent June 23, 2023 peak of 130.99 mmb. The major changes by region vs the recent June 23 peak are asia -30.69 mmb and Other -18.03 mmb. (iv) Below is the table we created of the WoW changes by region posted on Bloomberg at 9am MT yesterday. Our table also includes the “Original Posted” regional data for Sept 1 that was posted on Bloomberg at 9am MT on Sept 2.

Vortexa floating storage by region

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Figure 40: Vortexa crude oil floating by region

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Sept 8/23	Sept 1/23	WoW	Sept 1/23	Jun 23/23	Sep 8 vs Jun 23
Asia	43.93	42.67	1.26	37.80	74.58	-30.65
Europe	3.53	4.87	-1.34	4.96	6.52	-2.99
Middle East	3.32	4.09	-0.77	7.36	7.00	-3.68
West Africa	8.08	7.57	0.51	8.42	3.96	4.12
US Gulf Coast	2.32	2.70	-0.38	1.48	1.74	0.58
Other	19.16	22.63	-3.47	22.13	37.19	-18.03
Global Total	80.34	84.53	-4.19	82.15	130.99	-50.65

Vortexa crude oil floating storage posted on Bloomberg 9am MT on Sept 9

Source: Vortexa, Bloomberg

Source: Bloomberg, Vortexa

Oil: BNEF – global oil and product stocks surplus widened WoW to 53.3 mmb

Please note that the BloombergNEF global oil and products stocks estimate are for the week ending August 25, which is a week earlier than the EIA US oil inventory data that is for the week ending Sept 1. So, the BloombergNEF global oil stocks data won't include the US crude oil inventory draw of -10.58 mmb for the week ending September 1. On Tuesday, BloombergNEF posted its "Oil Price Indicators" weekly, which provides good charts depicting near-term global oil demand and supply indicators. (i) Note BloombergNEF uses different periods to determine the surplus/deficit, sometimes using a four-year average for 2017-2019 + 2022, and other times using a five-year average 2016-2019 + 2022. In both cases they do not include 2020 and 2021 in the averages. (ii) The global stockpile for crude oil and products surplus narrowed from 51.6 mmb to 25.8 mmb for the week ending August 25, narrowing the surplus by 25.8 mmb against the four-year average (2017-2019 + 2022). (iii) Total crude inventories (incl. floating) decreased by -32.3 mmb WoW to 647.5 mmb, narrowing the surplus from +55.3 mmb to +37.5 mmb against the four-year average (2017-2019 + 2022). (iv) Land crude oil inventories decreased by -11.4 mmb WoW to 561.8 mmb, widening the deficit to -13.5 mmb against the five-year average (2016-2019 + 2022). (v) Floating oil inventories decreased by 0.8 mmb, narrowing the surplus from 29.4 mmb to 28.7 mmb against the five-year average (2016-2019 + 2022). (vi) The gas, oil, and middle distillate stocks decreased by -1.1 mmb WoW to 150.7 mmb/d, with the deficit against the four-year average widening to -22.7 mmb. Jet fuel consumption by international departures for the week of September 4 is set to decrease by -5,500 b/d WoW, while consumption by domestic passenger departures is forecast to decrease by -58,400 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Global oil and product stocks

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Figure 41: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF

Oil: Global air travel continues to ramp up, now 96.1% of pre-Covid levels

On Wednesday, the International Air Transport Association (IATA) released air passenger data for July 2023 [\[LINK\]](#) and the July data showed the continued recovery momentum from Covid-19 in air passenger trends. Domestic air travel around the world was above pre-Covid levels for the 4th consecutive month, 8.3% above July 2019 levels. International air travel keeps recovering but is still below pre-Covid levels at 88.7% of July 2019 levels. (i) Total traffic in July, measured in revenue passenger kilometers (RPK), rose +26.2% YoY. Please note the IATA splits out total market air travel into International travel vs Domestic travel. (ii) For July 2023, total global RPKs were -4.4% vs July 2019 levels, but that was split between International RPKs -11.3% vs July 2019 and Domestic RPKs +8.3% vs July 2019 levels. (iii) The IATA commented “*The Northern Hemisphere summer is living up to expectations for very strong traffic demand. While the industry was largely prepared to accommodate a return to pre-pandemic levels of operations, unfortunately, the same cannot be said for our infrastructure providers. Performance of some of the key air navigations services providers, for example, has been deeply disappointing for many reasons from insufficient staffing to the failure fiasco of NATS in the UK... Even more worrying, however, are political decisions by some governments—among them Mexico and the Netherlands—to impose capacity cuts at their major hubs that will most certainly destroy jobs and damage local and national economies. The numbers continue to tell us that people want and need air connectivity.*” Our Supplemental Documents package includes the IATA release.

Air travel up significantly in July

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Figure 42: July 2023 Air Passenger Market

	World	July 2023 (% year-on-year)			
	share ¹	RPK	ASK	PLF (%-pt) ²	PLF (level) ³
TOTAL MARKET	100.0%	26.2%	23.7%	1.7%	85.2%
Africa	2.1%	25.0%	26.3%	-0.8%	74.6%
Asia Pacific	22.1%	67.1%	53.4%	6.7%	81.6%
Europe	30.8%	11.7%	11.5%	0.2%	87.7%
Latin America	6.4%	15.5%	11.4%	3.1%	86.7%
Middle East	9.8%	21.9%	21.0%	0.6%	82.1%
North America	28.8%	13.2%	11.9%	1.0%	89.7%

Source: IATA

Oil: Air cargo in July “Air cargo demand strengthens despite challenges”

We look at international air cargo as the data that affirms the level of export orders and trade. So continued YoY contraction in air cargo reflects the continued YoY contraction in trade, at least trade via air. The IATA also notes that air cargo is losing market share to cheaper shipping cargo. On Wednesday, the International Air Transport Association (IATA) announced cargo data for the month of July [\[LINK\]](#). The global demand in air cargo markets remained in a YoY deficit for the 17th consecutive month in July 2023. However, the IATA wrote “Compared to July 2022, demand for air cargo was basically flat. Considering we were 3.4% below 2022 levels in June, that’s a significant improvement. And it continues a trend of strengthening demand that began in February... Many fundamental drivers of air cargo demand, such as trade volumes and export orders, remain weak or are deteriorating. And there are growing concerns over how China’s economy is developing”. Global demand, measured in cargo tonne-kilometres, fell -0.8% YoY in July, a sign of improvement when compared to last month’s -3.4% YoY decline. Cargo demand was 3.3% below 2019 levels, reflecting the downward trend of air cargo demand. Despite the YoY weakness in cargo demand, air cargo capacity was +11.2% YoY due to the restoration of belly capacity during the summer season. On the international level, all regions except Europe and North America saw YoY increases in volume for July and continue to remain below levels seen a year ago. African carriers realized an increase of 2.9% YoY in air cargo volumes in July (+2.8% in June), Asia Pacific carriers experienced a +2.7% YoY increase (-3.6% YoY in June), Latin America airlines decreased by -0.4% YoY in July (+7.3% YoY in June), Middle Eastern carriers saw a +1.5% YoY increase (+0.5% YoY in June), North American carriers posted a -5.2% YoY decrease (-6.5% YoY in June), and finally, European carriers saw a -1.5% YoY decline (-2.8% YoY in June). Our Supplemental Documents package includes the IATA release.

