SAF GROUP

Energy Tidbits

November 5, 2023

Produced by: Dan Tsubouchi

Vitol Reminds China Fuel Sales Solid But Unseasonably High Oil Stocks Plus Low Refiner Margins Point to Less Oil Imports

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. Vitol's Mike Muller reminded that China oil stocks are unseasonably high and very low refiner margins "*will manifest itself into lower appetite for crude"* ie. less China oil imports. [click here]

2. Vortexa floating oil storage estimated at 68,14 mmb at Nov 3. Only been six weeks have been below 70 mmb since Covid hit in Q1/20, four of which are in the last five weeks. [click here]

3. More missiles and military action in Red Sea but not any major market concerns on risk to shipping in Red Sea and Bab el Mandeb that would impact Suez Canal. [click here]

4. So far Biden hasn't rescinded Venezuela license for oil despite Venezuela breaking commitment on elections. [click here]

5. Overlooked is there will be the need/opportunity for >15 bcf/d of new US/Cdn natural gas supply due to new capacity additions for LNG and pipelines to Mexico. [click here]

6. I didn't get to writing many items due to travel.

7. 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.

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

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Natural Gas: +79 bcf build in US gas storage; now +293 bcf YoY surplus

US gas storage +293 bcf YoY surplus

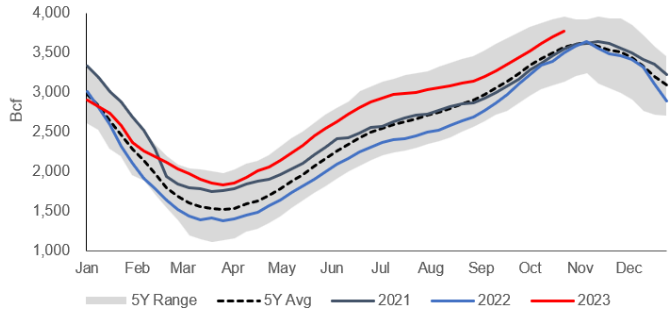
For the week of October 27, the EIA reported a +79 bcf build (in line with expectations of a +79 bcf build), and a YoY decrease compared to the +107 bcf build reported for the week of October 28, 2022. This is close to the official number for the storage to start the Nov 1 winter withdraw season. Total storage is now 3.779 tcf, representing a surplus of +293 bcf YoY compared to a surplus of +313 bcf last week. Total storage is +205 bcf above the 5-year average, up from the +183 bcf surplus last week. Below is the EIA's storage table from its Weekly Natural Gas Storage report [LINK].

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons			
					Year ago (10/27/22)		5-year average (2018-22)	
Region	10/27/23	10/20/23	net change	implied flow	Bcf	% change	Bcf	% change
East	925	908	17	17	845	9.5	886	4.4
Midwest	1,100	1,075	25	25	1,037	6.1	1,056	4.2
Mountain	255	252	3	3	203	25.6	210	21.4
Pacific	285	283	2	2	247	15.4	277	2.9
South Central	1,214	1,182	32	32	1,154	5.2	1,146	5.9
Salt	313	299	14	14	296	5.7	299	4.7
Nonsalt	901	883	18	18	858	5.0	847	6.4
Total	**3,779**	**3,700**	**79**	**79**	**3,486**	**8.4**	**3,574**	**5.7**

Source: EIA

Figure 2: US Natural Gas Storage – Historical vs Current



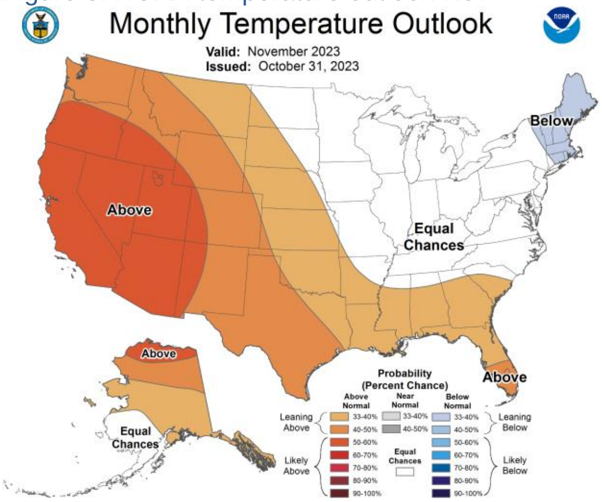
Source: EIA, SAF

Natural Gas: NOAA expects a warmer than normal start to winter

Forecast for warm start to winter

Nov is considered the first winter month for natural gas withdraw season. We continue to believe that the key holdback to near term natural gas and in particular global LNG prices is that forecasts still call for a warmer than normal start to winter in Asia, Europe and the US. A warm start to winter keeps a lid on prices unless it turns colder for Dec/Jan/Feb. As seen in 2023, a warm start to winter and a warm winter overall has kept natural gas and LNG prices held back all year in 2023. On Tuesday, NOAA provided its next 30-days forecast for Nov, which calls for warmer than normal temperatures in the west half and south of the US, and normal temperatures for most of the rest of the US. Below is the NOAA temperature probability map for Nov.

Figure 3: NOAA temperature outlook Nov



Source: NOAA

Natural Gas: US Aug gas production was 104.4 bcf/d, +1.0 bcf/d MoM, +3.5 bcf/d YoY

US gas production +3.5 bcf/d YoY in August

The warm winter 2022/23 was the big reason for the holdback to HH and AECO natural gas prices in 2023, but the other major factor was the continued big YoY growth in US natural gas production. US natural gas production was flat for May, June and July, before increasing in Aug. What isn't clear yet if the Aug increase was just related to associated natural gas being increased related to the EIA's adjustment up for oil production. On Tuesday, the EIA released its Natural Gas Monthly [LINK], which includes its estimated "actuals" for August's dry gas production. Key items to note are as follows: (i) August's production of 104.4 bcf/d was up +3.5 bcf/d YoY from 100.9 bcf/d in August 2022 and up +1.0 bcf/d MoM from July's revised production of 103.4 bcf/d. (ii) US dry gas production was relatively unchanged over the prior three months with July 103.4 bcf/d, June 103.3 bcf/d, and May 103.6 bcf/d. Our Supplemental Documents package includes excerpts from the EIA Natural Gas Monthly.

Figure 4: US Dry Natural Gas Production

bcf/d	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jan	56.0	60.0	66.0	65.3	66.8	73.4	73.6	70.6	78.7	89.3	97.4	92.6	96.2	101.9
Feb	57.2	58.8	67.0	65.4	68.4	73.8	77.3	71.5	80.4	89.9	98.9	85.8	96.0	102.0
March	57.3	61.5	65.0	65.3	68.9	74.1	73.8	73.2	81.3	90.3	95.3	93.6	97.6	102.9
Apr	57.6	62.3	64.8	66.1	70.5	75.2	73.7	73.3	81.2	90.7	95.0	94.3	98.3	102.7
May	58.0	62.4	65.0	65.9	70.2	74.1	72.9	73.3	82.1	91.4	87.9	94.2	99.1	103.6
June	57.2	62.1	64.6	65.8	70.5	74.0	72.2	74.0	82.5	91.7	90.4	93.9	99.3	103.3
July	58.2	62.5	66.3	67.1	72.0	74.2	72.8	74.7	84.2	92.2	90.3	94.8	100.4	103.4
Aug	58.9	63.2	66.0	66.9	72.4	74.3	72.2	74.7	85.9	94.4	90.4	95.0	100.9	104.4
Sept	59.1	63.1	66.4	66.8	72.4	74.7	71.7	76.0	87.3	94.8	91.3	95.7	102.4	
Oct	60.1	65.1	66.5	67.0	73.1	74.2	71.4	77.3	88.4	95.6	89.7	97.2	102.2	
Nov	60.1	65.9	66.6	67.7	72.6	73.9	72.0	79.8	89.9	97.2	92.5	98.3	102.2	
Dec	61.0	65.6	66.0	66.5	73.2	73.9	71.2	80.4	89.5	97.1	93.1	99.1	100.2	
Average	58.4	62.7	65.9	66.3	70.9	74.2	72.9	74.9	84.3	92.9	92.7	94.5	99.6	103.0

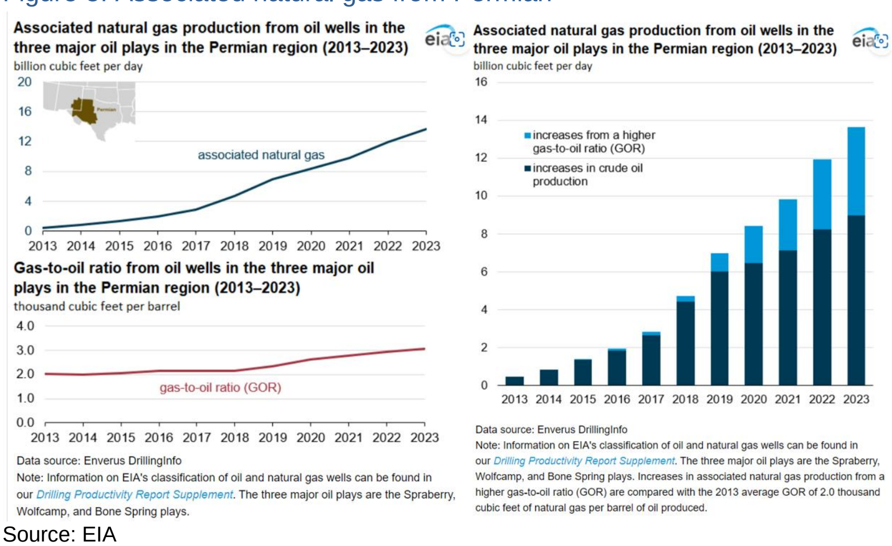
Source: EIA, SAF

Natural Gas: EIA reminds increasing associated natural gas in Permian "oil" wells

Associated natural gas in Permian oil wells

There was a good reminder from the EIA's Natural Gas Weekly released on Nov 2 of how the Permian "oil" wells producing increasing proportion of associated natural gas and associated NGLs over the life of each well. This is something we have been highlighting for several years – the fact that the top US "oil" plays (Permian, Bakken, Eagle Ford, Anadarko, etc) are “oil” plays that each produce associated natural gas and associated NGLs in each well. This is because as the well pressure declines over time, natural gas will preferentially flow thereby increasing the percentage of natural gas produced of the boe produced. And with the natural gas comes the NGLs. On Thursday, the EIA posted its Natural Gas Weekly, which featured “*Associated natural gas production nearly triples in the top three Permian oil plays since 2018”*. The EIA wrote “*Associated-dissolved natural gas (associated natural gas) produced from the three top producing tight oil plays in the Permian region—the Wolfcamp, Spraberry, and Bone Spring plays—has nearly tripled since 2018, from an annual average of 4.7 billion cubic feet per day (Bcf/d) to 13.7 Bcf/d in the first seven months of 2023. Production has grown due to both rising crude oil production in the Permian region and an increasing gas-to-oil ratio (GOR) among the oil wells in these three plays. The GOR measures the volume of natural gas per barrel of oil that a well produces.”* And “*Most of the natural gas produced in the Permian region is associated natural gas.”* And “*The Spraberry, Wolfcamp, and Bone Spring plays produce a majority of the associated natural gas within the Permian region. Over the past decade, the combined GOR of these three plays has increased from 2.0 thousand cubic feet of natural gas per barrel of oil produced (Mcf/b) in 2013 to 3.1 Mcf/b in the first seven months of 2023. From 2013 to 2023, associated natural gas production from these three plays increased by 13.2 Bcf/d; about 4.7 Bcf/d of the increase came as a result of the increased GOR compared with 2013, while the other 9.0 Bcf/d of increased production came from increased crude oil production. We define oil wells as those with a GOR of less than or equal to 6.0 Mcf/b. Any increase in the GOR in an oil well means more natural gas per barrel of oil is being produced. The GOR of an oil well increases naturally over time. Pressure within the reservoir declines progressively as more oil is brought to the surface, which allows more natural gas to be released from the geologic formation. As more oil and natural gas is released within a well, the GOR tends to progressively increase, increasing the volume of associated natural gas produced per every barrel of oil.”* Our Supplemental Documents package includes the EIA associated natural gas writeup.

Figure 5: Associated natural gas from Permian



Source: EIA

Natural Gas: US pipeline exports to Mexico at 6.9 bcf/d in August

US pipeline exports to Mexico up MoM

The EIA Natural Gas Monthly also provides its "actuals" for gas pipeline exports to Mexico [LINK], which were 6.9 bcf/d in August, up +0.2 bcf/d MoM from 6.7 bcf/d in July and is up +1.1 bcf/d YoY from 5.8 bcf/d in August 2022. The EIA doesn't provide explanations for the numbers but the increase should be linked to some recent infrastructure increases. Mexico's relatively unchanged domestic production over the past seven years has created the need for increased US pipeline exports as Mexico builds out its domestic natural gas infrastructure. Below is our table of the EIA's monthly gas exports to Mexico.

Figure 6: US Pipeline Exports to Mexico

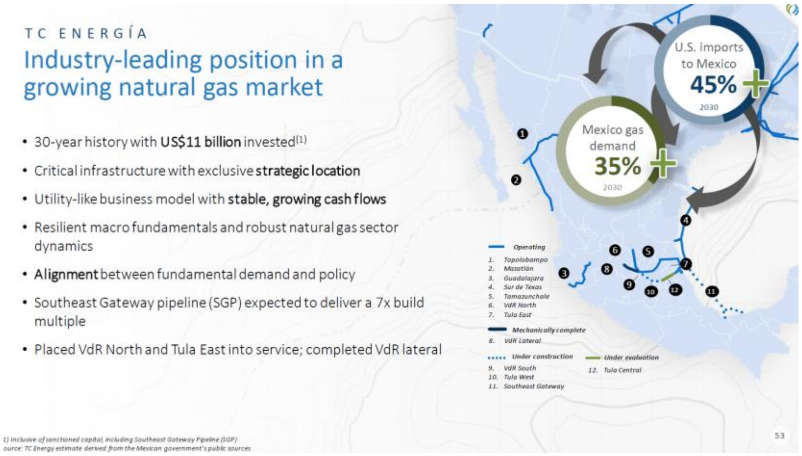
bcf/d	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Jan	1.7	2.2	3.2	3.9	4.4	4.9	5.2	5.6	5.7	5.3
Feb	1.8	2.3	3.5	4.0	4.5	4.8	5.4	4.9	5.5	5.4
March	1.9	2.4	3.3	4.2	4.3	4.8	5.4	5.9	5.5	5.7
Apr	1.9	2.6	3.5	3.7	4.4	4.7	4.6	6.1	5.9	5.6
May	2.0	2.8	3.7	4.0	4.4	5.0	4.7	6.2	6.0	6.2
June	2.2	3.0	3.9	4.5	4.6	5.2	5.4	6.6	6.1	6.8
July	2.2	3.3	4.0	4.4	4.9	5.4	5.8	6.4	6.1	6.7
Aug	2.1	3.3	4.3	4.4	5.0	5.4	6.0	6.2	5.8	6.9
Sept	2.2	3.3	4.1	4.2	5.0	5.4	6.1	6.0	5.6	
Oct	1.9	3.2	4.2	4.2	4.9	5.5	6.0	6.0	5.5	
Nov	1.9	3.0	4.0	4.5	4.7	5.3	5.5	5.5	5.4	
Dec	2.1	3.2	3.6	4.4	4.5	4.9	5.3	5.4	5.1	
Average	2.0	2.9	3.8	4.2	4.6	5.1	5.5	5.9	5.7	6.1

Source: EIA, SAF

TC Energy sees Permian natural gas +3 bcf/d to Mexico by 2030

TC Energy has their annual investor day on Nov 28. But last year's investor day also included its recap of how the build out of Mexico natural gas infrastructure will create demand/opportunity for an additional 3 bcf/d of Perman natural gas via pipeline. We have been highlighting that, looking ahead to rest of the 2020s, one of the big positives for North America natural gas is the continued strong growth in US LNG capacity that sets up increasing LNG exports ie. demand for US natural gas. On a lesser, but still significant added demand factor is the increasing buildout by TC Energy of natural gas infrastructure in Mexico that sets up that sets up increased demand for US natural gas. Here is what we wrote in our Dec 4, 2022 Energy Tidbits. "*One overlooked upside to US natural gas in the 2020s is that the growth Mexico infrastructure projects are starting to kick in. Yesterday, we tweeted [LINK] "Positive for US #NatGas for 2020s. It's not just increasing #LNG exports, it's also Mexico. Mexico #NatGas demand from 9 bcfd to 12 bcfd in 2030. @TCEnergy expects MEX #NatGas pipeline imports from Permian +45% from 6 bcfd in 2022 to 9 bcfd by 2030. #OOTT." The growth in Mexico natural gas demand is a big plus to the Permian. For the last few years, every time we write on Mexico's natural gas production, we say it is still stuck below 5 bcf/d and that any increase in Mexico natural gas demand has to be met by increasing natural gas or LNG imports. For the past 5+ years, other than a few months, Mexico gas production was below 5 bcf/d. Mexico's natural gas demand growth and growing infrastructure was one of the key growth themes at TC Energy's investor day on Tuesday. Mgmt's slide deck included the below slide and mgmt said "We expect Mexican natural gas demand to increase by 3% per year across the country from 9 Bcf to 12 Bcf in 2030, with strategic government projects creating over 1 Bcf a day of incremental gas demand in the southeast alone by 2025. Now given Mexico's limited natural gas production, this* *increase in demand will likely be served by supplies in the U.S. and more specifically the Permian as we believe Mexican imports from the Permian are likely to increase by 45% from 6 Bcf a day in 2022 to 9 Bcf by 2030."*

Figure 7: TC Energy Sees US Natural Gas Imports TO Mexico +45% to 2030



Source: TC Energy

Natural Gas: US LNG exports up +1.1% MoM to 11.4 bcf/d in August; up +17.6% YoY

US August LNG exports

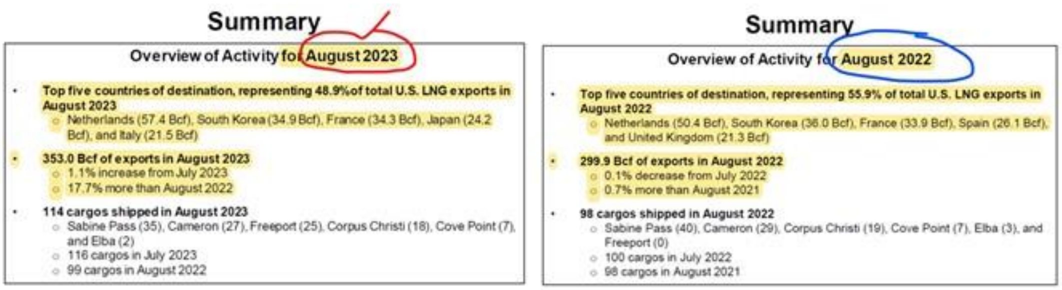
As a reminder, the US LNG export data is always available about two weeks before it is included in the EIA's Natural Gas Monthly report. Here is what we wrote in our Oct 22, 2023 Energy Tidbits memo. "*On Tuesday, the Department of Energy (DOE) posted its US LNG exports estimates for August 2023 [LINK]. This is a reminder that the US LNG export data is available about two weeks prior to the more commonly referenced US LNG exports from the EIA's Natural Gas Monthly. The EIA is a group under the Department of Energy. The data for LNG exports is either identical or just a rounding issue. On Tuesday, we tweeted [LINK] "US #LNG exports Aug/23 11.4 bcfd, +1.1% MoM, +17.7% YoY. Freeport LNG was out in Aug/22. Aug/23 top 5 export mkts: Dutch, Korea, France, Japan, Italy. Aug/22: Dutch, Korea, France, Spain, UK. This DOE LNG data is posted 2 wks before same data in @EIAgov #NatGas Monthly #OOTT" US LNG exports were up marginally MoM to 11.4 bcf/d in August from 11.3 bcf/d in July. US LNG exports are now averaging 11.5 bcf/d per month YTD for 2023, which is +0.6 bcf/d compared to the same period in 2022. The DOE did not comment on the MoM or YoY increases*." On Tuesday, the EIA's Natural Gas Monthly reported the same data, US LNG exports for August were 11.4 bcf/d, up +0.1 bcf/d MoM from 11.3 bcf/d in July and was up +1.7 bcf/d from 9.7 bcf/d in August 2022. The DOE LNG report includes more information on US LNG exports. Our Supplemental Documents package includes excerpts from the DOE LNG report.

Figure 8: US Monthly LNG Exports

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

Source: EIA, DOE

Figure 9: US LNG Exports August 2023 vs August 2022


Summary

Overview of Activity for August 2023

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

Summary

Overview of Activity for August 2022

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

Source: DOE

Natural Gas: Coastal GasLink 100% pipe installation, hydro testing complete

>15 bcf/d gas export capacity by 2030

On Monday, Coastal GasLink posted its October construction update [LINK], which highlighted that they have now completed 100% pipe installation. Or as Shell CEO Sawan describes it "*the pipeline itself has in essence completed the golden weld, the final weld on that pipeline and since then have also hydro tested the pipeline successfully*." Coastal GasLink wrote "*Major milestone: Coastal GasLink achieves 100% pipe installation. Coastal GasLink has achieved 100% pipe installation across the entire project route, connecting northeastern B.C. to LNG Canada's facility on the west coast. The final 'Golden Weld' took place at the base of Cable Crane Hill in Section 8 West earlier this month. This milestone means that all 670 kilometres of pipe has been welded, coated, lowered into the trench, rigorously tested, and backfilled. From the Wilde Lake Compressor Station near Dawson Creek to our Metering Station in Kitimat, physical construction on the project is now complete. The work is the last step before mechanical completion which is well on track for our year-end target and advances Coastal GasLink as Canada's first direct path for LNG to international markets."* Our Oct 1, 2023 Energy Tidbits memo highlighted Coastal GasLink's September construction update that noted they were 94.7% complete on the pipe installation. Our Supplemental Documents package includes the Coastal GasLink update.

Figure 10: Coastal GasLink Construction Update Oct 30, 2023

Source: Coastal GasLink

Shell expects LNG Canada 1.8 bcf/d Phase 1 start by the middle of this decade
Shell held its Q3 call on Thursday and one of the first questions to Shell CEO Sawan was on the timing for LNG Canada 1.8 bcf/d Phase 1 startup given Coastal GasLink has completed 100% pipe installation. On Friday, we tweeted [LINK] *"#Shell CEO #LNGCanada 1.8 bcfd Phase 1 update. #CoastalGasLink completed the "golden weld" ie. 100% pipe installation. LNG Canada recently passed 85% completion threshold. "expect to have a startup by the middle of this decade" Sounds like 1st LNG next 12 mths or so! #OOTT."* Sawan wasn't going to be caught up given a new date, rather reminded LNG Canada had recently passed the 85% completion mark and that he still expected startup "by the middle of the decade". Sawan said "*LNG Canada, we have indeed been pleased with the progress that has been made. You will have seen early October when TCE, the pipeline developer and Coastal Gas Link, the pipeline itself has in essence completed the golden weld, the final weld on that pipeline, and since then have also hydro tested the pipeline successfully. So, very pleased with that because as you know, that was very much on our watch. The second bit then is more the facilities at site. that the joint venture announced not too long ago that they had just passed the 85% completion threshold. And so that all continues to go according to plan. We're not announcing anything new. We continue to say today that we expect to have a startup by the middle of this decade. What could go wrong? I mean, typically teething issues in the startup of the plant, but that is what we are very focused on. What we have said to the joint venture is our focus is not just on the first cargo and when it starts up, it's on when can we get to the 100th cargo because that will show us the stability of the overall plant. And that's what the team is focused on. And so, so far we've seen good quality or the joint venture has seen good quality overall in the materials that we have received, the equipment was received. And so far the progress has been as we would have hoped for."*

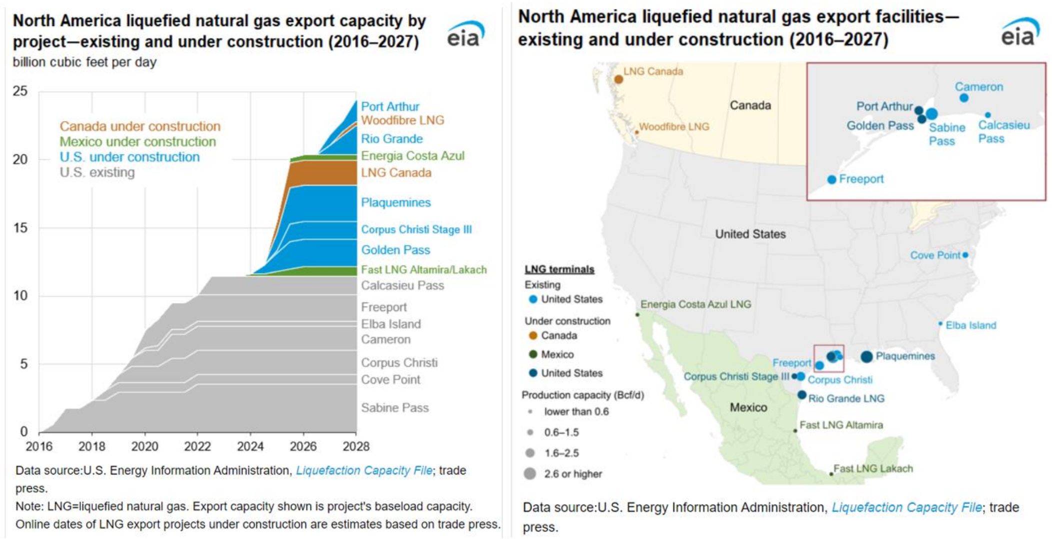
LNG Canada 1.8 bcf/d Phase 1 should drive Montney M&A

We continue to believe that LNG Canada 1.8 bcf/d Phase 1 sets up the need for the LNG Canada joint venture partners to acquires supply from M&A and/or long-term supply arrangements. We don't believe they would want to go into start up of LNG Canada 1.8 bcf/d Phase 1 without some certainty of at least several years supply. No question they will assume some level of future Montney drilling but the BC/Blueberry River First Nations deal leads to less clarity to plan multi-year drilling plans. Here is what we wrote in our July 30, 2023 Energy Tidbits memo. "*Yesterday, we tweeted [LINK] "Here's why a Shell FID on #LNGCanada 1.8 bcfd Phase 2 should drive M&A in Cdn #NatGas. See 👇02/21/22 tweet, Shell CEO Sawan wants to have enough #NatGas supply to match their LNG offtake share. In Q2/23 call, Phase 1 supply seems in good shape based on CFO Gorman comments. But a Phase 2 FID would be another question. #OOTT." (i) In Feb 2022, Shell CEO Swan, in his previous role, spoke about LNG Canada and it jumped out at us that his comments were pointing to the likelihood for M&A for the natural gas supply for LNG Canada. On February 21, 2022, we tweeted [LINK] "Buckle up, could be huge for Cdn #NatGas M&A. @Shell just said like to align equity #NatGas supply and offtake obligations, used #LNGCanada, Shell has 40% interest so would be 1.44 bcf/d if it FIDs #LNGCanada phase 2. It's why #LNGCanada Phase 2 is the must watch event #OOTT #LNG." Shell held its Integrated Business Deep Dive on Feb 21, 2022. Our tweet included the transcript we made of Sawan's comments. At approx. 9:18am MT, an analyst asks if the future equity percentage you have for the natural gas supply be less than the offtake percentage you have for the LNG? Sawan replied ".. typically, what I would say, as much as possible, having access across the entire value chain in as close of a percentage as you can, helps ensure that wherever value might rate at any point in time, you are capturing that value. So in general. Take our LNG Canada investment that you just referenced in the second question, we would look to be able to at least assure ourselves that we are not caught up by vagaries of one part of the market. let's say the gas supply, but we would want to have enough on the gas supply equity side to be able to make sure if gas prices go up there, we benefit from them while maybe disadvantaging the midstream or vice versa depending on where prices go. So we are not in the game of necessarily taking undue risk. we are in the game of creating integrated value chains that we can leverage as part of the broader portfolio." Unless Sawan has changed his mind since becoming CEO, he clearly says that for LNG Canada, he wants to have enough Shell natural gas supply to meet its LNG offtake share ie. 1.44 bcf/d if both Phase 1 and 2 go ahead. (ii) Our tweet yesterday said it looks they are in good shape for Phase 1. And we included CFO Gorman's comments in the Q&A on LNG Canada. Gorman said "Again, it's your upstream, which we have good confidence in as you know, a large part of the gas that's coming from this is coming for us from our own assets, Groundbirch and otherwise." We would think they would be able to get there with drilling their lands over the next 18 months. (iii) But an FID on LNG Canada 1.8 bcf/d Phase 2 would be another question. And we have to wonder, if Shell is looking to FID LNG Canada Phase 2 over the coming months, will this M&A cycle happen sooner than later before valuations of BC and Alberta natural gas reflect 1.8 bcf/d of LNG Canada Phase 1 sometime around 2025 and then another 1.8 bcf/d LNG Canada Phase 2 to follow perhaps in the 2030 range."*

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

There was a good reminder last week there is a need/opportunity for >15 bcf/d of US and Canada natural gas supply over the next five years. The EIA Natural Gas Weekly posted Oct 26 [LINK] highlighted "*Over the next five years, we expect North America's liquefied natural gas (LNG) export capacity to expand by 12.9 billion cubic feet per day (Bcf/d) as Mexico and Canada place into service their first LNG export terminals and the United States adds to its 11.4 Bcf/d of existing LNG capacity. By the end of 2027, we estimate LNG export capacity will grow by 1.1 Bcf/d in Mexico, 2.1 Bcf/d in Canada, and 9.7 Bcf/d in the United States from a total of ten new projects across the three countries.*" Mexico' has been unable to grow natural gas production so the need/opportunity to fill this capacity is for US and Canadian natural gas supply. And this 12.9 bcf/d oesn't include the buildout of Mexico domestic natural gas infrastructure capacity that TC Energy forecast last year to add 3 bcf/d demand for Permian natural gas via pipeline. Of this, only 11% (1.8 bcf/d) is direct Canada natural gas export via LNG Canada Phase 1. But the other big swing factor is the question on how much US natural gas can grow. Obviously more if the price is higher. But there will be the need or opportunity for more Cdn natural gas thru the US, not less. And at the same time, Canada will have the direct LNG Canada 1.8 bcf/d to export markets that will take some of Canada's existing natural gas moving to the US out to the LNG Canada instead. Our Supplemental Documents package includes the EIA blog.

Figure 11: North American LNG capacity growth thru 2027



Source: EIA

Natural Gas – Sinopec buys into Qatar NFS expansion & purchases 27-yr LNG supply

QatarEnergy & Sinopec sign NFS partnership agreement

Yesterday, QatarEnergy announced [LINK] "*QatarEnergy, Sinopec sign historic North Field South Partnership and 27-Year LNG Supply Agreement*". The deal has two key elements. First. "*Pursuant to the terms of the partnership agreement, QatarEnergy will transfer a 5% interest to Sinopec in a joint venture company that owns the equivalent of 6 million tons per annum (MTPA) of LNG production capacity in the NFS project.*" Second "*The two sides also signed a long-term sales and purchase agreement (SPA) for the delivery of 3 million tons per annum (MTPA) of LNG from the NFS project to Sinopec's receiving terminals in China over a* *span of 27 years."* That is 0.39 bcf/d. Our Supplemental Documents package includes the QatarEnergy release.

04/12/23: Sinopec bought into QatarEnergy's NFE LNG expansion project
Here is what we wrote in our April 16, 2023 Energy Tidbits memo on the prior QatarEnergy partnership deal with Sinopec on the North Field East expansion. "*On Wednesday, QatarEnergy and China Petrochemical Corporation (Sinopec) announced a definitive partnership agreement for the North Field East (NFE) expansion project [LINK]. . Upon signing the deal, Sinopec will acquire a 1.25% interest in the North Field East expansion project, which includes a 5% stake in one NFE train. Each train in the NFE has a capacity 8 MTPA (~1.05 bcf/d). Sinopec joins ExxonMobil, TotalEnergies, ConocoPhillips, ENI and Shell in the Qatar LNG expansions. QatarEnergy Presedent and CEO, Saad Sherida Al-Kaabi commented, "The People's Republic of China is a major driver of the global energy markets as well as being one of the most important gas markets in the world and is a key market for Qatari energy products. Today's event underscores QatarEnergy's commitment to deepening its relationships with key LNG consumers, while prioritizing long-term strategic partnerships and alignment with world class partners from China, represented by Sinopec here today." While Chairman of Sinopec, Dr. Ma Yongsheng added, "China-Qatar energy cooperation features a natural complementarity. QatarEnergy is a leading LNG producer in the world and one of the most important partners of Sinopec. The cooperation with QatarEnergy will help Sinopec further optimize China's energy consumption structure and enhance the security, stability, and reliability of clean energy supply. I hope that the two companies will continue to explore new LNG cooperation opportunities based on the solid foundation we have laid together and will further expand cooperation areas to achieve mutual benefit and win-win results.".*

11/21/22: Sinopec/QatarEnergy signed a 27-year LNG supply agreement
This is not the first time Sinopec agreed to buy 27-yr LNG supply from QatarEnergy. Here is what we wrote in our Nov 27, 2022 Energy Tidbits memo. "*There haven't been many long-term LNG deals over the past few months because most supply capacity pre 2025 seems to be getting contracted. On Monday, Sinopec and QatarEnergy announced their new agreement which will span 27 years and ship 0.53 bcf/d [LINK]. The two parties first signed a 10-year Sales and Purchase Agreement in March 2021 where both parties agreed to a 0.27 bcf/d supply to China. This new agreement adds 0.53 bcf/d to take the total of two existing deals up to 0.80 bcf/d. Chairman of Sinopec, Dr. MA Yongsheng explains "the signing of the long-term LNG SPA with QatarEnergy is a milestone and an important part of the integrated cooperation between the two sides on the NFE project. Qatar is the world's largest LNG supplier, and China is the world's largest LNG importer. The two countries share inherent complementarities and a good foundation for energy cooperation." Saad Sherida Al-Kaabi, CEO of QatarEnergy also commented on the deal stating "we are pleased to enter into this agreement, which will further solidify the excellent bilateral relations between the People's Republic of China and the State of Qatar and help meet China's growing energy needs. In addition, it opens a new and exciting chapter in our relationship with Sinopec, one that is very special and spans a number of different areas, and which we are excited about further growing and expanding into*

the 2050s." Both QatarEnergy and Sinopec are state owned energy companies on the forefront of the majority of long-term LNG agreements. This included nine of 38 deals we have tracked since July 1, 2021."

Natural Gas: Two other long-term LNG deals – Chesapeake/Vito, Cheniere/Foran

Long-term LNG deals

In addition to the QatarEnergy 27-yr LNG supply deal with Sinopec, there were two other long-term LNG supply deals. It was a big week for new long-term LNG supply deals. By background, there has been a significant slowdown in long-term LNG deals in since the end of H1/22 compared to the activity seen from July 1, 2021 through June 30, 2022. That's because most, if not all the available long term LNG supply available before 2026 was locked up in the July 1, 2021 through June 30, 2022 rush. Rather, the long-term deals now being done are generally for long-term supply starting in 2026 or later. And the other significant item to note is that we are seeing some very long-term out past 2050. There were two long-term LNG supply deals announced this week. (i) On Tuesday, Vitol announced they signed a long-term 15-year LNG supply deal with Chesapeake [LINK], whereby Vitol will, staring in 2028, purchase ~0.13 bcf/d. It's a 15-year deal and the term of the HOA extends through 2043. Ben Marshall, Head of Vitol Americas, said*: "We are excited to build upon our existing relationship with Chesapeake. The global energy landscape has changed significantly in the last two years, which has highlighted the importance of U.S. natural gas production and liquefaction in satisfying the world's energy needs. Global LNG demand is experiencing tremendous growth and Vitol continues to strengthen its position to safely and reliably deliver cost effective, flexible solutions to our customers around the world*". (ii) On Thursday, Cheniere Energy announced they entered into a long-term 20-year LNG SPA with Foran Energy Group [LINK]. Foran will purchase ~0.12 bcf/d of LNG for China markets. Deliveries will begin after the start of commercial operations of the "Train Eight" phase of Cheniere's Sabine Pass Liquefaction Expansion Project, which the company has not set a completion date for yet but will likely be after 2026 (which is the target completion date for the first seven trains). Cheniere mentioned in their Q3 conference call that they expect an extension to the SPA, possibly extending beyond 2050. Our Supplement document package contains the Chesapeake Energy and Cheniere Energy news releases.

There have been 18.98 bcf/d of long-term LNG supply deals since July 1, 2021

We first highlighted this abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg "*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs".* We included a table of the deals done in that short two week period. We continue to update that table, which now shows 18.59 bcf/d of long-term LNG deals since July 1, 2021. 61% of the deals have been by Asian LNG buyers, but we are now seeing rest of world locking up long term supply deals post Russia/Ukraine. Note in our non-Asian LNG deals will major LNG players (ie. Chevron, Shell, etc) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 65% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long-term supply deals since July 1, 2021. Our Supplemental Documents package includes our July 14, 2021 blog.