**Air cargo
demand down
YoY in July**

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Figure 43: July 2023 Air Cargo Market

	World share ¹	July 2023 (% year-on-year)		
		CTK	ACTK	CLF (%-pt) ²
TOTAL MARKET	100.0%	-0.8%	11.2%	-5.1%
Africa	2.0%	2.9%	11.0%	-3.3%
Asia Pacific	32.4%	2.7%	26.0%	-10.4%
Europe	21.8%	-1.5%	5.3%	-3.3%
Latin America	2.7%	0.4%	10.0%	-3.1%
Middle East	13.0%	1.5%	17.1%	-6.3%
North America	28.1%	-5.2%	0.5%	-2.2%

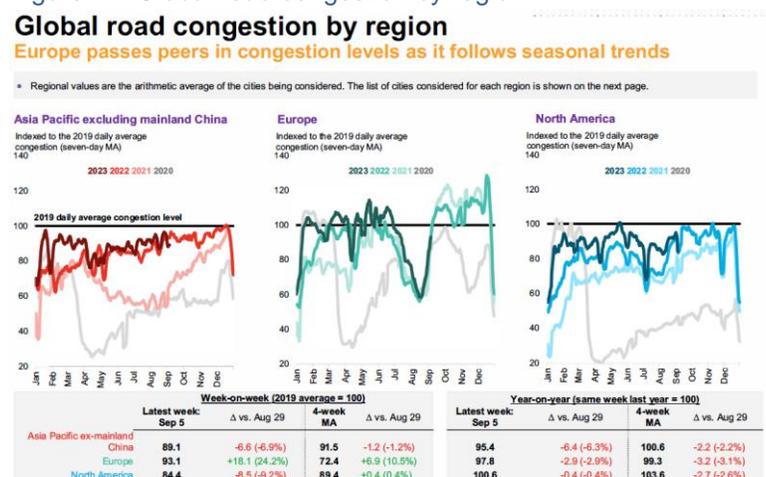
Source: IATA

Oil: TomTom city road congestion, Europe heads up global rebound as summer ends

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly report, which recaps traffic indicators in all the major economic regions of the world i.e., mobility indicators like TomTom. For the week ending September 5, BloombergNEF highlights that “Europe and China Lead Global upswing”. North America and Asia Pacific (ex-China) city-road congestion levels decreased WoW by -9.2% and -6.9%, respectively, while Europe saw a large WoW increase of +24.2%. Note these are indicators of road congestion at the city level and tracks the major cities in each region. So, we have been expecting to see declines over the summer holiday season, but a return to increased city-level road congestion in Sept and Oct. It is worth noting that TomTom data on city road congestion levels now reflects daily average congestion compared to peak congestion previously. The change in methodology took effect from January 19.

Global city road congestion

Figure 44: Global road congestion by region



Source: BloombergNEF calculations based on TomTom data. Note: Data updated to September 5, 2023. Δ = change, MA = moving average.

Source: BloombergNEF

Oil & Natural Gas: Great to see Cdn E&P, Paramount Resources, highlighted on CNBC

As long-term readers of the Energy Tidbits know, I don't get into stock recommendations and mention companies not for their attractiveness but for broad implications on plays, trends and

Paramount Resources

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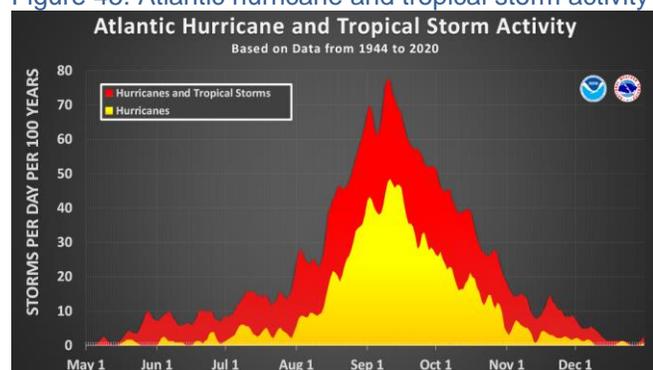
the sector. And, in this case, we are mentioning Paramount Resources because we never see Cdn E&P companies getting profiled on CNBC Squawk Box. It was great to see so we decided to include it in the memo. On Thursday, we tweeted [LINK](#) “always great to see a Cdn E&P stock highlighted on @SquawkCNBC. billionaire investor Leon Cooperman just now to @BeckyQuick @andrewsorkin on his Paramount Resources \$POU holding. #OOT #NatGas.” Our tweet included the short 35-second clip of billionaire investor Leon Cooperman on why he liked Paramount Resources.

Oil & Natural Gas: 90% of Atlantic hurricanes are after Aug 1, peak is mid-Sept

There have been a lot hurricanes but, to the most part, they have been in the Atlantic Ocean and not impacting the Gulf of Mexico and oil, natural gas and LNG production and infrastructure. No two hurricane seasons are identical and there will always be items that make a hurricane season not the norm. But, our Aug 6, 2023 Energy Tidbits memo reminded that 90% of Atlantic hurricanes come after Aug 1, and the peak is normally mid-Sept. We reminded that July and early Aug may well the hottest time of the year, but 90% of Atlantic hurricanes typically come after Aug 1. So August normally marks the start of the ramp up of hurricane season with high hurricane activity typically from mid-Aug thru mid-Oct with a normal peak in mid-Sept. Below is NOAA’s graph showing the distribution of Atlantic hurricanes and tropical storms based on data from 1944 to 2020. [LINK](#)

Peak hurricane season is mid-Aug to mid-Oct

Figure 45: Atlantic hurricane and tropical storm activity by month



Source: NOAA

Oil & Natural Gas: Modest decline in BC wildfires, Alberta wildfires flat

Alberta wildfires continue to decline but BC wildfires were up again this week. As of 7pm MT last night, there were 81 Alberta wildfires including 2 Out of Control, which compares to a week ago at 82 Alberta wildfires including 4 Out of Control. In BC, there was a small decline in number of wildfires but it doesn’t seem like it with all the people being forced out of their homes. As of 7pm MT last night, there were 413 BC wildfires including 183 Out of Control, which compares to a week ago at 436 BC wildfires including 199 Out of Control.

BC and Alberta Wildfires

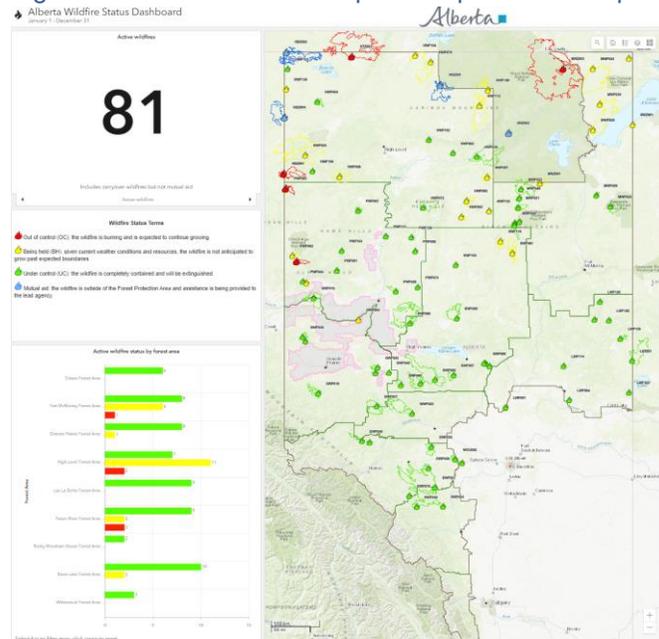
Links to Alberta and BC wildfire status maps

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

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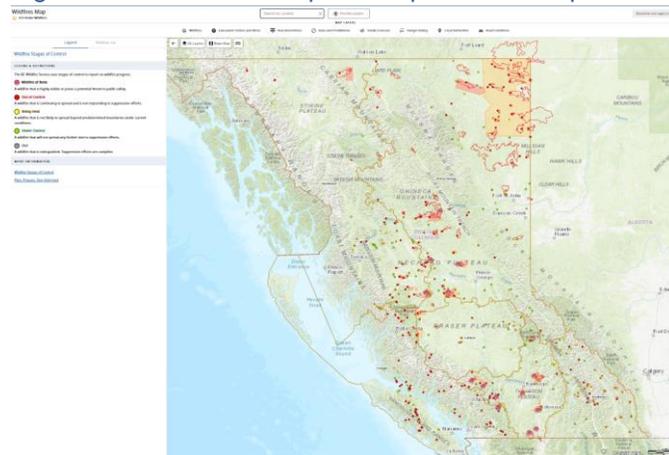
maps are interactive and open up for the information on any particular fire. Here are the wildfire maps as of 7pm MT last night.