Figure 12: Long-Term LNG Buyer Deals Since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country Buyer / Seller	Volume (bcf/d)	Duration Years	Start	End
Asian LNG Deals							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipec	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan / Oman	0.11	10.0	2025	2035
Jan 19, 2023	ITOCHU	NextDecade	Japan / US	0.13	15.0	n.a.	n.a.
Feb 7, 2023	Exxon Asia Pacific	Mexico Pacific Ltd	Singapore / Mexico	0.26	20.0	n.a.	n.a.
Feb 23, 2023	China Gas Holdings	Venture Global LNG	China / US	0.26	20.0	n.a.	n.a.
Mar 6, 2023	Gunvor Singapore Pte	Chesapeake Energy	Singapore / US	0.26	15.0	2027	2042
Apr 28, 2023	JERA	Venture Global LNG	Japan / US	0.13	20.0	n.a.	n.a.
May 16, 2023	KOSPO	Cheniere	Korea / US	0.05	19.0	2027	2046
Jun 1, 2023	Bangladesh Oil	QatarEnergy	Bangladesh / Qatar	0.24	15.0	2026	2031
Jun 21, 2023	Petro Bangle	Oman	Bangledesh / Oman	0.20	10.0	2026	2036
Jun 21, 2023	CNPC	QatarEnergy	China / Qatar	0.53	27.0	2027	2054
Jun 26, 2023	ENN LNG	Cheniere	Singapore / US	0.24	20.0	2026	2046
Jul 5, 2023	Zhejiang Energy	Mexico Pacific Ltd	China / Mexico	0.13	20.0	2027	2047
Aug 8, 2023	LNG Japan	Woodside	Japan / Australia	0.12	10.0	2026	2036
Sep 7, 2023	Petrochina	ADNOC	China / UAE	n.a.	n.a.	n.a.	n.a.
Nov 2, 2023	Foran	Cheniere	China / US	0.12	20.0	n.a.	n.a.
Nov 4, 2023	Sinopec	QatarEnergy	China/Qatar	0.39	27.0	2026	2053
Total Asian LNG Buyers New Long Term Contracts Since Jul/21				**11.53**			
Non-Asian LNG Deals							
Jul 28, 2021	PGNiG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNiG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
Dec 20, 2022	Shell	Oman LNG	UK/Oman	0.11	10.0	2025	2035
Jan 25, 2023	PKN ORLEN	Sempra Infrastructure	EU//US	0.13	20.0	2027	2047
Jan 30, 2023	BOTAS	Oman	Turkey / Oman	0.13	10.0	2025	2035
Mar 27, 2023	Shell	Mexico Pacific Ltd	UK / Mexico	0.15	20.0	2026	2046
Apr 24, 2023	Hartree Partners LP	Delfin Midstream	US / US	0.08	20.0	n.a.	n.a.
Jun 21, 2023	Equinor	Cheniere	Norway / US	0.23	15.0	2027	2042
Jun 22, 2023	SEFE	Venture Global LNG	EU//US	0.30	20.0	2026	2046
Jul 14, 2023	ONEE (Morocco)	Shell	Africa/US	0.05	12.0	2024	2036
Jul 18, 2023	IOCL	Adnoc	India/UAE	0.16	14.0	2026	2040
Jul 28, 2023	OMV	BP	Austria/UK	0.13	10.0	2026	2036
Aug 4, 2023	ConocoPhillips	Mexico Pacific Ltd	US/Mexico	0.29	20.0	2025	2045
Aug 22, 2023	BASF	Cheniere	Germany / US	0.10	17.0	2026	2043
Aug 30, 2023	Shell	Oman LNG	US / Oman	0.11	10.0	2025	2035
Oct 11, 2023	TotalEnergies	QatarEnergy	France / Qatar	0.46	27.0	2026	2053
Oct 18, 2023	Shell	QatarEnergy	Netherlands / Qatar	0.46	27.0	2026	2053
Oct 23, 2023	ENI	QatarEnergy	Italy / Qatar	0.13	27.0	2026	2053
Oct 31, 2023	Vitol	Chesapeake Energy	Sweden / US	0.13	15.0	2028	2043
Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21				**7.45**			
Total New Long Term LNG Contracts since Jul/21				**18.98**			

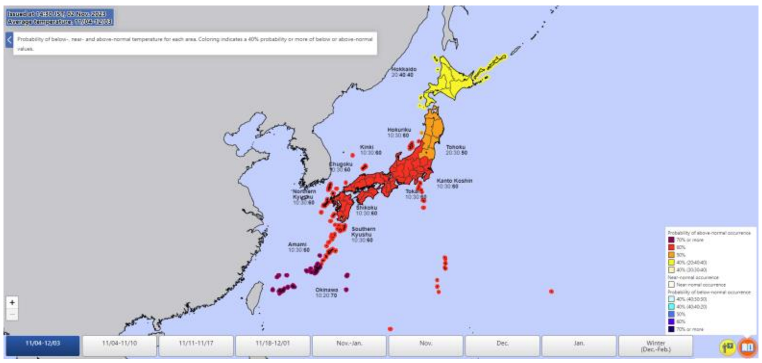
Source: SAF

Natural Gas: Japan forecast above normal temperatures through November

Japan's 30-day temperature forecast

We continue to stress that it's hard to catch up from a warm start to winter in natural gas regions. And if there is a warm start to winter, it means it has to be cold in Jan/Feb. It looks like the warm weather so far this fall will continue through November. Every Thursday, the Japan Meteorological Agency updates its 30-day outlook [LINK]. The November 2 update calls for a warmer than normal November (especially in the southern prefectures) which means, for Tokyo in November, daily highs in the 16-21C and nighttime lows of around 9-13C. This shouldn't generate much natural gas demand for air conditioning. Rather it's what we call "leave the windows open" weather. Below is the JMA's 30-day temperature probability forecast for Nov 4 – Dec 03.

Figure 13: JMA Nov 4 – Dec 03 Temperature Probability Forecast



Source: Japan Meteorological Agency

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

Japan LNG stocks down -1.4% WoW

It was hot in Japan through September and we saw Japan was drawing on its LNG stock in Sept for power generation, which took LNG stocks below year ago and the 5-yr average. We have been expecting Japan to build back LNG stocks in Oct for the winter but this week there was a draw. Stocks are still below 2022 levels but now above the 5-year average. On Wednesdays, Japan's METI releases its weekly LNG stocks data [LINK]. LNG stocks on Oct 29 were 104.7 bcf, down -1.4% WoW from Oct 22 of 106.1 bcf, and down -13.8% YoY from 121.5 bcf a year earlier, but above the 5-year average of 96.5 bcf. METI did not comment on the WoW decrease. Below is the Japanese LNG stocks graph from the METI weekly report.

Figure 14: Japan LNG Stocks

Source: METI

Natural Gas: China expects a surge in winter peak load capacity but last yr was hot

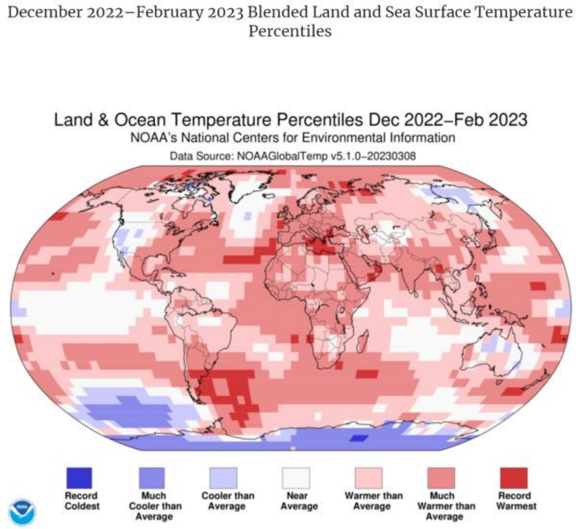
China was hot last winter

Our first thought was "we certainly hope so" when we saw the Bloomberg's Monday report "*Peak Winter Demand to Test China's Power Supply Security.*" That's because last winter was a hot winter in China. Bloomberg wrote "*A sharper surge in demand for peak-load capacity is expected this winter that will test China's supply security, the National Energy Administration said at a briefing on Monday. * Capacity required to meet peak winter power demand could be 140 gigawatt-hours higher than last year, said Zhang Xing, NEA spokesman.*" One item that jumps out from the Bloomberg report is that coal should be a go-to fuel. Bloomberg wrote "*NEA will urge more coal supply to Yunnan, and extra gas supply to Guangdong and Hainan. * NEA pledges to make all efforts to meet foreseeable supply gaps. ** To push new coal power plants to start operations on time.*" Our Supplemental Documents package includes the Bloomberg report.

Winter 2022/23 was hot around the world

We said "we certainly hope so" when seeing China expects more power demand this winter. That should be the case for Asia, Europe and North America as it was hot all around the world last winter (Dec/Jan/Feb). NOAA wrote "*The December 2022–February 2023 global surface temperature was 0.90°C (1.62°F) above the 20th-century average of 12.1°C (53.8°F). This ranks as the fifth-warmest December–February period (tied with 2018 and 2022) in the 174-year record. The past nine December–February periods have ranked among the ten warmest such periods on record.*"

Figure 15: DJF 2022/2023 Land & Ocean Temperature Percentiles



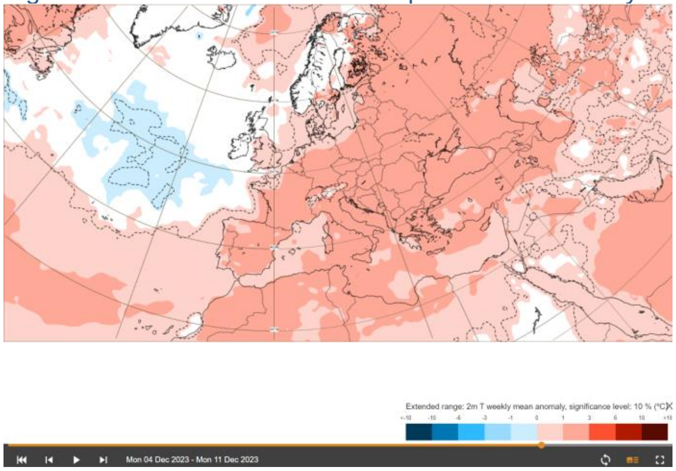
Source: NOAA

Natural Gas: Looking like warmer than normal Nov and for 1st half Dec in all of Europe

Europe still expected warmer than normal

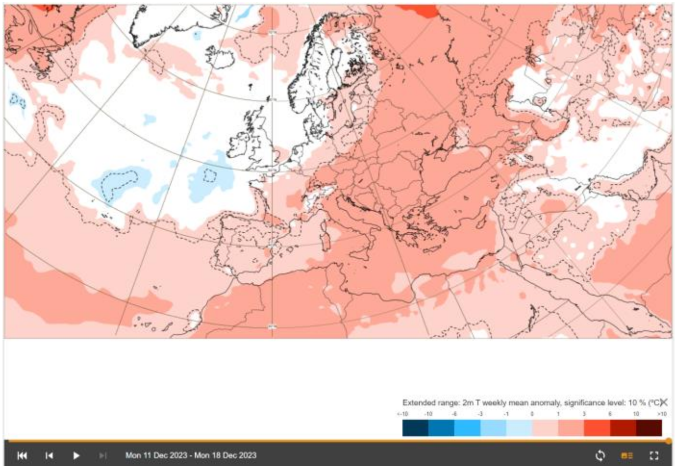
Our concern for near-term natural gas and LNG prices is that there will be a holdback until markets start to see a move to normal winter temperatures. And that is especially so this winter with Europe gas storage full. As seen with winter 2022/23, when it starts warm, it's hard to catch up. For terminology, much of Europe uses Oct 1 as the start of winter natural gas season. We tend to focus more on later Nov and early Dec as when we might expect to see the start of any decent weather driven natural gas demand. The ECMWF provides daily short- term forecasts. ECMWF is European Centre for Medium Range Forecasts. Yesterday's ECMWF's near term forecast calls for warmer than normal temperatures across Europe for most of Nov, in particular to end Nov and to start Dec. For perspective, we looked at AccuWeather daily forecasts for this Dec 4-18 period and it forecasts Paris with daily highs around 8-11C and overnight lows of 2-5C. For Berlin, AccuWeather calls for daily highs of 6-8C and overnight lows of 2-4C. So not huge natural gas demand weather.

Figure 16: ECMWF Dec 4-11 Temperature Probability Forecast



Source: ECMWF

Figure 17: ECMWF Dec 11-18 Temperature Probability Forecast



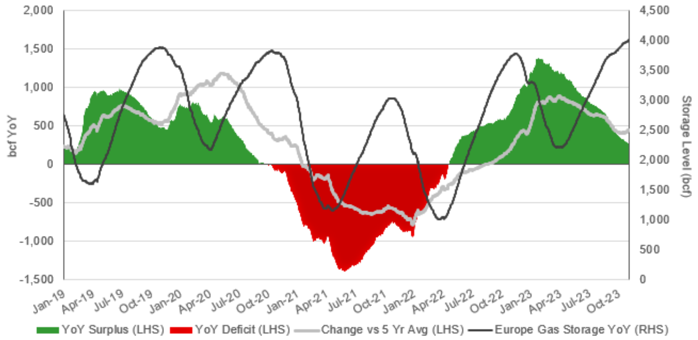
Source: ECMWF

Natural Gas: Europe storage continues to be effectively full at 99.49%, new 5-year high

Europe gas storage

Please note that Europe generally refers to the start of winter natural gas withdraw season as starting Oct 1, whereas North America refers to the start of winter natural gas season as starting Nov 1. Europe storage is now over 99% full, which means they entered winter essentially completely full. This week, Europe storage increased by +0.75% WoW to 99.49% on Nov 2. Storage is now +4.49% greater than last year's levels of 95.00% and is +9.24% above the 5-year average of 90.25%. The current storage level is the highest it's been in the past 5 years. Below is our graph of Europe Gas Storage Level.

Figure 18: European Gas Storage Level



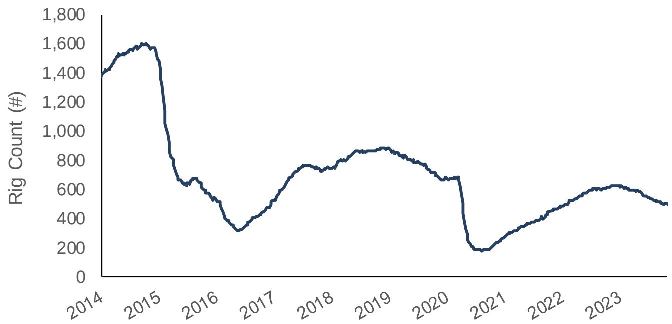
Source: Bloomberg, SAF

Oil: US oil rigs -8 WoW at 496 rigs, US gas rigs +1 WoW to 118 rigs

US oil rigs down WoW

On Friday, Baker Hughes released its weekly North American drilling rig data. (i) US oil rigs are not following their normal seasonal pattern to increase up to around US Thanksgiving. And with oil prices still over $80, we have to believe that some of the oil rig reductions are linked to recent M&A such as Exxon/Pioneer. Total US oil rigs were down -8 rigs WoW at 496 total rigs and are down -117 rigs YoY for the week of November 3. This is up +15 rigs from the 2022 low of 481 rigs in January. (ii) On a per basin basis, there were a few changes in the major US basins for the week of November 3. The Permian was down -3 rigs WoW to 303 rigs, Cana Woodford was down -1 rig WoW at 13 rigs, Marcellus was up +1 rig WoW to 1 rig, and Williston was down -1 rig WoW to 32 rigs. Granite Wash, Mississippian, and DJ Niobrara were flat WoW at, 6, 1 and 14 rigs respectively. Others were down -4 rigs WoW at 78 oil rigs. (iii) The Permian is near its lowest level since March 18, 2022, and is down -54 rigs from its recent high of 357 rigs on April 28, 2023. (iv) Gas rigs were up +1 rig WoW to a total of 118 rigs and have now decreased -37 rigs YoY. On a per basin basis, Haynesville was down -1 rig WoW at 38 rigs, Marcellus was down -2 rigs WoW at 27 rigs, Utica was up +2 rigs WoW to 12 rigs and Others were up +2 rigs WoW to 30 rigs. Below is our graph of total US oil rigs. Below is our graph of total US oil rigs.

Figure 19: Baker Hughes Total US Oil Rigs



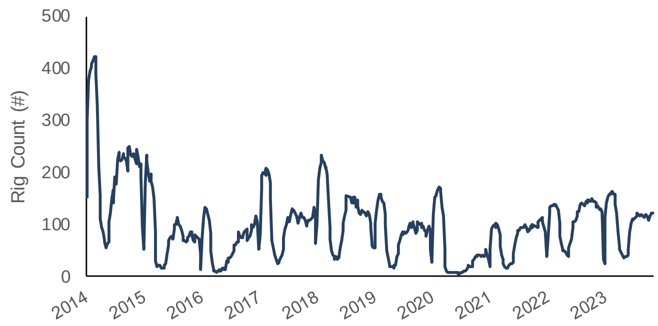
Source: Baker Hughes, SAF

Cdn total rigs flat WoW

Oil: Total Cdn rigs flat WoW at 196 total rigs

For the week of November 3, total Cdn rigs were flat WoW at 196 rigs. All provinces were flat WoW with BC at 19 rigs, Alberta at 138 rigs, Saskatchewan at 34 rigs, Manitoba at 4 rigs and Newfoundland at 1 offshore rig. We still expect to see some modest increases over the coming 5 or 6 weeks before the normal seasonal Xmas slowdown. Cdn oil rigs were flat WoW at 122 rigs, along with Cdn gas rigs at 74 rigs, and Cdn offshore rigs at 1 rig. Cdn oil rigs are down -19 rigs YoY, while gas rigs are up +6 rigs YoY. Below is our graph of total Cdn oil rigs.

Figure 20: Baker Hughes Total Cdn Oil Rigs



Source: Baker Hughes, SAF

US oil production flat WoW

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

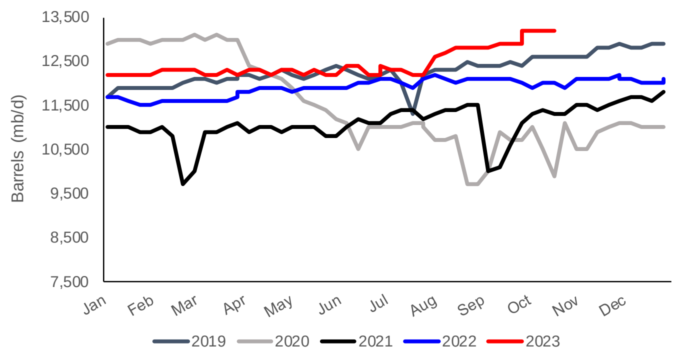
Two weeks ago there was a second big adjustment to the EIA's weekly oil production estimates. The first was in August, when our Aug 13, 2023 Energy Tidbits memo highlighted the EIA increased their weekly US oil production estimates by +0.4 mmb/d. Our Oct 15th Energy Tidbits memo highlighted the EIA's second big, another +0.4 mmb/d, adjustment to the weekly production estimates. Two weeks ago, the EIA wrote *"Crude Oil Production Re-benchmarking Notice: When we release the Short Term Energy Outlook (STEO) each month, the weekly estimates of domestic crude production reported in the Petroleum Supply Monthly (PSM) and other current data. If we find a large difference between the two series, we may re-benchmark the weekly production estimate on weeks when we release STEO. This week's domestic crude oil production estimate incorporates a re-benchmarking that increased estimated volumes by 370,000 barrels per day, which is about 2.8% of this week's estimated production total*." This 2nd EIA adjustment was needed to bring the weekly production estimates in line with the EIA's actuals. And as noted in the Form 914 item below, the EIA's Oct adjustment basically makes up for the weekly estimates being below the EIA's actuals for Aug. This week, the EIA's production estimates were flat WoW at 13.200 mmb/d for the week ended October 27 [LINK]. Alaska was up +0.003 mmb/d WoW to 0.433 mmb/d. Below is a table of the EIA's weekly oil production estimates.

Figure 21: EIA's Estimated Weekly US Field Oil Production

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
2022-Jan	01/07	11,700	01/14	11,700	01/21	11,600	01/28	11,500		
2022-Feb	02/04	11,600	02/11	11,600	02/18	11,600	02/25	11,600		
2022-Mar	03/04	11,600	03/11	11,600	03/18	11,600	03/25	11,700		
2022-Apr	04/01	11,800	04/08	11,800	04/15	11,900	04/22	11,900	04/29	11,900
2022-May	05/06	11,800	05/13	11,900	05/20	11,900	05/27	11,900		
2022-Jun	06/03	11,900	06/10	12,000	06/17	12,000	06/24	12,100		
2022-Jul	07/01	12,100	07/08	12,000	07/15	11,900	07/22	12,100	07/29	12,100
2022-Aug	08/05	12,200	08/12	12,100	08/19	12,000	08/26	12,100		
2022-Sep	09/02	12,100	09/09	12,100	09/16	12,100	09/23	12,000	09/30	12,000
2022-Oct	10/07	11,900	10/14	12,000	10/21	12,000	10/28	11,900		
2022-Nov	11/04	12,100	11/11	12,100	11/18	12,100	11/25	12,100		
2022-Dec	12/02	12,200	12/09	12,100	12/16	12,100	12/23	12,000	12/30	12,100
2023-Jan	01/06	12,200	01/13	12,200	01/20	12,200	01/27	12,200		
2023-Feb	02/03	12,300	02/10	12,300	02/17	12,300	02/24	12,300		
2023-Mar	03/03	12,200	03/10	12,200	03/17	12,300	03/24	12,200	03/31	12,200
2023-Apr	04/07	12,300	04/14	12,300	04/21	12,200	04/28	12,300		
2023-May	05/05	12,300	05/12	12,200	05/19	12,300	05/26	12,200		
2023-Jun	06/02	12,400	06/09	12,400	06/16	12,200	06/23	12,200	06/30	12,400
2023-Jul	07/07	12,300	07/14	12,300	07/21	12,200	07/28	12,200		
2023-Aug	08/04	12,600	08/11	12,700	08/18	12,800	08/25	12,800		
2023-Sep	09/01	12,800	09/08	12,900	09/15	12,900	09/22	12,900	09/29	12,900
2023-Oct	10/06	13,200	10/13	13,200	10/20	13,200	10/27	13,200		

Source: EIA

Figure 22: EIA's Estimated Weekly US Oil Production



Source: EIA, SAF

EIA Form 914 August

Oil: EIA Form 914 – US August oil actuals +1.068 mmb/d YoY

As noted above, in October the EIA made a second adjustment to bring its weekly estimates in line with actuals. And it looks like the +370,000 b/d adjustment to the weekly estimates is about right compared to the EIA"s Form 914 actuals for August of 13.053 mmb/d, which is +328,000 b/d vs the EIA weekly estimates of 12.275 mmb/d. 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. The EIA made its first +0.4 mmb/d increase adjustment to the Aug 4 week as a catch up, and then its second +370,000 b/d to the Oct 6 week as a second catch up. On Tuesday, the EIA released its Form 914 data [LINK], which is the EIA's "actuals" for August US oil and natural gas production. The Form 914 actuals for Aug have production at 13.053 mmb/d, which is +328,000 b/d vs the EIA weekly estimates of 12.725 mmb/d. And because of this significant difference, the Form 914 August production is +1.068 mmb/d YoY. The actuals thru August paint a picture of much stronger than expected YoY growth in US oil production.

Figure 23: 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	12,694	12,894	12,959	13,053				
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 24: EIA Form 914 US Oil Production vs Weekly Estimates

Source: EIA, SAF

Oil: US gasoline prices -$0.07 this week to $3.43

US gasoline prices

Biden may not be getting much love in the polls for his handling of the economy but one key item not hurting him right now is gasoline prices. As expected, US gasoline prices were down this week, in great part driven by continuing lower California gasoline prices. Yesterday, AAA reported that US national average prices were down $0.07 this week to $3.43 on Nov 4, which is also down $0.36 MoM vs month ago of $3.79, and also down $0.36 YoY vs year ago of $3.79. Remember US gasoline prices started to ease below $4 in August 2022 and were helped in Q4/22 by the SPR releases.

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

The big reason for the drop in US gasoline prices over the past five weeks was the expected big drop in California gasoline prices following the five weeks ago Gov Newsom move to immediately switch to cheaper winter blend gasoline. Yesterday, AAA reported California average gasoline prices were down $0.14 WoW to $5.17, and now down $0.81 MoM from month ago California prices of $5.98. Here is what we wrote in our Oct 1, 2023 Energy Tidbits memo. "*California gasoline prices to drop as Newsom allows move to winter gas. We expect California gasoline prices to be down this week given Gov Newsom, on Thursday night, has moved an immediate switch to cheaper winter blend fuels. The San Diego Tribune reported [LINK] "In an attempt to curb a recent spike in gasoline prices, Gov. Gavin Newsom late Thursday instructed California regulators to speed the delivery of less expensive winter-blended gas to stations across the state. Winter-blended gas is about 20 to 25 cents per gallon cheaper than summer-blended gas and fuel analysts expect the waiver put in place by the California Air Resources Board at Newsom's behest will lead to a dip in prices within a few days. "This waiver will affect wholesale gas prices probably on*

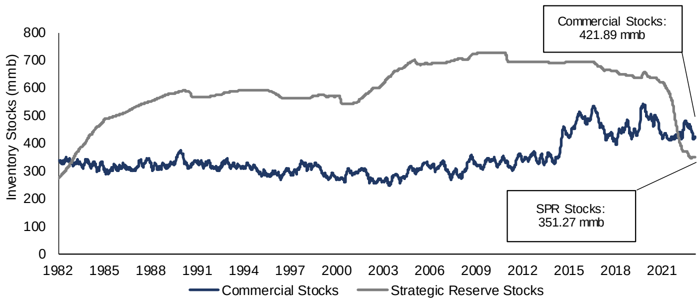
Friday," said Patrick De Haan, head of petroleum analysis at GasBuddy, a tech company that helps drivers across the country find the cheapest places to buy gas. "But there's only one day left in the trading week. That may segue into another drop on Monday and theoretically retailers could be passing that along in lower prices this weekend, but it's not going to be much at first."

Oil: US SPR reserves now -70.619 mmb lower than commercial crude oil reserves

US SPR reserves

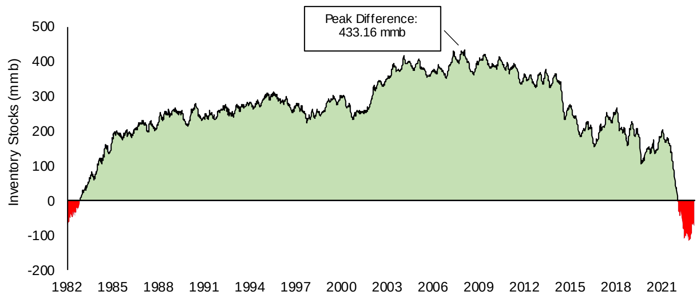
Oil in the US Strategic Petroleum Reserves (SPR) continues to be much lower than total US commercial crude oil reserves. The SPR went back below commercial for the first time since 1983 in the Sept 16, 2022 week. This deficit widened this week after a build in commercial oil stocks of +0.773 mmb. The EIA's weekly oil data for October 27 [LINK] saw the SPR reserves stay flat WoW at 351.274 mmb, while commercial crude oil reserves increased +0.773 mmb to 421.893 mmb. There is now a -70.619 mmb difference between SPR reserves and commercial crude oil reserves. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 25: US Oil Inventories: Commercial & SPR



Source: EIA, SAF

Figure 26: US Oil Inventories: SPR Less Commercial



Source: EIA, SAF

Oil: Crack spreads increased $1.18 WoW to $21.65

Crack spreads up this week

This week, crude oil into refineries were +0.062 mmb/d WoW, which followed last week's down 0.207 mmb/d WoW, and the prior week's +0.193 mmb/d WoW. We remind that oil demand is driven by refiners and their ability to make money by processing oil and selling petroleum products. So crack spreads are a good indicator if refiners will be looking to buy more or less oil. This week, crack spreads were +$1.18 WoW to $21.65 on Nov 3, which followed $20.47 on Oct 27, $21.81 at Oct 20, $20.73 on Oct 13, $19.28 on Oct 6, $22.35 on Sept 29, $26.07 on Sept 22, and $32.48 on Sept 15. Crack spreads at $21.65 are a little above the high end of the more normal pre-Covid that was more like $15-$20, but not high enough to drive any real change in refiner plans..

Explaining 321 crack spread

People often just say “cracks”, which refers to the 321 crack spread. This is the spread or margin that refiners make from buying crude at a certain price and then selling the finished petroleum products at their respective prices. The 321 crack spread is meant to represent what a typical US refinery produces. It assumes that for every three barrels of crude oil, the refinery will produce two barrels of gasoline and one barrel of distillates. So the crack spread is based on that formula and worked back to a crack spread per barrel. Below is the current 321 crack spread, which was $21.65 as of the Friday Nov 3, 2023 close.

Figure 27: Cushing Crude Oil 321 Crack Spread Nov 3, 2013 to Nov 3, 2023

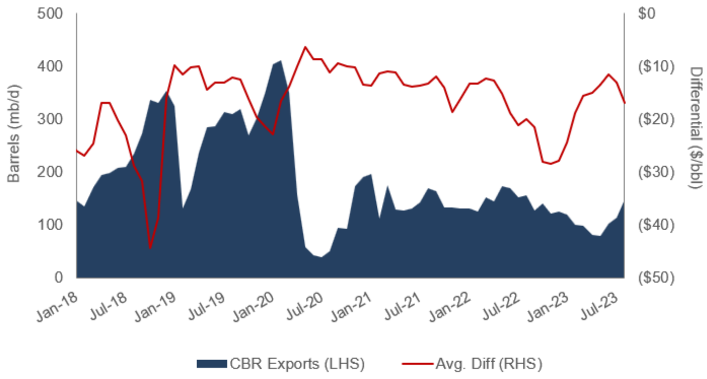
Source: Bloomberg

Oil: Cdn crude by rail exports at 148,651 b/d in August, down -4.2% YoY

Cdn crude by rail down YoY in August

As noted below, we asked (but did not receive a reply) the EIA why their crude by rail imports from Canada data is so different than the CER data for Cdn crude by rail exports to the US. But for now, the CER reported Cdn crude by rail exports were up +34,867 b/d MoM to 148,651 b/d in August vs the 113,784 b/d in July [LINK]. This puts export volumes at -6,495 b/d YoY (-4.2%) vs August 2022 of 155,146 b/d. CBR volumes are +109,784 b/d since the Covid low of 38,867 b/d in July 2020. The WCS–WTI differential still provide the price incentive for crude by rail to the Gulf coast. But May and June and July to a lesser extent were impacted by oil sands maintenance. The CER doesn’t provide any explanation for the MoM changes, but the big MoM increase was likely linked to the slightly less maintenance impact. Below is our graph of Cdn crude by rail exports compared to the WCS–WTI differential.

Figure 28: Cdn Crude By Rail Exports vs WCS Differential



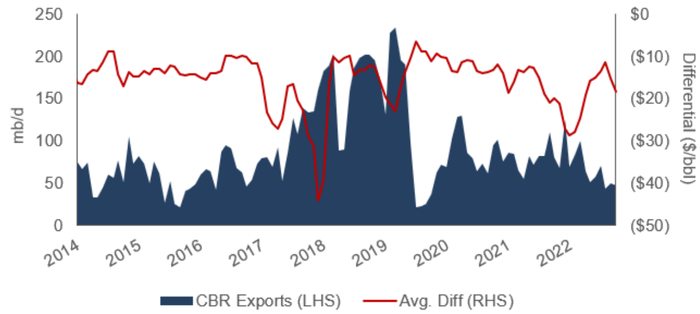
Source: Canadian Energy Regulator, Bloomberg

Oil: EIA estimates total Cdn crude by rail imports down MoM to 56,613 b/d in August

EIA Cdn crude by rail imports

Last month, we reached out to the EIA to ask if they could shed some light on why there might be such a large difference to the CER numbers but they did not respond to our question. Last month, there was a 75,000 b/d difference in what the CER estimated as Cdn crude by rail exports to US in July vs what the EIA estimates as Cdn crude by rail imports from Canada. This month, there is 92,000 b/d difference in what the CER estimates as Cdn crude by rail exports to US in Aug vs what the EIA estimate for crude by rail imports from Canada. We have checked to see if somehow the crude by rail went into the US and was turned around and sent back to Canada via truck, rail or pipeline. But the EIA shows zero crude by rail exports Plus we checked the North Dakota Pipeline Authority monthly report as North Dakota will truck oil into Canada and the NDPA showed zero such volumes in July and small amounts in Aug. Our only explanation was that the higher amount of Cdn crude by rail exports to the US is railed to the GoM and directly put on tankers for export from the GoM. That way they wouldn't be included in the EIA's ~30,000 b/d of crude oil by rail imports into PADD 3 in July or the ~47,000 b/d into PADD 3 in Aug. But for now, on Friday, the EIA posted its monthly "U.S. Movements of Crude Oil by Rail" [LINK], which includes the EIA data on US imports of Cdn crude by rail. EIA estimates total US imports of Cdn crude by rail was 56,613 b/d in August, which was down -1,968 b/d MoM from 58,581 b/d in July. US imports of Cdn crude by rail into PADD 3 (Gulf Coast) were 47,097 b/d in August which is down -3,419 b/d MoM from 50,516 in July. The EIA did not comment on the MoM changes. Below is our graph of Cdn CBR exports to the Gulf Coast and WCS differential over time.

Figure 29: Canada CBR Exports to US Gulf Coast vs WCS Differential



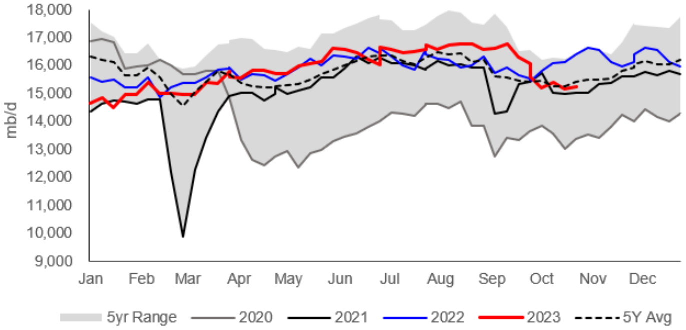
Source: EIA, Bloomberg

Oil: Refinery inputs up +0.062 mmb/d WoW to 15.251 mmb/d

Refinery inputs +0.062 mmb/d WoW

There are always unplanned issues that impact crude oil inputs into refineries, but refineries around the world follow seasonal patterns for their maintenance. There was the normal summer ramp up that lasted a little longer than normal given the big crack spreads. We saw the decline in crude oil inputs for the fall turnarounds, but it looks like US refineries are mostly coming out of turnarounds so we should start to see a steady increase in crude inputs. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended October 27 [LINK]. The EIA reported crude inputs to refineries were up +0.062 mmb/d this week to 15.251 mmb/d and are down -0.591 mmb/d YoY. Refinery utilization was down -0.2% WoW to 85.4%, which is -5.2% YoY. We likely hit the seasonal peak in refining last month.

Figure 30: US Refinery Crude Oil Inputs



Source: EIA, SAF

Oil: US net oil imports +0.348 mmb/d WoW as oil exports up +0.064 mmb/d WoW

US net oil imports

The EIA reported US "NET" imports were up +0.348 mmb/d to 1.528 mmb/d for the October 27 week. US imports were up +0.412 mmb/d to 6.425 mmb/d, which is among the low points for the last few months. (i) Venezuela weekly imports. We know why the EIA doesn't have any data in the row for Venezuela weekly oil imports but we still don't know if the weekly oil imports are off or if Venezuela is included in the weekly oil imports in the Others number. But we do know that Chevron continues to import >100,000 b/d from Venezuela into the Gulf Coast. Give the EIA credit for putting out weekly oil import estimates, but it's a reminder that we have to be careful about using the weekly oil import estimates. Rather we need to make sure we go to the monthly data for oil imports. ii) The WoW increase in US imports was driven mostly by "Top 10". Top 10 was up +0.392 mmb/d. Some items to note on the country data: (i) Canada was up +0.098 mmb/d to 3.485 mmb/d. (ii) Saudi Arabia was down -0.142 mmb/d to 0.294 mmb/d. (iii) Mexico was up +0.390 mmb/d to 1.004 mmb/d. (iv) Colombia was down -0.072 mmb/d to 0.074 mmb/d. (v) Iraq was up +0.169 mmb/d to 0.351 mmb/d. (vi) Ecuador was up +0.041 mmb/d to 0.133 mmb/d. (vii) Nigeria was down -0.059 mmb/d to 0.030 mmb/d.