Figure 46: Alberta wildfire map as of 7pm MT on Sept 9



Source: Alberta Wildfire Status Dashboard

Figure 47: BC wildfire map as of 7pm MT on Sept 9



Source: BC Wildfire Service

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Energy Transition: G20, critical to assess macroeconomic impact of both climate change and transition policies

G20 dampens energy transition

The G20 Leaders meeting ended today and they posted their 37-pg communique [\[LINK\]](#). (i) The biggest reminder we got from this G20 leader's communique vs the prior G7 leaders communique is it shows the huge challenge and difference between moving from the 7 rich economies of the world to even the 20 largest economies, let alone the rest of the world. The G7 are to the most part western rich countries and also include Japan. The G20 opens it up to a wide range of countries from Russia, China, India, Saudi Arabia, Brazil. This is the challenge of trying to implement items like climate change. (ii) Plus India's influence as host is clear with items like the G20 isn't the place for geopolitical issues. And what we saw was a big reality check on the energy transition. (iii) Earlier this morning, we tweeted [\[LINK\]](#) "Reality check moving from G7 to G20 on #EnergyTransition. *"critical to assess & account for the short, medium & long-term macroeconomic impact of both the physical impact of climate change and transition policies, including on growth, inflation, & unemployment". "just, affordable & inclusive energy transitions". "no country should have to choose between fighting poverty and fighting for our planet". #Oil #NatGas will be needed for longer. #OOTT."* (iv) The general news headline will be on not coming out and specifically blaming/noting Russia in its war on Ukraine. This should not surprise given Russia is in the G20. Rather they move back to the more general international UN resolutions like no one should use force to seek territorial acquisition of any state. This is hugely different than the G7 that went right after Russia. (v) There were a number of differences to the G7 on the energy transition. The G7 says things like phases out of unabated coal, reduce our overall reliance on fossil fuels, achieving net-zero emissions no later than 2050. The G20 doesn't mention net zero. And they do talk about phasing out unabated coal but then have the qualifier *"in line with national circumstances"*. Reminds that always have to look at the qualifier to any statement. (vi) There are many reality checks on the energy transition. Our tweet noted a few of them, but there are many more. The G7 will talk about a just transition, but the G20 adds the key word affordable to just transition. *"We commit to accelerating clean, sustainable, just, affordable and inclusive energy transitions following various pathways, as a means of enabling strong, sustainable, balanced and inclusive growth and achieve our climate objectives. We recognise the needs, vulnerabilities, priorities and different national circumstances of developing countries."* The G20 is clear that the cost of transition has to be taken into account. *"We affirm that no country should have to choose between fighting poverty and fighting for our planet"*. Perhaps the most important change is how the G20 included "transition policies" in this sentence *"It is also critical to assess and account for the short, medium and long-term macroeconomic impact of both the physical impact of climate change and transition policies, including on growth, inflation, and unemployment"*. (vii) There is a lot more of a reality check on moving from the G7 to the G20 on the energy transition. Our Supplemental Documents package includes excerpts from the G20 communique.

A lot of important G20 Leaders action items but not all are commitments

We try to be careful in reading a lengthy Leaders communique that has so many action items noted. It's 37 pages. But we remind that it is important that the first focus should be on the action item lead-in and then the second focus should be at the end of the sentence to see if there is a qualifier. A good example of the qualifier was noted above on phasing out unabated coal *"in line with national circumstances"*. In other words, those with unabated coal can keep it. But the lead-in to every

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sentence tells it there is a commitment or if one country wanted an action item included without committing the G20 to do something. The G20 action items can start with “we commit”, “we recognize”, “we pledge”, “we take note of”, “we encourage”, “we will”, “we support”, and they will also add “there were different views and assessments of the situation”

Energy Transition: G20 “mainstreaming Lifestyles for Sustainable Development”

The G20 also highlighted what Jimmy Carter in the 70s would have included in energy conservation and efficiency but what the G20 called “Lifestyles for Sustainable Development”. The UN calls it “*Enabling Sustainable Lifestyles*”. It’s all the same thing, it’s a back to the future approach to energy with the common approach put walking as the first choice for transportation. The G20 wrote “*Mainstreaming Lifestyles for Sustainable Development (LiFE)*. 36. *Based on the G20 High-Level Principles on Lifestyles for Sustainable Development, we commit to robust collective actions that will enable the world to embrace sustainable Zero Draft production and consumption patterns and mainstream Lifestyles for Sustainable Development. Relevant studies on it show that it could contribute to significant emission reduction by 2030 for a global net-zero future. We support the creation of an enabling policy environment to promote sustainable lifestyles for climate action.*”

Lifestyles for Sustainable Development

Beijing residents increasingly embrace “slow transportation”

China calls is slow transportation. Here is what we wrote in our April 30, 2023 Energy Tidbits memo. “We recognize that China didn’t say the reason for this data was Covid driven, but last Sunday, People’s Daily (Chinese communist party news) reported [\[LINK\]](#) “*Beijing residents increasingly embrace “slow transportation”*. *Residents in Beijing’s six central districts have increasingly embraced slower means of transportation, the Beijing Municipal Commission of Transport has found. In 2022, 49 percent of the trips made by these residents involved walking or riding bicycles, said the commission, adding that the ratio was the highest in a decade. Specifically, 31.7 percent of the trips were made on foot while 17.3 percent by bike. In recent years, authorities in Beijing have taken various measures to encourage residents to use slower means of transportation, which helps ease traffic congestion and is more eco-friendly. Zhang Yan, an official with the transport commission in Haidian District, said that in 2022, 319 kilometers of bike lanes were widened and six walkways were upgraded in the district.*”

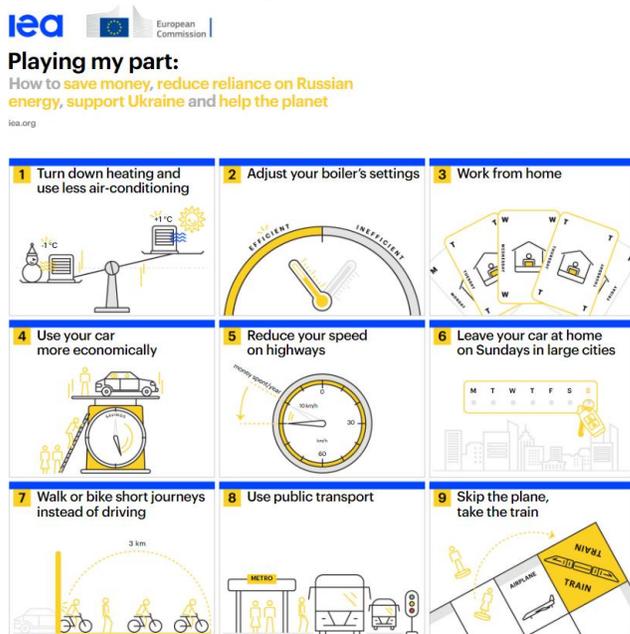
Fits IEA’s April 2021 suggestions on how to reduce energy demand