Figure 31: US Weekly Preliminary Imports by Major Country

(thousand b/d)	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	Sep 8/23	Sep 15/23	Sep 22/23	Sep 29/23	Oct 6/23	Oct 13/23	Oct 20/23	Oct 27/23	WoW
Canada	3,385	3,698	3,203	3,691	3,466	3,505	3,832	3,405	3,679	3,645	3,287	3,880	3,291	3,544	3,723	3,387	3,485	98
Saudi Arabia	444	426	242	427	330	285	221	462	567	383	383	383	291	67	208	436	294	-142
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	526	1,004	830	760	667	901	780	437	699	1,095	603	844	524	656	609	614	1,004	390
Colombia	153	215	287	290	296	75	290	295	300	211	287	286	143	289	150	146	74	-72
Iraq	134	259	273	235	305	304	283	232	100	248	233	280	306	247	127	182	351	169
Ecuador	144	207	216	175	142	363	192	328	99	0	134	167	125	0	0	92	133	41
Nigeria	189	91	229	94	237	307	89	144	220	219	0	3	0	46	48	89	30	-59
Brazil	43	357	216	103	280	130	198	245	68	545	209	240	209	362	63	221	168	0
Libya	0	0	0	0	87	83	85	0	90	0	0	0	89	88	47	86	106	0
Top 10	5,018	6,257	5,496	5,775	5,810	5,953	5,970	5,548	5,822	6,346	5,136	6,083	4,978	5,299	4,975	5,253	5,645	392
Others	862	917	871	893	872	1,205	963	1,069	948	1,236	1,381	1,146	1,237	1,030	967	760	780	20
Total US	5,880	7,174	6,367	6,668	6,682	7,158	6,933	6,617	6,770	7,582	6,517	7,229	6,215	6,329	5,942	6,013	6,425	412

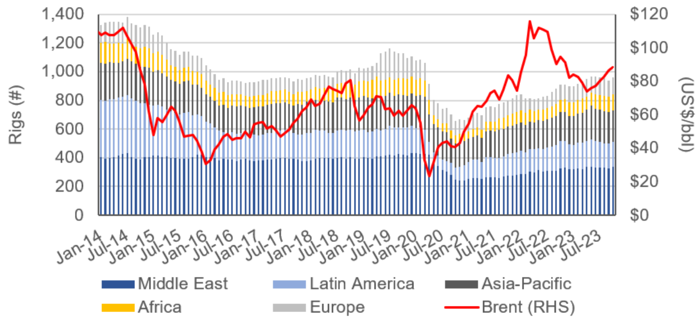
Source: EIA, SAF

Oil: Baker Hughes International rigs +22 MoM to 962 rigs in October

International rigs +22 MoM in October

On Friday, Baker Hughes posted its monthly update to international rigs, in total, that show rigs in October increased MoM. (i) Total international rigs increased by +22 rigs MoM to 962 rigs in October, and total rigs are now up +156 rigs from the recent low of 806 in April 2022. (ii) Turkey and Libya had the largest MoM increases of +5 to 22 rigs and +4 to 18 rigs, respectively. In October, Ukraine's rigs were flat at 46 rigs and is +19 rigs YoY from 27 rigs in October 2022 post the Russia invasion. In contrast, Nigeria, Thailand, Vietnam had the largest MoM decreases of -2 to 13 rigs, -2 to 13 rigs, and -2 to 1 rig, respectively. (iii) Libya, Saudi Arabia, and China are up +12 rigs, +7 rigs, and +8 rigs YoY. The largest YoY decreases were realized by Colombia and Kuwait which had declines of -10 rigs and -6 rigs, respectively. (iv) October's count of 962 rigs was +6% YoY from 911 in October 2022, and down -15% vs pre-Covid October 2019 of 1,130 rigs. The YoY rig count is as follows: Africa +27, Asia-Pacific +11, Europe +15, Latin America -13, and the Middle East +11. (v) Rig counts continue to be solid in the major Persian Gulf countries but remain below pre-Covid levels. Since February 2022, Saudi Arabia has added +19 rigs to 86 active rigs in October 2023, while UAE (Abu Dhabi) added +25 rigs and Iraq added +16 rigs each over the same period. Below is our graph of international rigs by region and avg monthly Brent price.

Figure 32: Baker Hughes International Rig Count and Brent Price



Source: Baker Hughes, Bloomberg, SAF

Oil: Will Biden rescind Venezuela reopening now that Maduro violates commitments

Maduro violates his commitments

There is a good test happening now for Biden on what does he does he do with his reopening of Venezuela oi land gas from three weeks ago. It looks like Maduro has already violated his commitments that led to Biden reopening Venezuela oil and gas sector. (i) As of our 7am MT news cut off, we still have not seen any statement of if the US plans to review and reverse its reopening following what appears to be a direct Maduro violation of the Venezuela commitment to open elections that led to Biden's relaxation of oil and gas sanctions. (ii) Maduro's violation. It only took eight days for Venezuela to move to against the opposition and against what Maduro promised to the US that led to Biden opening up access to Venezuela oil and gas. On Monday, Bloomberg reported that Venezuela Supreme Justice Tribunal announced it had suspended the results of the opposition primary vote on Oct 22 that elected primary's winner Maria Corina Machado. Venezuela voiding the election of the opposition winner looks like a pretty clear violation. (iii) On Tuesday, we tweeted [LINK] "*How can #Biden not rescind 10/18 license for reopening VEN #Oil #NatGas. "The U.S. government retains the authority to rescind authorizations should the representatives of Maduro fail to follow through on their commitments..." Assume US also looking at $CVX VEN license. #OOTT.*" (iv) The US opened up Venezuela oil and gas "*In response to the signing of an electoral roadmap agreement between Venezuela's Unitary Platform and representatives of Maduro, and in support of the Venezuelan people, the U.S. Department of the Treasury's Office of Foreign Assets Control (OFAC) today issued 4 General Licenses suspending select sanctions. Under Secretary of the Treasury for Terrorism and Financial Intelligence Brian E. Nelson issued the following statement on the General Licenses: "The United States welcomes the signing of an electoral roadmap agreement between the Unitary Platform and Maduro representatives. Consistent with U.S. sanctions policy, in response to these democratic developments, the U.S. Department of the Treasury has issued General Licenses authorizing transactions involving Venezuela's oil and gas sector and gold sector, as well as removing the ban on secondary trading. Treasury is prepared to amend or revoke authorizations at any time, should representatives of Maduro fail to follow through on their commitments. All other restrictions imposed by the United States on Venezuela remain in place, and we will continue to hold bad actors accountable.".* (v) It seems hard to see how Biden overlooks this Venezuela move so will he rescind the reopening of Venezuela oil and gas?

Will companies still move ahead on investing capital?

We have to believe companies have to wonder if Biden will rescind the licenses given this looks to be Maduro backtracking on the Venezuela commitments. But, even if Biden hasn't rescinded yet, we have to wonder if companies and their board of directors will be prepared to still move ahead on investing capital under this question. Surely, investors would question investing capital knowing Venezuela has moved to suspend the election of the opposition leader for the next Venezuela election.

Biden reopened based on Venezuela and opposition sign Partial Agreements

Here is what we wrote in our Oct 22, 2023 Energy Tidbits memo. "As expected, Venezuela and the opposition signed agreements that have led to Biden opening up more oil and gas. We recognize that the Biden Administration have used this to relax to some degree their sanctions on Venezuela oil and gas. But we can't help read the Norway release and wonder if the pathway to elections will be as smooth as some think. Norway has been facilitating the talks and ,on Tuesday, Norway had a short announcement [LINK] " *Joint Statement from the Venezuela Dialogue and Negotiation Process. In accordance with the Memorandum of Understanding signed on 13 August 2021 in Mexico City, the Government of the Bolivarian Republic of Venezuela and the Unitary Platform of Venezuela have resumed the Venezuela Dialogue and Negotiation Process on Venezuela. At today's session in Barbados, the parties signed a Partial Agreement on the Promotion of Political Rights and Electoral Guarantees for All, in accordance with the provisions of paragraphs 1 and 2 of the Agenda, referring to "Political Rights for All" and "Electoral Guarantees for All". In addition, they signed a Partial Agreement for the Protection of the Vital Interests of the Nation, with the purpose of preserving the assets of the Republic abroad, as well as defending Venezuelan territorial integrity and national sovereignty. Finally, they thanked the Facilitator for the Kingdom of Norway, the accompanying countries the Kingdom of the Netherlands and the Russian Federation, and the host country for this fifth round, the Republic of Barbados."*

Biden general license opens up Venezuela oil BUT it is only a 6-mth license.
Here is another item from our Oct 22, 2023 Energy Tidbits memo. "*We highlight the same caveat that we did when Biden gave Chevron it's license – the license is only for 6-months. The general license is good as it applies to basically all Venezuela oil and gas excluding those involving Russia. But the US Treasure stated the license can be revoked at any time and the license expires on April 18, 2024, although they say their intention is to renew if Maduro keeps his side of the bargain. We encourage people to read the Treasury Dept FAQ as it provides needed color to a short release. It looks to be a good license as it also allows the "provisions of related goods and services" and "the payment of invoices for goods and services related to oil or gas sector operations in Venezuela." This is important as it allows the oil and gas companies to do what they need to increase production. Our Supplemental Documents package includes the Treasury Dept release and FAQ*."

How much more VEN oil depends on how much capital under a 6-mth license
Here is another item from our Oct 22, 2023 Energy Tidbits memo. "*It seemed like common estimate being used is that Venezuela oil production could increase by 200,000 b/d in 2024 with the Biden licenses. (i) The big wildcard for production increases will be how much capital will oil companies spend knowing the license terminates on April 18, 2024 unless the US renews the license. And the other caveat that the US can revoke the license at any time if Maduro doesn't deliver as committed. This general license doesn't have the benefit of the Chevron license that was on a rolling 6-month term unless revoked. (ii) We think the likely scenario is much like Chevron – a go slow scenario without big capex given the short term. Rather the oil companies will pick off low hanging fruit with little capex. But, even so, we think at least a 200,000 b/d increase is reasonable even if the oil companies take a Chevron approach and not implement any big drilling programs. Ie. we think there should be at least 200,000 b/d of low hanging fruit even before any major drilling program. This could include items like pumpjack replacements, bringing in diluent, adding equipment repairs, well workovers, etc."*

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

Here is another item from Oct 22, 2023 Energy Tidbits memo. "*We highlight that the key for the timing of increasing Venezuela oil production will be how much capital is invested to restore and grow Venezuela oil production. Here is what we wrote in our Aug 27, 2023 Energy Tidbits memo with the then reports that US was looking at this lifting of sanctions. Here is what we then wrote "Oil markets should be prepared for the risk that there is addition oil supply coming from Venezuela in 2024. No one should be surprised to see the Bloomberg Wednesday report "The Biden administration is in talks with Venezuela to explore a temporary lifting of crippling sanctions in exchange for allowing fair elections next year. The preliminary discussions involve senior officials from both nations, including Venezuela's head of congress Jorge Rodríguez, according to people familiar with the process, who asked not to be identified. Washington has floated the idea of sanctions relief to persuade the regime of President Nicolás Maduro to hold a competitive presidential vote in 2024, and free political prisoners. Sanctions have aggravated Venezuela's economic and humanitarian crisis by hindering oil sales, though failed in their original objective of ousting Maduro. If a deal is reached, the US would grant a license to lift some or all of Venezuela's sanctions temporarily." And "Should Venezuela take concrete actions toward restoring democracy, leading to free and fair elections, we are prepared to provide corresponding sanctions relief," said Adrienne Watson, a spokeswoman for the White House's National Security Council, in a written response to questions." This fits the thesis (we share) that Biden is looking ahead to the 2024 election and looking for items to help him lower oil prices to flow thru to lower US gasoline prices given he used up his SPR help to lower US gasoline prices for the 2022 mid-terms. It's preliminary and there is no guarantee that it will happen. However, it makes sense that they are having discussions now to have the chance of any deal for 2024. What isn't clear is what is corresponding sanctions relief? The number one issue that Biden has wanted is free and fair elections so we would assume that would lead to lifting oil sanctions. The other interesting part is that the US says "taking concrete actions toward…", which means this could happen before any elections. This is why we highlight this item, the inference is that some sort of preliminary deal could see lifting of sanctions on Venezuela oil in early 2024."*

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

One of the key factors for how much Venezuela can increase oil is what does the Biden Administration do with respect to its license to Chevron. It is important to remember that Chevron has been on a go-slow plan in Venezuela. Its licence is for six months but renewable every month so Chevron never has more than six months visibility that it can work here. And that without visibility to longer than six months, it hasn't committed to drill wells and make big infra capex spending. If Biden gives Chevron the green light for a longer period (ie. 2 years or so) it will open up the potential for big production and exports increases for Venezuela. Here is what we wrote in our Dec 25, 2022 Energy Tidbits memo. "*There was an overlooked Argus report on Wed [LINK] "High hurdles to grow Chevron's Venezuela oil output." It was likely overlooked for the title of the report. (i) But, yesterday, we tweeted [LINK] "Tip of the Iceberg! Chevron VEN Nov production is ~90,000 b/d, 1,400 wells, ~65 b/d ave well. Note 👇category 2: ~8,700 wells need ~$0.5 mm/well to become operational. At 65 b/d ave = ~550,000 b/d capacity add without drilling one well. Thx*

@ArgusMedia Carlos Camacho! #OOTT." (ii) The Argus report reminds of the huge near term upside For Chevron to add production in Venezuela without drilling one well. (iii) Recall that the US only gave a waiver for six months. It s a rolling six-month waiver as the current month ends so it's basically saying to Chevron you have six months from today, but no guarantee for longer. This lack of visibility beyond the six-month window is why Chevron CEO said they aren't planning to do any drilling within six months. Rather working to move the existing oil in inventory and do some well reworking. (iv) Chevron's go-slow plan looks to add >110,000 b/d in the next six months in the Occiente basin. I think most refer to it as the Oriente Basin. Production was 150,000 b/d early this year and is down to 90,000 b/d in Nov. Argus reports "An internal Chevron plan to increase Venezuelan oil production to 200,000 b/d by mid-2023 relies on efforts to rehabilitate some 18,000 wells in various states of disrepair in the country's once-prolific Occidente region". This addition makes sense given the rolling six-month term and what we call the go-slow plan. (v) Adding >110,000 b/d by mid-203 is the Tip of the Iceberg. (vi) We believe Chevron could crank up to add another 200,000 b/d by end of 2023, and a further 200,000 b/d or likely a lot more in 2024. We don't think it's unreasonable to see this up at 500,000 b/d to 1,000,000 b/d in two years if Chevron moves from a go-slow to a get-at-it plan. And this is without drilling one new well. This Argus report shows these elements. (vii) There is so much low-hanging fruit to Chevron to grow Venezuela oil production without drilling any wells. It's all existing wells that need some sort of work or power. (viii) Remember, this is apart from the previously reported 1.79 mmb of oil in storage ready for export. (ix) Argus reporting on an internal Chevron plan. Says "Occidente" region was 150,000 b/d earlier in 2022, but is now down to 90,000 b/d in Nov. Says there are 18,000 wells in total. But only 1,400 producing wells, that is ~65 bpd per well on average. Remember, this is in an industry starved for capital, equipment and basic operating efforts. The question is how much would these 1,400 producing wells be producing with proper maintenance, etc? we suspect a lot more than 65 bpd, would guess something over 100 bpd on average. Category 1 is producing wells. ~7% or 1,400 wells producing oil "but many at decline rates". As noted, these are on average producing 65 bpd. They don't say it, but these heavy oil wells are all likely now or soon to be candidates to reworking so we would expect also some upside here to effectively hold production if not increase. Category 2 is the huge low hanging fruit with "About 8,700 wells fall into Category 2, which includes non-operating wells that may just need minor work to become operational. These wells may need around $500, 000 each in new investment to be viable, according to sources familiar with the field." If we use the current producing average of 65 bpd, that is ~550,000 b/d of incremental production capacity for $4.35 billion. That assumes the 65 b/d average. Is it reasonable to assume the average as these are wells that down for some reason? If Chevron is prepared to spend $500,000 per well, it's safe to say these aren't stripper wells that produce a very low amount of production. Rather, we can't believe Chevron would put in this category any wells that aren't capable of a decent level of production and we suspect much more than the average well of 65 b/d. Again, this is not drilling, rather we expect well cleanouts, reworking, etc. If use 100 bpd, that is 870,000 bpd of incremental production capacity. Category 3 "are more than 7,900 wells that need between $5mn-$6mn of investment each to be commercially viable". We are not clear what is required here. Plus upside from wells that don't fit in to category, 1, 2 or 3. Argus notes 'Hundreds

of wells in the PdV report are reportedly shut down just for a lack of reliable electricity, which plagues many parts of the country". This is where something like diesel power generation comes into play. The reality is that reliable power is something that is also involved in the above categories. Our Supplemental Documents package includes the Argus report."

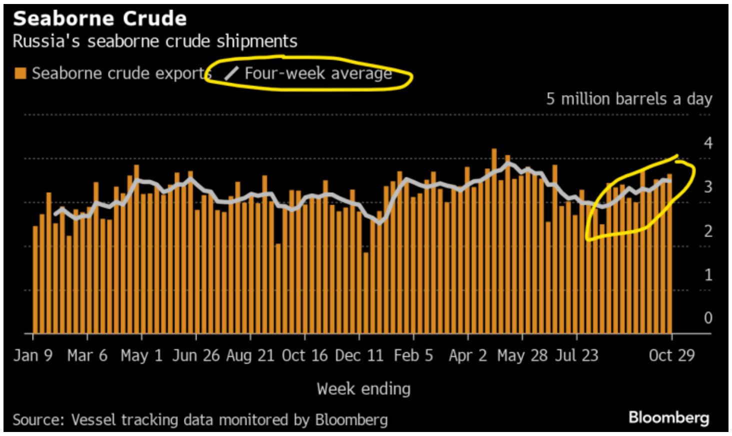
03/22/22. Chevron said could double Venezuela's 800,000 b/d within months
We continue to believe there can be big near-term growth in Venezuela oil production if the Biden licenses had a longer term. We don't see the continued 6-month terms being enough to give Chevron the confidence to drive ahead as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

Oil: Russia oil shipments still +200,000 vs commit to cut shipments by 300,000 b/d

Russia oil shipments above commitment

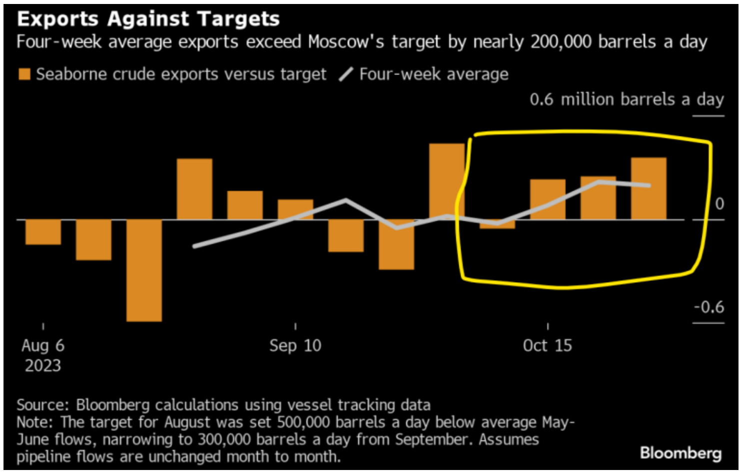
It was the 3rd consecutive week for Russian crude oil shipments to be higher than its commitment for a voluntary cut to its shipments by 300,000 b/d thru year end. The Bloomberg crude oil shipments tracking shows Russia has met its commitments on 6 of the last 13 weeks. However, we are still expecting some near-term reduction of exports in the coming weeks with Russia oil refineries coming off maintenance. On Tuesday, we tweeted [LINK] "*Russia keeps shipping more #Oil than committed. See 👇@JLeeEnergy great weekly recap. 10/29 wk: +110 kbd to 3.64 mmbd. brings 4-wk ave to ~200 kbd over committed. RUS refinery maintenance ending so should reduce shipments. #OOTT.*" Bloomberg reported on Russia crude oil shipments for the week ended Oct 29. Bloomberg reported "*Russia's oil flows climbed for a third week, with shipments exceeding a target set as part of a pact with Saudi Arabia to keep barrels off the market and adding to supply even as the demand outlook weakens. About 3.64 million barrels a day of crude was shipped from Russian ports in the week to Oct. 29, an increase of 110,000 barrels a day from the previous seven days, tanker-tracking data monitored by Bloomberg show. Despite that gain, the less volatile four-week average edged lower to 3.48 million barrels a day, down by about 20,000 barrels a day from the period to Oct. 22.*" And "*Deputy Prime Minister Alexander Novak said in early August that Moscow would prolong export restrictions at a reduced level of 300,000 barrels a day below their May-June average until the end of the year. Bloomberg calculations indicate that shipments through ports should be running now at about 3.28 million barrels a day. Weekly* *shipments exceeded Moscow's target by the most in four weeks, overshooting by about 360,000 barrels a day. Despite edging lower, four-week average volumes exceeded it by almost 200,000 barrels a day in the most recent period."* Our Supplemental Documents package includes the Bloomberg report.

Figure 33: Russia's seaborne crude shipments thru Oct 29 week



Source: Bloomberg

Figure 34: Exports Against Targets Last 12 Weeks thru Oct 29 week



Source: Bloomberg

Oil: Russia oil refineries coming off maintenance, should reduce exports

Russia oil refineries coming off maintenance

Assuming Russia doesn't increase oil production, there should be some natural reduction of its oil shipments to export markets as Russian oil refineries are coming off fall maintenance. Last Sunday afternoon, Bloomberg reported "*Russian oil processing climbed to a seven-week high as the country's refineries return from seasonal maintenance. The nation processed 5.48 million barrels a day in the seven days through Oct. 25, according to a person with knowledge of the matter. That's almost 210,000 barrels a day more than in* *the previous week, Bloomberg calculations based on historic data show. Refinery runs have improved as routine maintenance that's set to run through next month draws to an end. That has boosted Russia's average daily processing during the Oct. 1-25 period to 5.31 million barrels a day, though that's still below the 5.38 million barrels a day for most of September, the calculations show."* And "*Russian refineries will keep raising processing rates, according to Viktor Katona, head crude analyst at market intelligence firm Kpler. An extra 250,000 barrels a day of primary capacity will come back online in the second week of November as maintenance ends, he said."*

Oil: Russia needing increasing munitions (artillery shells) from North Korea

Russia needs more artillery shells from North Korea

One of the big and growing issues for all the major participants in wars is munitions supply, whether it be the Ukraine, Russia, Israel or Hamas. In Russia's case, there are limited countries who will/can supply munitions to Russia and one is North Korea. And it looks like Russia is needing more and more from North Korea and one of the major shortages for all sides is the basic artillery shell. On Thursday, the Korea Herald (and other Korean media) reported [LINK] "*North Korea might have provided Russia with short-range ballistic missiles and portable anti-aircraft missiles in addition to artillery rounds for its war in Ukraine, a senior South Korean military official said Thursday. The Joint Chiefs of Staff made the assessment amid concerns over increasing military cooperation between Pyongyang and Moscow following the rare summit between North Korean leader Kim Jong-un and Russian President Vladimir Putin in September. Military officials estimated about 2,000 containers of military equipment and munitions were shipped from North Korea's northeastern port of Rajin to Vladivostok in Russia's Far East, which is sharply up from 1,000 containers revealed by the White House on Oct. 13 citing satellite imagery taken in September. The volume is presumed to be capable of loading over 200,000 rounds of 122 mm artillery shells or over 1 million rounds of 152 mm shells, which are used by both countries."* Our Supplemental Documents package includes the Korea Herald report.

WSJ: Cost of standard 155mm artillery shells is up 4x in since Russia/Ukraine

Last Sunday, the WSJ posted its story "*Wars Push Up Demand for Weapons, Sparking Fears of Shortages".* The report is about the concerns for the west to keep up with munitions for Ukraine and Israel. However, the story also notes how the cost of munitions is up 4x since Russia/Ukraine. The WSJ wrote "*With demand increasing faster than production, prices of some supplies have soared. NATO-standard 155-millimeter artillery shells, one of the West's most basic armaments, had cost governments about $2,100 apiece before Russia's invasion of Ukraine last year, said Dutch Admiral Rob Bauer, Stoltenberg's top military adviser, at the NATO forum. The price of those shells, which Bauer dubbed "one of the most coveted objects in the world right now," has increased fourfold, to about $8,400, he said*." Our Supplemental Documents package includes the WSJ report.

Oil: TASS ""*We have only one Putin." Peskov on the president's "doubles*"

TASS says "*only one Putin"*

We couldn't' help think of the classic line from Hamlet ""*The lady doth protest too much, methinks"* when we saw yesterday's TASS report "*We have only one Putin." Peskov on the president's "doubles".* [LINK]. Everyone has seen the speculation that Putin uses multiple body doubles. So it was interesting to see Kremlin spokesperson Peskov address this. TASS wrote ""*We have only one Putin." Peskov on the president's "doubles". According to the press secretary of the Russian leader, many curiosities are now appearing in the media* *and Telegram channels. Press Secretary of the President of the Russian Federation Dmitry Peskov dispelled myths about the "doubles" of Vladimir Putin. We have only one Putin!" said the Kremlin spokesman, speaking at the Znanie Society's marathon at the Russia exhibition-forum. According to Peskov, many curiosities are now appearing in the media and Telegram channels. As an example, he cited "information" about the "doubles" of the head of state. "Now the 'experts' are guessing - there are three or four of them and who we now see every day - this morning they laid [flowers] at [the monument] to Minin and Pozharsky - this is the third or fourth 'double', it is not clear," Putin's press secretary laughed."*

Red Sea missiles

Oil: More Red Sea missiles, surely added risk to shipping in Red Sea/Bab el Mandeb
We believe that if the level of military action that has happened in the Red Sea had been happening in the Persian Gulf, oil prices would be way higher. Imagine if the US shot down 4 cruise missiles and 30 drones in the Persian Gulf and more cruise missiles and drones were shot down at the north end of the Red Sea. There was more action this week in the Red Sea. We just have to think there is added risk to ships in the Red sea when there are more missiles being launched and shot down. It's not On Thursday, we tweeted [LINK] "*Suez Canal 101. - Houthis to continue missile/drones at ISR. - IDF says Houthi missiles/drones shot down OVER the Red Sea. - IDF says increasing navy ships IN Red Sea. - US/ISR ships aren't down at Bab el Mandeb. 👇Surely added risk to tankers/cargo in Red Sea/Mandeb & Suez? #OOTT.* We certainly don't dispute that the Strait of Hormuz is the most important potential shipping chokepoint for oil and LNG transit and that continues to be the primary worry/focus for most wondering if the Israel/Hamas war expands to a regional war involving Iran. But the reality so far is that there is increasing military action in the Red Sea thanks to the Houthis. We start our tweet Suez Canal 101 because people overlook that every tanker or cargo ship that goes thru the Suez Canal has to also go thru the Red Sea and Bab el Mandeb.

Over 6 mmb/d of oil & products is tankered thru the Bab el-Mandeb
Here is another item from our Aug 1, 2021 Energy Tidbits memo. "*The Bab el-Mandeb is one of the world's most significant chokepoints for moving oil and petroleum products. The EIA Aug 27, 2019 brief "The Bab el-Mandeb Strait is a strategic route for oil and natural gas shipments" reminds "The Bab el-Mandeb Strait is a sea route chokepoint between the Horn of Africa and the Middle East, connecting the Red Sea to the Gulf of Aden and Arabian Sea. Most exports of petroleum and natural gas from the Persian Gulf that transit the Suez Canal or the SUMED Pipeline pass through both the Bab el-Mandeb and the Strait of Hormuz." And the EIA estimates "In 2018, an estimated 6.2 million barrels per day (b/d) of crude oil, condensate, and refined petroleum products flowed through the Bab el-Mandeb Strait toward Europe, the United States, and Asia, an increase from 5.1 million b/d in 2014. Total petroleum flows through the Bab el-Mandeb Strait accounted for about 9% of total seaborne-traded petroleum (crude oil and refined petroleum products) in 2017. About 3.6 million b/d moved north toward Europe; another 2.6 million b/d flowed in the opposite direction mainly to Asian markets such as Singapore, China, and India". Our Supplemental Documents package includes the EIA brief [LINK].*

Figure 35: Bab el-Mandeb Strait, a world oil chokepoint

Source: EIA

Oil: Iran still warning, but not yet getting drawn directly into the Israel/Hamas war

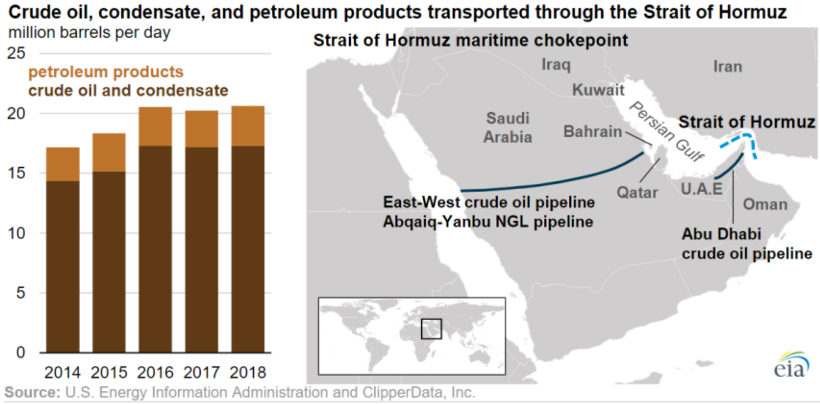
Will Iran be drawn in?

Iran continues to warn of the risk with escalation of Israel's attacks on Hamas but, as of our 7am MT news cut off, we still have not see any reports that expecting Iran's warnings is about to lead to Iran joining the war. However, Iran's potential involvement is still the major risk for Israel and its allies. We still don't think markets are reflecting any probability for Iran to directly enter the war otherwise there would be a big risk premium in oil prices. We agree that no one knows what would play out and for how long. And who would be involved if somehow Iran gets directly involved. But the potential risk to oil supply is huge if oil, petroleum products and LNG shipments get interrupted/stopped in the Strait of Hormuz, or if there are missile/attacks on Iran and other Persian Gulf oil wells, production facilities or export terminals. This would be brutal. The risk is there that Iran gets drawn in or decides it is obligated to join in.

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

On Oct 15, we tweeted [LINK] "*Reminder any military conflict that interrupts tankers via Strait of Hormuz will have a huge impact. It is the most important tanker transit chokepoint for #Oil #PetroleumProducts #LNG tankers. See 👇 @EIAgov Strait of Hormuz, it's 4-yrs old but still makes the point. #OOTT."* The Strait of Hormuz is the most important chokepoint for global oil and LNG shipping. This EIA blog is four years old, but still provides an excellent recap of the significance of the Strait of Hormuz. We recommend adding the June 20, 2019 EIA brief "*The Strait of Hormuz is the world's most important oil transit chokepoint"* to reference libraries. The brief reminds that 17.3 mmb/d of crude oil and condensate flows thru the Strait of Hormuz, but also highlights there is 3.3 mmb/d of petroleum products and over 11 bcf/d of LNG flows thru the Strait. The significance is that the EIA the liquids flows are "*equivalent of about 21% of global petroleum liquids consumption".* This is of total global consumption, not of global oil import/export volumes. The brief also notes "*There are limited options to bypass the Strait of Hormuz. Only Saudi Arabia and the United Arab Emirates have pipelines that can ship crude oil outside the Persian Gulf and have the additional pipeline capacity to circumvent the Strait of Hormuz. At the end of 2018, the total available crude oil pipeline capacity from the two countries combined was estimated at 6.5 million b/d. In that year, 2.7 million b/d of crude oil moved through the pipelines, leaving about 3.8 million b/d of unused capacity that* *could have bypassed the strait*". Our Supplemental Documents package includes the EIA brief.

Figure 36: Crude oil, Condensate & Petroleum Products Flows Thru Strait of Hormuz



Source: EIA

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

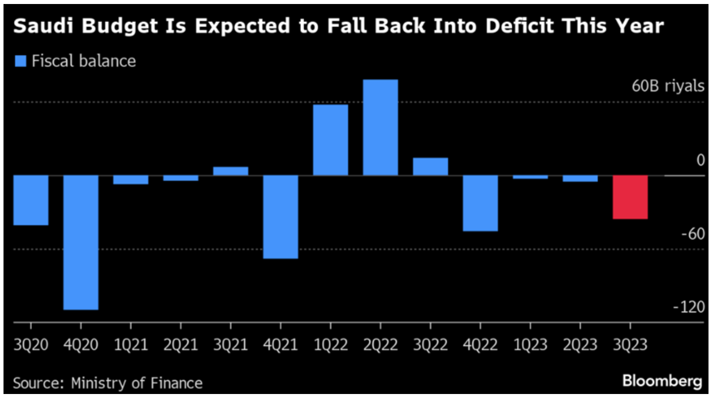
Saudi oil cuts

We heard a number of oil watchers comment this week on when will Saudi add back its voluntary 1 mmb/d cuts that, as of now, are only in place until the end of Dec. It seemed like more are moving to the cuts continuing past Dec 31. No one knows, but our view is unchanged – absent a major oil supply interruption, we don't see Saudi Arabia adding back oil to physical markets until Q2/24. Saudi Arabia knows that oil demand is seasonally lower in Q1 each year vs the preceding Q4. And Saudi Arabia knows China oil stocks are high and refinery margins are low. Our latest tweet on this was on Oct 6 [LINK] "*Beyond headlines, see paragraph 3 "Still, Saudi negotiators emphasized that market conditions would guide any action on production". Hard to see Saudi adding #Oil in early Q1, the seasonally low demand period . But a Q1 decision to add Oil into physical markets in Q2 for seasonal increasing demand could make sense.* #OOTT."

No question it gets tougher financially for Saudi to hold

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

Figure 37: Saudi Budget is Expected to Fall Back into Deficit This Year



Source: Bloomnberg

Oil: It's a different era in Saudi, UAE than in 1973

A different era in Saudi Arabia

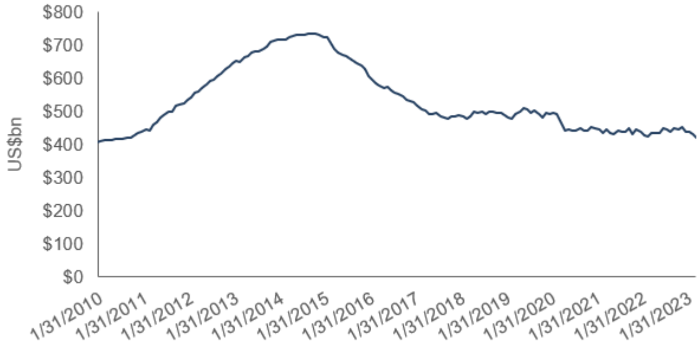
It's hard not to realize that the Arab leaders are very different today than in 1973 when the Yom Kippur war led to the Arab Oil Embargo. Its' a new generation of leaders, especially in Saudi Arabia and UAE. And they have been working to try to bring stability to the region. At the same time, it is also a different oil & LNG world, not just with less reliance on the Middle East but the existence of oil and LNG stockpiles. Don't forget in 1973, the creation of strategic petroleum reserves was the result of the Arab Oil Embargo. And throw on top of that, the need, from Saudi Arabia in particular, to access huge billions of dollars to finance its Vision 2030 and buildup of its non energy economy. The last thing Saudi Arabia wants is a regional war. It doesn't mean to say it won't happen, but we have to think countries like Saudi Arabia and UAE will do all they can to help avoid a regional escalation and avoid any cut off of oil and LNG to the west. It's a tough balancing act as they have to talk tough but try to avoid an escalation.

Oil: Saudi nest egg, its net foreign assets were up $12.8b MoM in September

Saudi net foreign assets

On Tuesday, the Saudi Central Bank (SAMA) released its Monthly Statistical Bulletin for the month of September [LINK]. We continue to believe the #1 financial theme for Saudi Arabia in the 2020s will be their continued, and likely increasing, use of Other People's Money as they try to transition their country to MBS's Vision 2030. We believe this has been obvious with how Saudi Arabia's net foreign assets dropped by 43% or $315.9b over the last nine years. We are surprised that markets and oil watchers didn't seem to pay attention to the Saudi net foreign assets data i.e., what we call their nest egg to help them their push to MBS's Vision 2030. There was a +$12.8b MoM increase to $420.2b vs $407.4b in August. Saudi net foreign assets at September 31 of $420.2b is a decline of 43% or $316.8b over the last 9 years from its peak of $737.0b on Aug 31, 2014. That is an average of $2.9b per month for the last 109 months since the peak. One factor over the last several years is that Saudi Arabia has been moving more capital to its PIF (Public Investment Fund) but those would generally be into less liquid assets. Saudi Arabia is far from going broke but there has been a huge decline in the last 9 years, but it is still a big nest egg. This net foreign asset depletion is why we have been highlighting that the primary financial theme for Saudi Arabia in the 2020s is getting Other People's Money (OPM) to fund as much of their Vision 2030 as possible. And no question, accessing OPM has helped to slow down and temporarily pause the decline in net foreign assets. Below is our graph of Saudi Arabia net foreign assets updated for the September 31 data.

Figure 38: Saudi Arabia Net Foreign Assets



Source: Bloomberg

Oil: Iran oil minister says Iran crude oil production now 3.4 mmb/d

Iran says now at 3.4 mmb/d

Iran continues to deliver on its oil production growth in H2/23. On Wednesday, SHANA (news agency for Iran's oil ministry) reported [LINK] "*Oil Minister Javad Owji on Wednesday announced that Iran's oil production has reached 3.4 million barrels per day (bpd). Speaking to reporters on the sidelines of the weekly cabinet session, the minister said the country's oil output amounted to 2.2m bpd when the incumbent administration took office two years ago. The figure has now soared to 3.4m bpd thanks to the Oil Ministry's measures over the past 24 months, he mentioned.*"

Can or will anyone stop Iran from adding ~0.6 mmb/d to oil markets in H2/23?