The Lifestyles for Sustainable Development is also in line with the IEA’s April 21, 2022 suggestion on how to reduce demand by “*walk or bike short journeys instead of driving.*” Here is what we wrote in our April 24, 2022 Energy Tidbits. “*We couldn’t help think back to the 70s and how the US responded in response to the Arab Oil Embargo in 1973/74. Recall, it was very different back then as the Arab oil producers cut off supply and the US and other western countries has a real oil supply shortage. And don’t forget this is before any strategic oil reserves. Strategic oil reserves and the IEA came about in response to the Arab Oil Embargo. The IEA posted its “Playing my part: how to save money, reduce reliance on Russian energy, support Ukraine and help the planet”. [\[LINK\]](#). This is right out of Jimmy Carter’s 1976 election campaign playbook. Other than people couldn’t work remotely from home in*”

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the 70s as we didn't have computers and plane travel was still mostly for the rich. Rather it was the response to the real worry that the Arab oil producing countries would once again cut off oil exports to the West forcing immediate cut off of oil and gasoline. The IEA's tips are right out of the post Arab Oil Embargo playbook like turning down heating, adjusting boiler setting, reducing your speed on highways, etc. Don't forget the US lowered its interstate highway speed to 55 mph after the Arab Oil Embargo for this very reason – to reduce gasoline consumption. Below is the IEA's graphic.

Figure 48: IEA's Playing my part



Source: IEA, April 21, 2022

Energy Transition: New York knows it needs to renegotiate offshore wind contracts

It feels like New York realizes it has to negotiate and pay up if it wants the major offshore wind projects to proceed or else it risks these approved projects not going to FID. The bottom line is that these major offshore wind projects are likely to get done, but done later than expected and at significantly higher electricity costs to NY customers. Fits our several year thesis – the Energy Transition is happening, but is taking way longer, will cost way more and be a bumpy/rocky road. On Monday, we tweeted [\[LINK\]](#) "Looks like @NYSERDA knows have to renegotiate and pay up or else major NY #OffshoreWind won't happen. So expect delays and higher than promised prices for wind electricity to consumers for the #EnergyTransition. Thx @OffshoreWINDbiz Adrijana Buljan.#OOTT #NatGas." There were a number of reports last Friday on filings by the New York State Energy Research and Development Authority (NYSERDA) in response to the petitions filed by the major New York offshore wind developers seeking price adjustments on their contracts to give them better

Offshore New York wind projects

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prices/revenues. Our tweet included the offshorewind.biz reporting as we thought it gave the best insight into the filings. We did not review the NYSERDA filing. NYSERDA is well aware that they need to renegotiate or else they risk these approved major offshore wind projects not getting done. Offshorewind.biz wrote *“In their petitions, the developers said that without price adjustments their offshore wind projects might not be able to move forward, with Ørsted and Eversource saying that without this intervention “it would not be able to obtain a final investment decision (FID) allowing it to fully construct the Project” and the Equinor-BP joint venture noting that price adjustments would “restore the Projects’ ability to attract the capital required for them to move forward”. And “[If] no price adjustment is made, progress to Climate Act targets would be slowed, opportunities to realize earlier grid reliability and health benefits, as well as substantial economic development, would be missed”, NYSERDA states”.* Offshorewind.biz report included the below NYSERDA table of the increased prices being sought by the wind developers. Our Supplemental Documents package includes the Wind Offshore.biz report.

Figure 49: NYSERDA estimated pricing impact of developer proposed new prices

Project	Original Strike Price (\$/MWh)	Adjusted Strike Price (\$/MWh)	Strike Price Increase
Sunrise Wind	\$110.37	\$139.99	+27%
Empire Wind 1	\$118.38 ³⁴	\$159.64 ³⁵	+35%
Empire Wind 2	\$107.50	\$177.84	+66%
Beacon Wind	\$118.00	\$190.82	+62%
Empire/Beacon portfolio (Wtd. Avg.)	\$114.43	\$176.36	+54%
Portfolio (Wtd. Avg.)	\$113.40	\$167.25	+48%

Source: NYSERDA

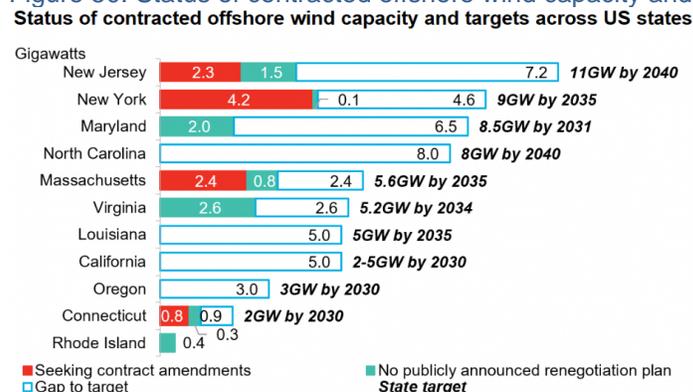
Over ½ of US offshore wind projects face delays

The NYSERDA filing is in line with what we have been highlighted – major offshore NE US wind projects are on hold pending renegotiation. Here is what we wrote in our July 16, 2023 Energy Tidbits memo. *“Wind generation and the big offshore wind projects are key to the Energy Transition. And no question, over the past few years there have been a number of major offshore wind projects announced including offshore the US east coast. But it isn’t enough to have a project announced, the project has to get done and done on time. There have been some offshore wind project cancellations and project developers leaving projects. And there are also many offshore projects in delay limbo as the project developers seek to renegotiate the deals to get satisfactory returns due to big cost increases. These projects are in limbo. We have been reporting on this lack of returns to OEMs and project developers. In the, BloombergNEF estimates that more than half of all offshore wind projects are now delayed and there could be more projects delays on top of that. On Monday, we tweeted [\[LINK\]](#) “Over 1/2 of US #OffshoreWind face delays as “developers such as Avangrid, Shell-Ocean Winds, BP-Equinor & Orsted-Eversource have cited deteriorating economics due to rising costs in trying to renegotiate or cancel contracts” reports @atinjai. #NatGas power will be needed for longer. #OOTT.” Our tweet included the below BloombergNEF graph and wrote “New York state has a target to add 9 gigawatts of cumulative offshore wind capacity by 2035*

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and contracted 4.36GW of projects in its two concluded solicitations. But renegotiation attempts mean that 95% of the contracted capacity is at risk of delays. Neighboring Massachusetts sees 75% of contracted capacities being delayed by renegotiation attempts. In Connecticut it's 73%. New Jersey, which is targeting of 11GW, risks delays to 60% of its contracted pipeline. About 9.7GW of US offshore wind projects, or just over half of the 17.8GW total contracted, face delays, and more projects may soon face the same fate. Developers such as Avangrid, Shell-Ocean Winds, BP-Equinor and Orsted-Eversource have cited deteriorating economics due to rising costs in trying to renegotiate or cancel contracts." Our Supplemental Documents package includes the BloombergNEF report."

Figure 50: Status of contracted offshore wind capacity and targets across US states



Source: BloombergNEF, news reports, company petitions
 Source: BloombergNEF

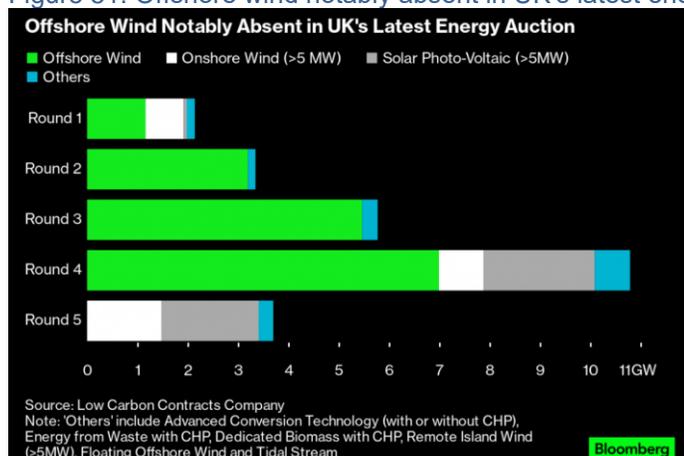
Energy Transition: No bids at UK’s offshore wind auction

The offshore wind developers gave another clear sign that the offshore wind terms aren't sufficient to invest capital by the latest UK offshore wind sale. No one bid for the offshore wind rights because the terms didn't provide acceptable returns. It's just math. On Friday, Bloomberg reported "The UK's offshore wind energy plans, and the climate goals that go with it, have been brought to a sudden halt. On Friday, an auction for contracts to build new wind farms received zero bids from developers. It's the first time that's happened since the current system was introduced almost a decade ago, and it raises major questions about the UK's environmental targets. The aim of the subsidies is to ensure a guaranteed price, but firms say it needs to be much higher or the construction of new wind turbines at sea will grind to a halt. The dilemma for Prime Minister Rishi Sunak is how to find a fix without spending too much money or pushing up energy costs for households. It's pitting the short-term political cycle — an election is due by early 2025 — against the long-term need to address climate change." Our Supplemental Documents package includes the Bloomberg report.

Offshore New York wind projects

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Figure 51: Offshore wind notably absent in UK's latest energy auction



Source: Bloomberg

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

The NYSERDA comments earlier and the lack of bids in the UK energy auction are also in line with what we wrote in last week’s (Sept 3, 2023) Energy Tidbits memo on the RWE CEO LinkedIn post. Here is what we wrote “We have to wonder if governments are hearing wind developers and OEMs insisting the economics are working for wind generation, in particular offshore wind, or if they are just ignoring it and hoping for the best. Sooner or later, governments will have to make changes or accept what is clearly happening – wind projects aren’t proceeding as approved and planned. There is a pause in wind, in particular offshore wind, in EU and US in 2023 and no visibility to unlock that pause. We have been highlighting this issue and clearly wind developers and OEMs don’t see any changes coming to get a restart. (i) On Wednesday, we tweeted [LINK](#) “WOW! Must read 🙌 RWE CEO post “... #OffshoreWind projects in EU & US have been stopped, mainly citing cost increases” “worst case scenario for the #EnergyTransition when large projects that have already been awarded are not realised as planned”. #NatGas needed for longer. #OOTT.” (ii) Our tweet included a LinkedIn post by RWE CEO Markus Krebber last week “is there a perfect storm brewing in the offshore wind industry?” Krebber had a very clear message that the offshore wind industry is stuck in 2023 and it needs a lot from governments if they want offshore wind to get unstuck. And Krebber warned that offshore wind being stuck is the “worst-case scenario” for the energy transition. Krebber said “In recent weeks, for the first time, offshore wind projects in Europe and the U.S. have been stopped, mainly citing cost increases. In other news, turbine manufacturers were once again in the red in their latest quarterly reports, with losses running into billions. This is not good news, it’s in fact the worst-case scenario for the energy transition when large projects that have already been awarded are not realised as planned. Happening at a time when the entire offshore industry has to scale up to achieve expansion targets, this quickly calls into question the achievement of climate protection goals.” Krebber then goes thru five actions and

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says clearly “This development must serve as a wake-up call for policymakers to adapt the regulatory framework to market realities.” The Krebber LinkedIn post is short and worth a read. Our Supplemental Documents package includes the Krebber LinkedIn post.”

Vattenfall stopped UK offshore wind project with 40% cost increases

Another reason why no one should have been surprised by the lack of bids for offshore wind at the UK energy auction is the latest offshore wind news in the UK is negative. We have just seen major UK offshore wind project that have been approved now being stopped. Here is what we wrote in our Aug 6, 2023 Energy Tidbits memo. “Offshore wind is facing a big pause year in 2023 and the question will be how long will the pause last? The pause is caused by wind developers being hit by cost increases so not being able to see the economics in the project. As a result, many projects are either being stopped, cancelled or being renegotiated. On Monday, we tweeted [LINK](#) “Not just US #OffshoreWind needs renegotiation. ~40% cost increases = @VattenfallGroup stop Norfolk Boreas offshore wind "in its current form" & also Vanguard East & West in Norfolk Zone. NZ is 3,600 MW & 68% of its key EU projects. #NatGas will be needed for longer. #OOTT.” This is another clear example of offshore wind not happening as expected. Vattenfall (Sweden) reported Q2 on July 20, which included its announcement that it is stopping development of its biggest wind project in Europe – their Norfolk Zone offshore wind project offshore UK. They have been hit with cost increases up to 40%. Higher inflation capital costs affect entire energy sector “but the geopolitical situation has made offshore wind and its supply chain particularly vulnerable”. In the Q2, Vattenfall wrote “Higher costs, especially in offshore wind power. Although demand for fossil-free electricity is greater than ever, the market for offshore wind power is challenging. Higher inflation and capital costs are affecting the entire energy sector, but the geopolitical situation has made offshore wind and its supply chain particularly vulnerable. Overall, we see cost increases up to 40%. This development affects future profitability and means that Vattenfall makes an impairment for wind power in Norfolk, UK, with a total impact on earnings of SEK 5.5 billion. We have decided to stop the development of Norfolk Boreas in its current form and not take an investment decision now due to mentioned factors, which triggers the impairment. We will examine the best way forward for the entire Norfolk Zone, which in addition to Boreas also includes the Vanguard East and West projects.” Note Vattenfall says it is stopping it “in its current form”, which looks like political talk for the project won’t go ahead unless there is a renegotiation. Also note this is basically stopping its entire Norfolk Zone and not just the Norfolk Boreas project that is part of the Norfolk zone. The Norfolk Zone is their biggest wind project in Europe that is 3,600 MW or 68% of its main projects in Europe total of 5,330 MW. Below is the slide from their March 29, 2023 Corporate Factbook. Our Supplemental Documents includes an excerpt from the Vattenfall Q2.”