No one should be surprised by Iran saying they are at 3.4 mmb/d as they have been warning of their growth in H2/23 from three months ago. Here is what we wrote in our Aug 13, 2023 Energy Tidbits memo that was titled "*Can or Will Anyone Stop Iran Adding ~600,000 b/d to Oil Markets in Next Few Months?.*" "*Iran looks to be an overlooked risk to oil prices in H2/23 and not because of sanctions removal. Rather because they are adding oil production capacity and we don't know who will or can stop them from adding the new oil capacity to oil markets. (i) Earlier this morning, we tweeted [LINK] "Near term Oil hold back. Another Iran reminder today that at 3.2 mmb/d & to exceed 3.3 mmb/d by late Aug. Vs #OPEC MOMR Secondary Sources had Iran at 2.828 mmb/d in July. Who can or will stop Iran from adding up 0.6 mmb/d to #Oil markets in next few mths? #OOTT." It follows our tweet yesterday [LINK] "Who can or will stop Iran from adding up to 0.6 mmbd to #OIl markets over coming mths? Iran not subject to #OPEC quota. US negotiating with Iran on prisoners & releases of Iranian funds. See 👇08/09/23 thread - Iran is #oil supply risk in H2. #OOTT @DanialRahmat12." Our Aug 8, 2023 tweet was [LINK] "Iran near term #Oil supply adds! Given #Biden doesn't have any stroke over #MBS & tapped SPR, wonder if he effectively turns a blind eye as he sees this as a replacement for an SPR release to try to help keep a lid on oil/#Gasoline prices for 2024. Thx @DanialRahmat12! #OOTT. " (ii) On Wednesday, Tehran-based analyst, Danial Rahmat, tweeted [LINK] "CEO of #NIOC: Iran's crude prod. to increase by 150 k b/d in a week. By the end of Sep. 100k b/d will be added and output will reach 3.5 mil.*

b/d. In H2, about $8 b deals will be signed to develop 2 joint fields. #OOTT @Energy_Tidbits @sean_evers @FrankKaneDubai @imannasseri." Rahmat was reporting on comments by National Iranian Oil Company managing director, Khojasteh mehr, at a press conference in Tehran on Aug 9. (iii) Later PressTV (Iran state media) reported on Khojasteh mehr's comments on the press conference. [LINK] "Iran will reach a milestone oil production figure of 3.5 million barrels per day (bpd) in late September, according to the CEO of state oil company NIOC, despite sanctions imposed on the country by the US. Mohsen Khojasteh Mehr said on Wednesday that Iran's oil output will increase by 150,000 bpd within the next week and by another 100,000 bpd by the end of the month to September 22 to reach a total of 3.5 million bpd. The figure would be a major increase from 2.2 million bpd of oil production reported in August 2021 when the current administrative government led by President Raeisi took office, said Khojasteh Mehr. He said the growth in oil output will entirely serve Iran's plans to increase its oil exports." Earlier this morning, our tweet attached the Irna (state media) reporting [LINK] on Iran oil minister saying today that oil production was 3.2 mmb/d and to surpass 3.3 mmb/d by the end of August. (iv) Iran is saying they can hit 3.5 mmb/d in late Sept. Based on this week's OPEC Aug MOMR Secondary Sources production for Iran of 2.828 mmb/d in July, this is an add of >600,000 b/d. We think this is a significant item as we don't see who will or can block Iran from adding these barrels to global markets. Iran is one of three countries not subject to OPEC+ quotas so isn't held back by OPEC+ in increasing production and exports. (v) In theory, Iran is under sanctions but US has turned a blind eye to stopping Iran oil exports. And given the late week breaking news of a potential US/Iran prisoner swap and release of Iran's blocked funds in South Korea, it's hard to see the US stepping up to enforce sanctions. Plus there is the political reality that it's only 15 months to the US 2024 Presidential election. Our Aug 9 tweet said "Given #Biden doesn't have any stroke over #MBS & tapped SPR, wonder if he effectively turns a blind eye as he sees this as a replacement for an SPR release to try to help keep a lid on oil/#Gasoline prices for 2024." US gasoline prices keep inching up. Biden used the SPR to keep a lid on prices in the run up to the 2022 mid-term elections. He doesn't have that cushion now so he can look at Iran's new capacity as a bit of SPR replacement to keep a lid on oil prices."

Oil: Kurdistan blames Iraq for delay in resuming oil exports via Turkey

Kurdistan oil via Turkey

We still don't see any indication when Kurdistan oil will resume oil exports via Turkey. But at least we have clear statements from Kurdistan's President Barazani that Kurdistan blames Iraq for the holdup Yesterday, we tweeted [LINK] "*Still no idea when Kurdistan #Oil exports via Turkey will restart. 👇 @KarwanFaidhiDri reports Kurd Pres Barazani "Now Baghdad is really the issue because Turkey has announced that it is ready and willing to accept" resuming exports. Still outstanding Erbil/Baghdad issues #OOTT."* Yesterday, Rudaw (Kurdistan news) reported [LINK] "*President Barzani blames Iraq for delay in resuming oil exports. Kurdistan Region President Nechirvan Barzani on Friday said Baghdad's failure to pay suitable fees to oil producers is one of the main obstacles to resuming oil exports through Turkey. "Now Baghdad is really the issue because Turkey has announced that it is ready and willing to accept" resuming exports, Barzani told Rudaw's Alla Shally during a press conference in Paris on Friday. Export of Kurdistan Region's oil through the Iraq-Turkey pipeline has been halted since March 23 when a Paris-based arbitration court ruled in favor of Baghdad against Ankara, saying Turkey had breached a 1973 agreement by allowing Erbil* *to begin independent oil exports in 2014. Erbil and Baghdad have had multiple rounds of talks about resuming the exports and Barzani said there are still "some measures" that they need to agree on, including contracts the Kurdistan Regional Government (KRG) has signed with oil companies."* Our Supplemental Documents package includes the Rudaw report.

Still seems this Kurdistan shut-in oil could last for way longer than expected
It's been over seven months since Kurdistan oil exports via Turkey have been shut-in. That's way longer than many expected. Our view is unchanged from before Israel/Hamas war that it seems like this could last for longer than expected. And that there are two deals, not one deal to be made. We have highlighted for weeks that Turkey has an ask on what they want, and we have seen no indication that Iraq and Turkey have reached a deal. And then there is still a Iraq/Kurdistan deal that still is unresolved and being highlighted by Kurdistan President Barazani. It seems like it's in Baghdad's hands and our concern remains that the OPEC+ quotas are to run thru Dec 2024 so Iraq can't crank up production. Iraq's oil exports are flat and it's Kurdistan oil that is being shut-in so, under the continued OPEC+ quota, Baghdad isn't being disadvantaged.

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

Libya oil stable at 1.2 mmb/d

As of our 7am MT news cut off, the latest NOC production update was posted on Friday on the Libya National Oil Corporation Twitter [LINK] and Facebook. The Google Translate was "*Crude oil production reached 1,206,000 barrels per day, and condensate production reached 52,000 barrels per day during the past 24 hours*." This is unchanged from the ~1.2 mmb/d levels over the past several months.

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

China oil softness

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

Oil: China scheduled domestic flights back down to early June levels

China scheduled domestic flights

On Monday, we tweeted [LINK] "*Negative China economy indicator. 1st. China scheduled domestic flights for Oct 24-30 of 92,361, which is back to Jun 6-12 week. 2nd. Big 26% cut* *in lookahead next 4-wks flights to 95,675 vs last wk's next 4-wks of 129,038. Thx @BloombergNEF Claudio Lubis #OOTT."* (i) On Monday, BloombergNEF posted its Aviation Indicators Weekly Oct 30. (ii) Negative. First, like last week, we think the takeaway is negative for China's scheduled domestic flights. The message from the "actuals" for China domestic scheduled flights is that the # of flights is back to early June 6-12 week levels, and we would have expected to see higher than that given China's economy has been looking more like it was bottoming whereas it was very uncertain in early June especially since China was predicting the Covid wave would peak at the end of June. Plus China''s international flights are up since early-June which would increase the need for more domestic flights. China scheduled domestic flights for the 24-30 week were -0.3% WoW to 92,361 flights, which puts scheduled domestic flights back to June 6-12 week of 93,328 flights. Second, there has been a big drop in the lookahead for the next four-weeks. This week's report says the next four-week lookahead is +3.6% over the next four weeks to 95,676 flights, which is down 26% vs last week's Oct 23 report that had scheduled next four weeks flights of 129,038. (iii) China scheduled domestic flights were -0.3% WoW to 92,361 flights for the Oct 24-30 week, which followed 92,638 flights for the Oct 17-23 week, 99,490 flights for the Oct 10-16 week, 101,120 flights for the Oct 3-9 week, 97,009 flights for Sept 26-Oct 2 week and start of Golden Week travel, 95,742 flgiths for the Sept 19-25 week. The last two weeks decrease was more than we would have expected. We had expected a decrease following the big 12-day holiday that combined Mid-Autumn Festival and Golden Week, but we wouldn't have a decrease back to early June levels. Because if we go back to Q2, China was predicting a peak in Covid at the end of June and international flights were way lower than now. More international flights means more domestic flights. And China has been putting a lot of stimulus and the economy has been showing more signs of finding a bottom. So a decrease post the 12-day holiday was expected but not back to June 6-12 levels. (iv) There has been a big reduction to the number of scheduled domestic flights. Today's update says "*The number of scheduled domestic flights is set to grow by 3.6% over the next four weeks to 95,676*." This is down 26% vs last week's (Oct 23 report) that said "*the number of scheduled domestic flights is set to grow by 39.3% over the next four weeks to 129,038*". And that 129,038 was down from the prior week's report that said "*the number of scheduled domestic flights is set to grow by 39.3% over the next four weeks to 129,038*." This small increase over the next for weeks especially considering the expected ramp up in international flights. Today's update says "*Relative to the week starting October 24, the combined number of international flights out of China for seven major airlines - Air China, China Eastern Airlines, China Southern Airlines, Hainan Airlines, Shenzhen Airlines, Sichuan Airlines and Xiamen Airlines - will rise by more than 205 a week to around 3,185 by the last week of November*." Note that 3,185 by the last week of November is down from two week's ago report that said "*will rise by more than 335 a week to around 3,440 by the first week of November*." Below is our running WoW changes from the prior BloombergNEF reports and the BloombergNEF charts from the Oct 30 report.

Figure 39: China scheduled domestic flights from BNEF Aviation Indicators Weekly reports

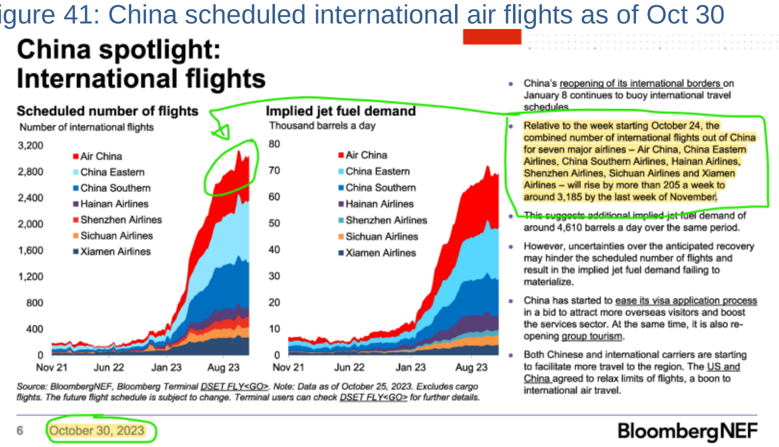
Oct 24-30: -0.3% WoW to 92,361 flights
Oct 17-23: -6.9% WoW to 92,638 flights
Oct 10-16: -1.6% WoW to 99,490 flights
Oct 3-9: +4.2% WoW to 101,120 flights
Sept 26-Oct 2: +1.3% WoW to 97,009 flights
Sept 19-25: essentially flat WoW to 95,742 flights
Sept 12-18: -2.7% WoW to 95,853 flights
Sept 5-11: -5.0% WoW to 98,469
Aug 29-Sep 4: -1.2% WoW to 103,637
Aug 22-28: +0.2% WoW to 104,932
Aug 15-21: -0.1% WoW to 104,716
Aug 8-14: +0.8% WoW to 104,823
Aug 1-7: -0.4% WoW to 104,000
July 25-31: +0.4% WoW to 104,436
July 18-24: +1.3% WoW to 104,011
July 11-17: +2.8% WoW to 102,709
Jul 4-10: +2.4% WoW to 99,904
Jun 27-Jul 3: +1.9% WoW to 97,572
Jun 20-26: +3.4% WoW to 95,724
Jun 13-19: -0.9% WoW to 92,568
June 6-12: -1.2% WoW to 93,328
May 30-Jun 5: +0.2% WoW to 94,486
May 23-29: -0.1% WoW to 94,321
May 16-22: -2.8% WoW to 94,417
May 9-15: basically flat at 97,049
May 2-8: +2.8% WoW to 97,087
Apr 25-May 1: +0.04% to 94,471
Apr 18-24: +2.1% WoW to 94,138
Apr 11-17: +0.7% WoW to 92,231
Apr 3-10: -4.2% WoW to 91,567
Mar 28-apr 3: +6.8% WoW to 95,624
Mar 21-27: +1.5% WoW to 89,513
Mar 14-20: -0.6% WoW to 88,166
Mar 7-13 week: -0.8% WoW to 88,675
Feb 27-Mar 3 week: -2.6% WoW to 89,430
Feb 21-27 week: +0.0% WoW to 91,828
Feb 14-20 week -0.5% WoW to 91,561
Feb 7-13 week -0.7% WoW to 92,007
Jan 31- Feb 6 week +10.9% WoW
Jan 24-30 week -9.2% WoW to 83,500
Jan 17-23 week +7% WoW to 91,959
Jan 10-16 week +20% WoW to 85,910
Jan 3-9 week: -5.3% WoW to 71,642
Dec 27-Jan 2 week: -5.6% WoW to 75,652

Source: BloombergNEF

Figure 40: China scheduled domestic air flights as of Oct 30

Source: BloombergNEF

Figure 41: China scheduled international air flights as of Oct 30



Source: BloombergNEF

Oil: US approved more weekly China/US flights

More China/US flights

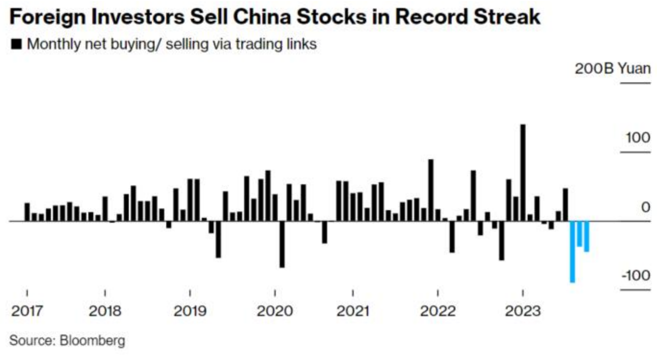
One of the reasons for why China sees a big ramp up in international flights is that, last week, the US approved more China/US flights. Here is what we wrote in last week's (Oct 29, 2023) Energy Tidbits memo. "*Yesterday, we tweeted [LINK] "Approved increase in China flights to/from US. More international flights = more domestic feeder flights. @USDOT approved # of weekly round trips, in aggregate, for major China airlines. Today: 18 wkly round trips. Oct 29: 24. Nov 9: 35. Thx @AirEVthingTRNSP @luzdingyu. #OOTT." On Friday, the US Dept of Transportation posted its order [LINK] that approved new increases, in aggregate, for the China major airlines in weekly round trips between China and the US. The weekly round trips, in aggregate fo the major China airlines went from 18 the other day to 24 as of today and then up to 35 on Nov 9. And as we always remind – more international flights means the need for more domestic feeder flights. Our Supplemental Documents package includes the DOT order."*

Oil: Foreign investors on record pace for net selling of China stocks in 2023

Foreign funds net sellers of China stocks

The net selling by foreign funds in China stocks continued in October for the 3rd big negative month. Oct net selling was $6.1b to bring the last three months to $23.5b. Bloomberg wrote "*The three-month selling streak, a record, amounts to 172 billion yuan and threatens to turn this year's flow into negative territory. If that happens, it would be the first time China saw an annual outflow since the second mainland-Hong Kong trading link opened in late 2016."* We had Bloomberg TV Asia Open on Tuesday night and they highlighted this trend this net selling. We tweeted [LINK] "*Foreign investors continue net selling of China stocks. See 👇 Foreign funds net sellers of $6.1b worth of mainland China shares in Oct. 3-month net outflow of $23.5b and "threatens to turn this year's flow into negative territory". Thx @business John Liu, April Ma. #OOTT."* Below is the Bloomberg graph attached to our tweet.

Figure 42: Foreign Funds Net Buying/Selling in China Stocks



Source: Bloomberg

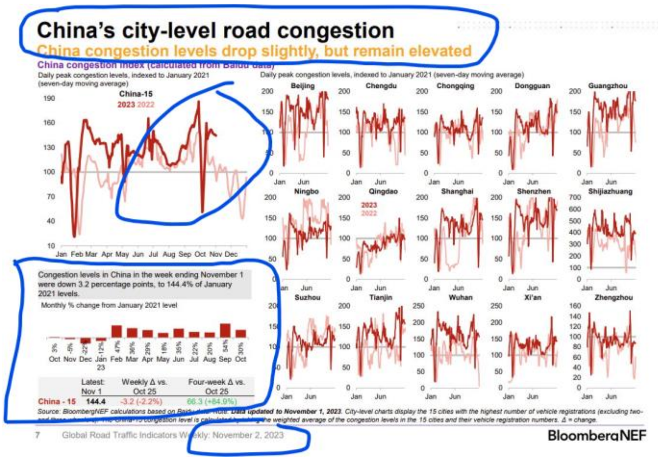
Oil: Baidu China city-level road congestion in Oct 2023 were 116% of Oct 2021 levels

China city-level traffic congestion

The headlines from the BloombergNEF Global Road Traffic Indicators Nov 2 report were ""*China congestion levels drop slightly, but remain elevated*" and "*Traffic levels in October eclipse those of the same month in 2022*". (i) On Thursday, we tweeted [LINK] *"Positive China mobility indicator. China Baidu city-level road congestion for Oct 2023 for Top 15 cities were 116% of Oct 2021 levels. Oct 2022 was 90% of Oct 2021 levels as Q4/22 still had*

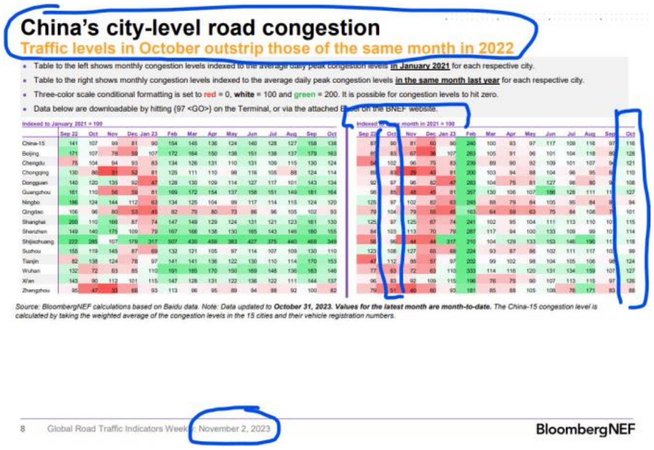
Covid restrictions. Thx @BloombergNEF. #OOTT." (ii) For the week ended Nov 1, Baidu data for China city-level road congestion was -2.2% WoW to 144.4 of Jan 2021 levels. For Oct, China city-level road congestion was up strongly YoY and also up strongly vs Oct 2021. For Oct 2023, the Top 15 cities in aggregate were 116% of Oct 2021 levels vs Oct 2022 that was 90% of Oct 2021 levels. Note the big crash and recovery in people driving in cities were for the recent 12-day holidays that combined the Mid-Autumn Festival and Golden Week. (iii) As noted above, the Baidu data is to Nov 1 so includes the full month of Oct data. For the Top 15 cities in aggregate, Oct 2023 was 116% of Oct 2021 levels vs Oct 2022 that was 90% of Oct 2021 levels. Twelve of the top 15 cities are higher YoY and 3 are lower YoY. The 3 lower YoY cities are Ningbo (10 mm population, port city ~220 km south of Shanghai), Qingdao (11 mm population, port city across Yellow Sea from South Korea), and Suzhou (13 mm population, right to the west of Shanghai). Compared to Oct 2021, 12 of the top 15 cities are higher and 3 are lower. The 3 lower cities vs Oct 2021 are Ningbo, Suzhou and Zhengzhou (13 mm population, inland in central China.)