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Figure 52: Vattenfall “Main projects in our 5 core countries”
Main projects in our 5 core countries

Country Name	Capacity (MW)	Support scheme	Awarded	Duration of support	Ownership (%)	Commissioning	Current status	
NL	Hollandse Kust Zuid 1-4	1,520	-	X	-	51	2023	Under construction, Partnering with BASF
DK	Vesterhav	344	FIT	X	50,000hrs	100	2023/2024	Under construction
UK	South Kyle	240	-	N/A	-	100	2023	Under construction
NL	Windplan Bissar	77	SDE+	X	15 yrs	100	2023	Under construction
UK	Battery@Ray	20	-	-	-	100	2023	Under construction
In construction							2,201	
UK	Norfolk projects	3,600	CID	-	15 yrs	100	2027-2029	Norfolk Boreas received CID in AR4, Norfolk Vanguard is preparing for CID bid in AR5
UK	Scotwind	750	CID	-	-	50	2030	Under development with consenting and permitting progressing to ensure participation in the CID bid, JV with Fred Olsen
GE	N-7.2 (Global Tech II)	980	-	-	-	100	2027	Development rights received in September 2022, FID planned for 2023
In development (in mature stage)							5,330	

■ Offshore
 ■ Onshore
 ■ Solar
 ■ Batteries

* The project has been sold but Vattenfall will build and operate the wind farm

Source: Vattenfall March 29, 2023 Corporate Factbook

Energy Transition: Orsted, need better deals or no more NE US offshore wind get done

On Wednesday, we tweeted [\[LINK\]](#) “Reality check. Energy costs will be higher in #EnergyTransition. It’s “inevitable” that electricity prices have to go higher, “and if they don’t, neither we nor any of our colleagues are going to more offshore” in US. #Orsted CEO. Thx @priazrocha @_ToddGillespie #OOTT #NatGas.” Orsted is one of the big global offshore wind players who has offshore NE US projects that are currently in limbo, needing renegotiated terms. Orsted CEO Mads Nipper was clear to Bloomberg that offshore wind deals in the US need better deals/higher prices for the wind developer or they won’t get done. The Bloomberg report was titled “Orsted Ready to Abandon US Wind Projects as It Asks for Help”. Nipper had a pretty clear message on the need for renegotiated better terms. And he also warned that having offshore wind means higher energy/electricity costs to consumers. So Nipper’s view is give wind developers a better deal or be prepared for no more offshore wind. Bloomberg wrote “While offshore farms are seen as critical to ridding the US power grid of fossil fuels and avoiding the worst effects of climate change, they’re also extremely capital- and labor-intensive. In order for the industry to bring future projects to fruition, it’s “inevitable” that consumer prices for energy will increase, Nipper said. “And if they don’t, neither we nor any of our colleagues are going to build more offshore,” Nipper said. “It’s very simple.” Our Supplemental Documents package includes the Bloomberg report.

Offshore wind needs better deals

Orsted CEO says Biden Admin must also renegotiate NE US offshore wind

Earlier, we noted the item on how New York recognizes the need to renegotiate with the offshore wind developers. But there is also a federal role and Orsted CEO Nipper’s comments to Bloomberg focused on the need for the Biden Administration to give a better deal to offshore NE US wind developers. Bloomberg wrote “Orsted A/S said it’s prepared to walk away from US projects unless the White House guarantees more support, highlighting the myriad challenges facing wind-energy developers in the country.” And “Under the Inflation Reduction Act, Orsted and other developers can already tap into tax credits generally worth 30%. At issue is the ability to claim additional bonus credits under the law that reward developers for using domestic content and projects that benefit so-called energy communities, such as

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those with coal mines and plants. Nipper has asked the White House to guarantee subsidies without the domestic content requirement at first and requested extra time to overcome the difficulties in sourcing American-made material. "What we proposed was a grace period, say, so give us three to five years," the CEO said. "Right now, it can't deliver." Biden administration officials working to implement the Inflation Reduction Act's tax provisions have emphasized that the domestic content bonus is an added incentive meant to help spur new clean-energy supply chains inside the US. The law "includes critical incentives to promote clean energy development while ensuring that US manufacturers and workers benefit from the growth of the clean energy economy," Treasury Department spokeswoman Ashley Schapitl said. The agency "is laser-focused on implementing these landmark incentives in a way that follows the law and its underlying goals."

Energy Transition: Italy looking at a return to nuclear power generation

Long before the energy transition, we have been believers that small modular reactors (SMR) for nuclear power generation can and will play a key role in the energy mix. And the last year has seen a major shift around the world to be more open to nuclear power, especially SMRs. And this shift is to a great part driven by place like Europe that are leading the energy transition and realize that they need something to give 24/7 reliable, available and affordable power as interruptible solar/wind can't do that. (i) On Monday, we tweeted [\[LINK\]](#) "Italy latest to look to bring back nuclear power for green transition ie. mini-nukes (small modular reactors) But until some distant time (ie. >2040?), will need #NatGas for 24/7 power as gas was 54.4% of 2022 electricity. Thx @ArgusMedia @TimothySanton @EnergyInstitute #OOTT", (ii) Italy was like many other countries and moved to eliminate or take off considering any nuclear power post the Fukushima March 11, 2011 nuclear disaster. On June 11, 2011, Italy's referendum saw 55% of the electorate vote >94% for a construction ban on nuclear power plants. (iii) On Monday, Argus reported [\[LINK\]](#) "The Italian government has restated its ambition to revive the Italian nuclear energy industry, with several ministers announcing plans to restart nuclear generation within the next 10 years." "The minister also said fourth-generation fission technology will be the government's main focus of attention, which means "considering small modular reactors to be a real possibility for the country over the next 10 years"." There were other minister comments. (iv) Our tweet noted the other reality is that any new nuclear power contribution to electricity is probably still in the post 2040 world so, until then, natural gas will be the key for 24/7 electricity generation. Our tweet included the Energy Institute data for 2022 Italy electricity consumption that had 2022 electricity generation by fuel: natural gas 54.4%, Renewable 25.1%, Hydro 9.8%, Coal 6.1%, Oil 3.4%, and Other 1.2%. Our Supplemental Documents package includes the Argus report and the Energy Institute electricity generation by fuel for 2022.

Italy looking at nuclear power

Energy Transition: Texas grid tightrope reminds of shortfalls of wind and solar

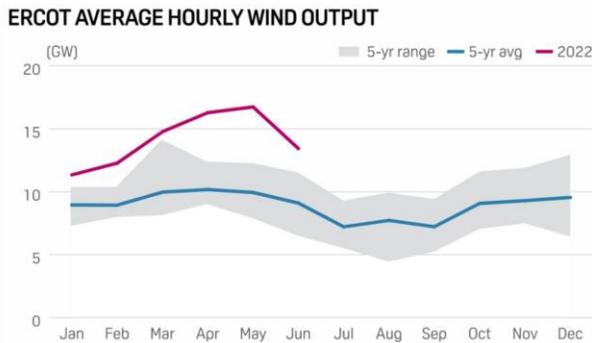
One of the big US energy stories this week was that it was very hot in Texas and the Texas grid operator, ERCOT, warned on multiple times that Texans needed to conserve electricity to avoid blackouts. Their warning reminded of the fundamentals of wind and solar generation and how they cannot provide 24/7 electricity. (i) On Thursday, we tweeted [\[LINK\]](#) "Texas @ERCOT_ISO electricity warning reminds of two renewable fundamentals. #Solar goes to zero every night. And remember Texas #Wind generation is seasonally low in the summer. See 📌 07/26/22 tweet @SPGlobalPlatts graph. It's why #NatGas is needed to save the day.

Texas wind generation is low in summer

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#OOTT.” (ii) The ERCOT Sept 6 warning was “Current forecasts are showing a potential for low reserves this evening because of continued high temperatures, high demand, low wind, and declining solar power generation into the evening hours” “Why the Request to Reduce Usage? • Heat. Continued statewide high temperatures. • Demand. Texas is seeing high demand due to the heat. • Solar. Solar generation starts to decline earlier in the afternoon hours towards the end of summer before completely going offline at sunset. • Wind. Wind generation is forecasted to be low this evening during peak demand time.” (iii) Everyone knows solar is zero when the sun doesn’t shine every day/night. And that wind generation isn’t the same speed all 24 hrs every day. But our tweet reminded something that many have forgotten – Texas wind generation is seasonally less every summer. Just like there are daily changes in wind generation, there is a seasonal change in wind generation in Texas. Our Thursday tweet retweeted our July 26, 2022 tweet [LINK](#) “Texas #Wind generation up big in 2022, however, average wind output tends to wane from June thru Sept. and risk increases for sufficient wind power to be unavailable during certain peak hours in Aug & Sept. Great reminder from @SPGlobalPlatts Mark Watson. #NatGas #OOTT.” And our tweet included the below Platts July 26, 2022 graph that showed the seasonal trends of low wind out put every summer. Note that the Platts July 26, 2022 included the warning for this very situation “As the ERCOT wind fleet has grown, so has its hourly average output, well above the five-year range for each month. However, average wind output tends to wane from June through September. Therefore risk increases for sufficient wind power to be unavailable during certain peak hours in August and September.” Our Supplemental Documents package includes the ERCOT Sept 6 warning [LINK](#).

Figure 53: NYSEERDA estimated pricing impact of developer proposed new prices



Source: Electric Reliability Council of Texas

As the ERCOT wind fleet has grown, so has its hourly average output, well above the five-year range for each month. However, average wind output tends to wane from June through September. Therefore, risk increases for sufficient wind power to be unavailable during certain peak hours in August and September.

Source: Platts

Energy Transition: Texas ERCOT warns on electricity risk for Oct 14 solar eclipse

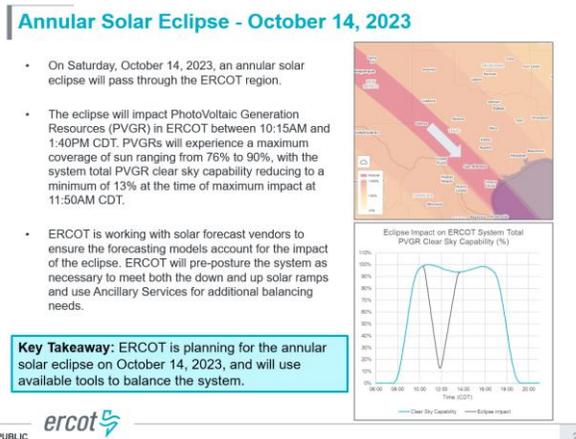
We have written on solar and lunar eclipses before but not in the context of a warning for electricity shortages as ERCOT (Texas) warned for the upcoming Oct 14 solar eclipse. When the solar eclipse hits, it will knock solar power down by almost 90% at the maximum impact time. And this will be when solar is supposed to be contributing at its peak to the daily energy mix. On Friday, we tweeted [LINK](#) “Add solar eclipse as a new risk to running out of

Texas electricity risk with solar eclipse

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power, for a few hours, risk under #EnergyTransition. @ERCOT_ISO warns on annular solar eclipse on Oct 14. Good thing it's a Sat and not until Oct when demand is less & Texas wind should be better. #NatGas will be needed. #OOTT." On Thursday, ERCOT posted "Oct 14, 2023 – Annual Solar Eclipse" [LINK]. Our tweet included the below ERCOT graphic on how they are planning to be able to "pre-posture the system as necessary to meet both the down and up solar ramps and use Ancillary Services for additional balancing needs". It isn't clear to us what is included in Ancillary Services. ERCOT said the annular solar "eclipse will impact PhotoVoltaic Generation Resources (PVGR) in ERCOT between 10:15am and 1:40pm CDT. PVGRs will experience a maximum coverage of sun ranging from 76% to 90%, with the system total PVGR clear sky capability reducing to a minimum of 13% at the time of maximum impact at 11:50am CDT." Our Supplemental Documents package includes the ERCOT alert.

Figure 54: Annular Solar Eclipse – October 14, 2023



Energy Transition: WNA forecasts reactor uranium needs to double by 2040

It was interesting to see the World Nuclear Association’s release on its first nuclear outlook since 2021. A lot has happened in the last two years including a major resurgence in the need for a nuclear power revival to provide 247 reliable, available, affordable power in the energy transition. (i) Yesterday, we tweeted [LINK] “Uranium sounds like #Oil supply risk for 20s - Yrs of underinvestment. West has pivoted back to #Nuclear for 24/7 power during #EnergyTransition, which means @WorldNuclear now fcsts reactor uranium needs double by 2040. Another reason #NatGas will be needed for longer. #OOTT.” (ii) On Thursday, the World Nuclear Association’ released its “The Nuclear Fuel ReportGlobal Scenarios for Demand and Supply Availability 2023-2040.” [LINK]. The message is pretty clear. There has been a return to significant interest in nuclear power for “energy security and sovereignty”, world reactor uranium requirements will double by 2040, and “there is no doubt that sufficient uranium resources exist to meet future needs; however, producers have been waiting for the market to rebalance before starting to invest in new capacity. Additional conversion and enrichment capacities are also likely to be needed.” Ie. there is a supply risk given the lack of investment. (iii) The other reminder from the WNA outlook is “Extending the planned operating lifetimes of the existing fleet of nuclear reactors is one of the positive changes from

Uranium supply risk?

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the previous edition of the report. Several countries with larger reactor fleets are allowing existing plants to operate for up to 60 years, and in the USA, to 80 years. Upwards of 140 reactors could be subject to extended operation in the period to 2040, driven by economics, emissions reduction targets, as well as security of supply.” This fits our long standing concerns on the energy transition – it’s happening nowhere near as quickly and smoothly as the commitments and aspirations. And therefore there has to be a push to extend the operating lives of existing nuclear power plants. It’s also why we have been of the view that natural gas generation will be needed for longer. Our Supplemental Documents package includes the WNA release.

Energy Transition: Mercedes EV Concept CLA Class has big range, fast recharging

The item that jumped out at us from the Bloomberg short interviews at the 2023 Munich Auto Show Munich Car Show 2023 was their interview with the Mercedes CEO. On Monday, we tweeted [\[LINK\]](#) “#EV range becoming less of an issue for winter countries for the higher income. #Mercedes CEO Kaellenius new EV Concept CLA – Class. “More than 750 km range”. “12 kwh per 100 km” “400 km range charged in only 15 minutes” #OOTT @youseftv @ocrook.” There is no indicative price but, even at the CLA Class, we wouldn’t expect the pricing to be one for the average income household. But for those with a higher income, we have to believe rated range of >750 km and 400 km range charged in 15 min will increase interest in an EV even in winter countries where the people assume they lose half the range. Our tweet included the video clip we made of CEO Kaellenius comments.

Mercedes EV
Concept CLA
Class

Energy Transition: UK PM Sunak “net zero story for me shouldn’t be a hair shirt story”

UK PM Rishi Sunak took advantage of the global stage at the G20 to try to reassure the folks back in the UK that he wants to reduce the cost of green policies. (i) Sunak also gave the best line of the G20. The Guardian reported [\[LINK\]](#) “Speaking during the G20 summit of world leaders in India, Sunak again hinted that he wanted to limit the impact of net zero policies on consumers. “Net zero done in the right way can be very beneficial for jobs,” he said. “That’s what we’ve got to make sure that the story is about. The net zero story for me shouldn’t be a hair shirt story of giving everything up and your bills going up. That’s not the vision of net zero that I think is the right one for the UK.” (ii) London’s ultra-low emission zone charges. The Belfast Telegraph reported [\[LINK\]](#) “Asked on his trip to India about policies affecting motorists, Mr Sunak told reporters: “It’s Sadiq Khan and the Labour Party and Sir Keir Starmer who are clobbering your readers and everyone else with Ulez. Clearly (it) is not right – at a time when people have challenges with the cost of living – to be saying to them, ‘you have got to pay £12.50 every time you pick up your kids from school or you do your weekly shop or see your GP’. “That’s clearly not right and demonstrates that they don’t have the right priorities.”

UK Sunak on Net
Zero

Capital Markets: UN FAO Food Price Index decreases MoM in August and is down YoY

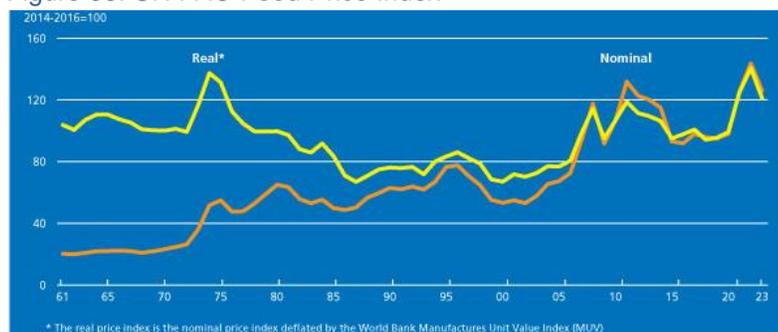
Other than a small blip in April 2023, the UN Food Price Index had declined for 12 months in a row prior to July 2023. But a decline in commodity food prices really hasn’t translated into a proportional decline in grocery food prices, or anywhere near that as the UN FAO Food Price index is a commodities measure and not a grocery store price measure. But it’s good news that food commodity prices seem to be easing and hopefully these will ultimately work their way thru the added costs in the supply chain before they get to grocery stores prices. The UN global food price index decreased in August 2023, reversing a MoM increase seen last

UN food price
index down MoM

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month. On Friday, the UN posted its monthly update of its FAO Food Price Index [\[LINK\]](#) titled “FAO Food Price Index drops in August”. Note that the index is calculated on a Real price basis. The FFPI averaged 121.4 points in August, which was a decrease of +2.1% MoM from 123.9 in July, and down -11.8% YoY. The FFPI also reported MoM declines for most of its sub-indices in August. The Vegetable Oil Index was down -3.1% MoM, after a gain last month, and is now -23.0% YoY. The Sugar Price index was the only index that realized a gain in August, up +1.3% MoM and +34.1% YoY. In contrast, the Meat Index was down from last month by -3.0% (-5.4% YoY), the Dairy Index was down -4.0% MoM (-22.4% YoY), and the Cereal Price index was down -0.9% MoM (-14.1% YoY). Below is the all time FFPI graph.

Figure 55: UN FAO Food Price Index



Source: UN

Q2/23 call, Loblaw on why grocery prices go up higher than commodity prices

Here is what we wrote in our July 30, 2023 Energy Tidbits. “We have been highlighting Loblaw mgmt. Q1/23 call explaining why grocery store prices keep going up more than commodity food prices. Loblaw held its Q2/23 call on Wednesday and took time to explain this same concept – there are a lot of cost increases that get passed on to them before they priced something for the grocery stores. The bottom line is that grocery store prices are going up when food commodity prices are going down. Here is what Loblaw said in the Q2/23 call. “As we battle inflation, we remain highly concerned about ongoing cost increases, and I wanted to offer some facts. This year suppliers have raised the price we pay for products by more than CAD 1 billion. This is double what we would expect normally. We have received double-digit increases from the same suppliers who gave us double-digit increases last year. That’s why you see products that are noticeably more expensive than they were just a couple of years ago. While cost increases are coming in from all peers of our supplier base, the largest global brand stand out. Let me give you an example. Since inflation began, one of our largest vendors submitted price increases totaling 50% or CAD0.25 billion[ph], that’s just one supplier. Here’s another good illustration In Q2, the average price for meat, fruit and vegetable purchase in our stores were up in the mid-single digits. But the average purchase in the center of store where you find the biggest brands was up in the double digits. At the same time, our Food project – food profit margins have declined as our costs have grown faster than our prices. The math is very simple. Cost increases from big brands were well above -- and as its food inflation and our Food margin decline, suggesting of grocery profiteering just

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don't add up. Food inflation is a global problem. The causes range from climate change to -- We know that some cost increases are justified but many are not. The price of transportation, wheat, flour, paper and plastic all well off 2022 high. Our teams are actively reaching out to our largest suppliers pressing for cause decreases based on these facts. With lowered costs, we will lower prices."

Capital Markets: Sign of the times, Toronto increases taxes on >\$3mm home sales

Canada is a great country to live and we all have options to leave if we want to. But the reality we have highlighted for several years or more is that there is an increasing cost to live in countries like Canada that are moving more to Europe government spending. Taxes and government take on corporations, the higher income and the wealthy is only going one way and that is up, up and away. And, just like technology breakthroughs in oil and gas drilling, increasing government takes get quickly adopted by other governments. This week, the City of Toronto approved a graduated land transfer tax on homes that sell for more than \$3mm. In Canada, there is no capital gains tax on selling a principal residence. Toronto is increasing the municipal land transfer tax on homes above \$3 mm. The CBC reported [\[LINK\]](#) "As for the graduated municipal land transfer tax rate, a 3.5 per cent tax would be applied to homes valued at more than \$3 million up to \$4 million. A 4.5 per cent tax would be applied to homes valued at more than \$4 million up to \$5 million, a 5.5 per cent tax to homes valued at more than \$5 million up to \$10 million, a 6.5 per cent tax to homes valued at more than \$10 million up to \$20 million, and a 7.5 per cent tax would be applied to homes valued at more than \$20 million."

Toronto increases taxes

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

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.

@Energy_Tidbits on Twitter

LinkedIn: Look for quick energy items from me on LinkedIn

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

Look for energy items on LinkedIn

Misc Facts and Figures

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

Can New York Jets get back to Super Bowl for first time since 1969

The NFL season is finally here. And the big prediction game is on how the now Aaron Rodgers led New York Jets will do and can they finally get back to the Super Bowl after their last and only appearance in the 1969 Super Bowl. The Jets haven't been

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back to the Super Bowl since 1969. That game was famous for the Joe Namath led Jets upsetting the favored Baltimore Colts. But earlier this morning, we heard the comment that the Super Bowl was actually named after that win, which isn't right. The Jets win in 1969 was the first time the game was called Super Bowl. It was the third game. Prior to that, it was called "AFL-NFL Championship Game".

SuperBall was the reportedly led to the Super Bowl naming

As noted above, the AFL-NFL Championship Game name for the first two games was just too long and boring. And the 3rd game was called Super Bowl. Here is what Time wrote on how that came to be. [\[LINK\]](#) "Finally, it was Rozelle's idea to call the game "The AFL-NFL World Championship Game." That name was official, but it never took off. It was too cumbersome, a mouthful, no good for newspaper headlines. It was Lamar Hunt, the main founder of the American Football League and owner of the Kansas City Chiefs, who came up on the term "Super Bowl." As his son, Lamar Hunt Jr., explained, the idea came from his "Super Ball" toy. "My dad was in an owner's meeting. They were trying to figure out what to call the last game, the championship game. I don't know if he had the ball with him as some reports suggest. My dad said, "Well, we need to come up with a name, something like the 'Super Bowl.'" And then he said, "Actually, that's not a very good name. We can come up with something better." But "Super Bowl" stuck in the media and word of mouth." The SuperBall was one of the hot toys in the 60s, it was a small hard rubber ball that had huge bounce. And you felt it when someone whipped at you and hit you.

Figure 56: SuperBall



Source: Time

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