Figure 43: China city-level road congestion for the week ended Nov 1



Source: BloombergNEF

Figure 44: China city-level road congestion for the week ended Nov 1



China's city-level road congestion

Traffic levels in October outstrip those of the same month in 2022

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

Indexed to January 2021 = 100

	Sep 22	Oct	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
China-15	141	107	99	81	90	154	145	136	124	140	128	127	158	138
Beijing	171	107	78	59	107	172	164	150	138	151	138	137	179	163
Chengdu	75	104	94	93	83	134	126	131	110	131	109	115	130	124
Chongqing	130	86	31	52	81	125	111	110	98	116	105	88	124	114
Dongguan	140	120	135	92	47	128	130	109	114	127	117	101	143	134
Guangzhou	161	110	56	59	81	169	172	154	137	158	151	149	181	164
Ningbo	186	124	144	112	63	134	125	104	99	117	114	115	124	120
Qingdao	106	96	80	53	48	82	75	80	73	86	96	105	102	93
Shanghai	200	110	166	87	74	147	149	129	124	131	121	123	181	130
Shenzhen	149	140	175	109	79	167	166	138	130	165	143	146	180	155
Shijiazhuang	222	285	107	179	317	507	430	459	383	427	375	440	468	349
Suzhou	158	119	145	87	69	132	121	105	97	114	107	109	130	110
Tianjin	82	138	124	78	97	141	141	136	122	130	110	114	170	153
Wuhan	132	72	83	85	110	191	185	170	150	169	148	136	183	146
Xi'an	143	90	112	101	115	147	128	131	122	136	122	111	144	137
Zhengzhou	95	47	33	68	93	113	96	95	89	94	88	92	100	82

Indexed to same month in 2021 = 100

	Sep 22	Oct	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
China-15	87	90	81	60	90	240	100	93	97	117	109	116	97	116
Beijing	85	83	67	36	107	283	105	91	96	101	104	118	80	128
Chengdu	54	102	96	75	83	239	89	90	92	109	101	107	94	121
Chongqing	86	83	29	43	81	200	103	94	88	104	96	95	[illegible]	110
Dongguan	92	97	96	62	47	283	104	75	81	127	98	80	[illegible]	108
Guangzhou	98	85	48	45	81	357	130	106	107	186	128	111	[illegible]	127
Ningbo	125	97	102	82	63	245	88	79	84	105	95	84	[illegible]	94
Qingdao	79	104	79	55	45	163	64	59	63	75	84	108	[illegible]	101
Shanghai	125	97	125	67	74	241	102	95	104	111	113	110	[illegible]	115
Shenzhen	84	103	113	70	79	287	117	94	100	133	109	99	[illegible]	114
Shijiazhuang	58	96	44	44	317	210	104	129	133	153	146	190	[illegible]	118
Suzhou	123	108	127	65	69	224	93	87	86	102	111	117	[illegible]	99
Tianjin	47	112	88	57	97	202	99	102	98	104	105	106	98	124
Wuhan	77	63	72	63	110	333	114	116	120	131	134	159	107	127
Xi'an	96	83	92	109	115	196	76	75	90	107	113	115	97	126
Zhengzhou	79	51	40	60	93	181	85	88	105	108	78	171	83	88

Source: BloombergNEF calculations based on Baidu data. Note: Data updated to ***October 31, 2023. Values for the latest month are month-to-date.*** *The China-15 congestion level is calculated by taking the weighted average of the congestion levels in the 15 cities and their vehicle registration numbers.*

8 Global Road Traffic Indicators Weekly November 2, 2023 BloombergNEF

Source: BloombergNEF

Oil: Caixin Manufacturing PMI at 49.5 in Oct, manufacturing back to contraction

Oct PMI 49.5

On Tuesday night, we tweeted [LINK] "*China manufacturing back to contraction. China Caixin Manufacturing PMI Oct 49.5 (est 50.8) vs Sep 50.6, Aug 51.0, Jul 49.2, Jun 50.5. See 👇negatives across the board - manufacturing production, new export orders down, business confidence, etc. Thx @SPGlobalPMI #OOTT pic.twitter.com/s0uqAJMwNJ."* As a reminder, there are two China manufacturing PMI data from S&P Global that come out each month. The Official Manufacturing PMI that normally comes out the day before the Caixin Manufacturing PMI data that we track. We have focused on the Caixin PMI as it is viewed as more of a leading indicator for how the China recovery is doing as it is a more export-oriented PMI and export have been the big driver of China for the past 20 years. The Caixin Manufacturing PMI for Oct was released at 7:45pm MT Tuesday night [LINK]. The Oct number was contractionary compared to Sept at 50.6. And the written message was very much an economy is in recovery but still a long way to go to get to a sustained solid growth. The IHS wrote "*Business optimism continued to decline, with the corresponding gauge hitting the lowest since September last year despite remaining in expansionary territory. Respondents were concerned about the global economic outlook in the coming year. Overall, manufacturers were not in high spirits in October. Supply, employment and external demand all fell, while domestic demand expanded at a slower pace. Costs and output prices both rose, purchases fell, and inventories of finished goods increased. Business optimism continued to wane."* Our Supplemental Documents package include excerpts from the PMI.

Figure 45: China Caixin General Manufacturing PMI

Source: S&P Global

Oil: Vortexa crude oil floating storage est 68.14 mmb at Nov 3, -7.30 mmb WoW

Vortexa floating storage

We are referencing the Vortexa crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Oct 28 at 9am MT. (i) Our tweet yesterday [LINK] said *"#Oil bulls should like this.Floating oil storage 68.14 mmb at 11/03. Only been 6 wks below 70 mmb since Covid, 4 of which in last 5 wks. Down 65 mmb vs recent 06/23/23 peak 133,84 mmb. Thx @Vortexa @business #OOTT."* (ii) The headline will be oil floating storage is below 70 mmb for only the 6th week below 70 mmb since Covid hit in Q1/20, and 4 of these 6 weeks have been in the last 5 weeks. (iii) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Nov 3 at 68.14 mmb, which is -7.30 mmb WoW vs basically unrevised Oct 27 at 75.44 mmb. Note Oct 27 was only revised +0.17 mmb vs the 75.27 mmb originally posted at 9am on Oct 28. (iii) Revisions. There were a mix of +/- revisions and most were small. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am MT on Oct 28 are as follows: Oct 27 revised +0.17 mmb. Oct 20 revised -3.44 mmb. Oct 13 revised -0.28 mmb. Oct 6 revised +2.10 mmb. Sept 29 revised -0.62 mmb. Sept 22 revised +0.44 mmb. (iv) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 74.88 mmb vs last week's then seven-week average of 78.23 mmb. The decrease is due to the dropping of a higher 90.07 mmb in the average being replaced by the low 68.,14 mmb for 11/03. (v) Also remember Vortexa revises these weekly storage estimates on a regular basis. For example, when most report on the Vortexa data on Monday morning, they will be reporting on different estimates. We do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. Normally we download the Vortexa data as of Saturday mornings around 9am MT. (vi) Note the below graph now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (vii) Nov 3 estimate of 68.14 mmb is -22.16 mmb YoY vs Nov 4, 2022 of 90.30 mmb. (viii) Nov 3 estimate of 68.14 mmb is -152.17 mmb vs the Covid peak of 220.31 mmb on June 26, 2020. (ix) Nov 3 estimate of 68,14 mmb is +2.53 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT Nov 4, 9am MT Oct 28, and 9am MT Oct 21.

Figure 46: Vortexa Floating Storage Jan 1, 2000 – Nov 3, 2023, posted Nov 4 at 9am MT

Source: Bloomberg, Vortexa

Figure 47: Vortexa Estimates Posted 9am MT on Nov 4, Oct 28, and Oct 21

Posted Nov 4, 9am MT

Date	Last Px
Fr 11/03/2023	68141
Fr 10/27/2023	75439
Fr 10/20/2023	67737
Fr 10/13/2023	68664
Fr 10/06/2023	68333
Fr 09/29/2023	84961
Fr 09/22/2023	90856
Fr 09/15/2023	90070
Fr 09/08/2023	92060
Fr 09/01/2023	90638
Fr 08/25/2023	85753

Oct 28, 9am MT

Date	Last Px
Fr 10/27/2023	75267
Fr 10/20/2023	71176
Fr 10/13/2023	68984
Fr 10/06/2023	66231
Fr 09/29/2023	85578
Fr 09/22/2023	90415
Fr 09/15/2023	90585
Fr 09/08/2023	92785
Fr 09/01/2023	91444
Fr 08/25/2023	86333
Fr 08/18/2023	102.97k

Oct 21, 9am MT

Date	Last Px
Fr 10/20/2023	64270
Fr 10/13/2023	71763
Fr 10/06/2023	69549
Fr 09/29/2023	87637
Fr 09/22/2023	93341
Fr 09/15/2023	91699
Fr 09/08/2023	93267
Fr 09/01/2023	91364
Fr 08/25/2023	86721
Fr 08/18/2023	103.001k
Fr 08/11/2023	108.69k

Source: Bloomberg, Vortexa

Oil: Oil floating storage in Gulf Coast back to more normal levels this week

US Gulf Coast floating storage

Yesterday, we tweeted [LINK] *"No surprise, floating oil storage in Gulf Coast was back down to 1.82 mmb at Nov 3. See 👇10/28 tweet last week's 6.64 mmb as originally posted on Oct 28 looked to be set for either a downward revision or it was an unusual one-time spike. Thx @vortexa @business #OOTT."* We had expected to see a big drop in US Gulf Coast floating storage as we couldn't see any reasons for the big +5.51 mmb/d WoW to 6.64 mmb as of Oct 27. We had expected a downward revision or it was an unusual one-time spike. It turns out a combination of both. Vortexa estimated US Gulf Coast crude oil floating storage was 1.82 mmb as of Nov 3, which was -3.77 mmb vs the revised down Oct 27 of 5.59 mmb. Oct 27 of 5.59 mmb was revised down by -1.05 mmb vs the originally posted Oct 27 of 6.64 mmb.

Figure 48: Vortexa crude oil floating in US Gulf Coast

Source: Bloomberg, Vortexa

Oil: Vortexa crude oil floating storage WoW changes by regions

Vortexa floating storage by region

Bloomberg also posts the Vortexa crude oil floating storage in the key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the "Other" or rest of world. (i) As noted above, Oct 27, in total, was basically unchanged, revised +0.17 mmb. The main revisions in a region vs the originally posted (as of 9am Oct 28) floating oil storage for Oct 27 were Asia revised -3.32 mmb and Other revised +3.54 mmb. (ii) Total floating storage was -7.30 mmb WoW. The major WoW changes by region were Other +3.87 mmb WoW, US Gulf Coast -3.77 mmb WoW and Asia -3.58 mmb WoW. (iii) Nov 3 of 68.,14 mmb is down a whopping 65.80 mmb vs the recent June 23, 2023 peak of 133.94 mmb. The major changes by region vs the recent June 23 peak are Asia -40.56 mmb and Other -20.47 mmb. (iv) Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for Oct 70 that was posted on Bloomberg at 9am MT on Oct 28.

Figure 49: Vortexa crude oil floating by region

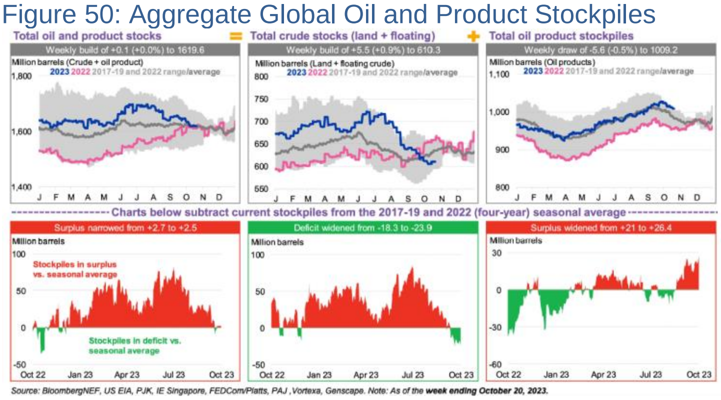
Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted	Recent Peak	
Region	Nov 3/23	Oct 27/23	WoW	Oct 27/23	Jun 23/23	Nov 3 vs Jun 23
Asia	34.01	37.59	-3.58	40.91	74.57	-40.56
Europe	3.99	6.17	-2.18	6.22	6.52	-2.53
Middle East	5.30	5.10	0.20	5.32	7.15	-1.85
West Africa	6.63	8.47	-1.84	7.20	7.87	-1.24
US Gulf Coast	1.82	5.59	-3.77	6.64	0.97	0.85
Other	16.39	12.52	3.87	8.98	36.86	-20.47
Global Total	68.14	75.44	-7.30	75.27	133.94	-65.80
Vortexa crude oil floating storage posted on Bloomberg 9am MT on Nov 4						
Source: Vortexa, Bloomberg						

Source: Bloomberg, Vortexa

Oil: BNEF – global oil and product stocks surplus narrowed WoW to 2.5 mmb

Please note that the BloombergNEF global oil and products stocks estimate are for the week ending Oct 20, which is a week earlier than the EIA US oil inventory data that is for the week ending Oct 27. So, the BloombergNEF global oil stocks data won't include the US crude oil inventory build of +0.77 for the week of Oct 27. On Monday, 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 2.7 mmb to 2.5 mmb for the week ending Oct 20. (iii) Total crude inventories (incl. floating) increased by +0.9% WoW to 610.3 mmb, while the stockpile surplus widened from 18.3 mmb to 23.9 mmb. (iv) Land crude oil inventories increased by +0.9% WoW to 539.7 mmb, widening the deficit to -44.5 mmb against the five-year average (2016-2019 + 2022). (v) The gas, oil, and middle distillate stocks decreased by -1.7% WoW to 143.7 mmb, with the deficit against the four-year average narrowing to -14.9 mmb. Jet fuel consumption by international departures for the week of November 6 is set to increase by +52,400 b/d WoW, while consumption by domestic passenger departures is forecast to decrease by -34,800 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 50: Aggregate Global Oil and Product Stockpiles

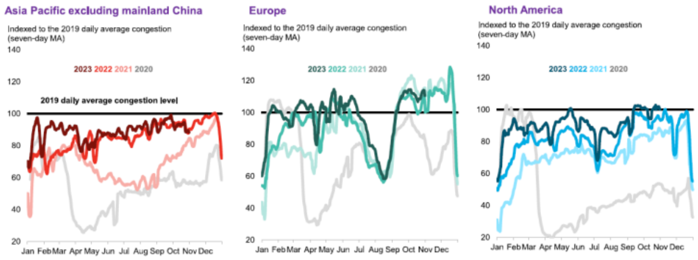


Source: BloombergNEF

Oil: TomTom mobility indicators: EU, NA increase, Asia-Pacific decreases WoW

On Thursday, BloombergNEF posted its Global Road Traffic Indicators Weekly report, which recaps traffic indicators in all the major economic regions of the world i.e. mobility indicators like TomTom. For the week ending Oct 31, EU and North American traffic levels increased by +0.5% and +0.1% WoW, respectively, while Asia Pacific (ex-China) traffic levels decreased -0.5% WoW. Traffic levels in Europe, North America, and Asia Pacific (ex-China) traffic are +10.6%, +0.1% and -11.7% compared to the 2019 average and are +10.4%, +7.6% and -2.5% YoY, respectively. Traffic in Europe has recovered to pre-summer levels while Asia Pacific (excluding mainland China) is still below pre-Covid levels. It is worth noting that TomTom data on congestion levels now reflects daily average congestion compared to peak congestion previously. The change in methodology took effect from January 19.

Figure 51: Mobility Indicators



	Week-on-week (2019 average = 100)				Year-on-year (same week last year = 100)			
	Latest week: Oct 31	Δ vs. Oct 24	4-week MA	Δ vs. Oct 24	Latest week: Oct 31	Δ vs. Oct 24	4-week MA	Δ vs. Oct 24
Asia Pacific ex-China	88.3	-0.5 (-0.5%)	90.8	-0.7 (-0.8%)	97.5	-0.4 (-0.4%)	98.5	+0.0 (+0.0%)
Europe	110.6	+0.6 (0.5%)	110.1	-0.9 (-0.8%)	110.4	+5.8 (5.5%)	107.1	+2.1 (+2.0%)
North America	100.1	+0.1 (0.1%)	98.7	-0.3 (-0.3%)	107.6	+2.5 (2.4%)	106.9	+0.1 (+0.1%)

Source: BloombergNEF calculations based on TomTom data. Note: ***Data updated to October 31, 2023****. Δ = change. MA = moving average.*

Source: BloombergNEF

Maersk's economic outlook

Oil: Maersk sees "challenging times" ahead for container

A.P. Moller-Maersk released it Q3 report on Friday and its CEO, Vincent Clerc, continued with another weak outlook for the container market, which is a good indicator for the global economic outlook. On Friday, we tweeted [LINK] *"#Maersk CEO. "Our industry is facing a new normal with subdued demand, prices back in line with historical levels and inflationary pressure on our cost base". Also note "slower steaming" ie. saves fuel consumption/reduces emissions. #OOTT."* Clerc stated "*Our industry is facing a new normal with subdued demand, prices back in line with historical levels and inflationary pressure on our cost base. Since the summer, we have seen overcapacity across most regions triggering price drops and no noticeable uptick in ship recycling or idling. Given the challenging times ahead, we accelerated several cost and cash containment measures to safeguard our financial performance. While continuously streamlining our organisation and operations, we remain dedicated to our strategy of fulfilling our customers' diversified supply chain needs while pursuing growth opportunities across our Terminals business and Logistic & Services*".

08/04/23: Maersk saw no sign of significant rebound in container volumes in H2

Here is what we wrote in our Aug 6, 2023 Energy Tidbits memo on the Q2. "*A.P. Moller-Maersk released it Q2 report on Friday. We tweeted [LINK] "Good thing for #Oil that Saudi Energy Minister Abdulaziz is in control. @Maersk Q2: no sign of significant rebound in volumes in H2. China re-opening recovery "lost steam & the local property sector shows no sign of a rebound" "material risk of recession" in US & EU. #OOTT."   Maersk's release title included "in difficult market conditions". Maersk noted the difficult market conditions, they don't see any "significant" recovery in container volumes in H2/23. And they are negative on the overall economic outlook. Maersk wrote "Global economic growth is projected to hover around 2% in 2023. Despite the improvement in Q1, cracks began to appear in the economic outlook in Q2. In China, the re-opening recovery that followed the end of the zero-COVID policy lost steam, and the local property sector shows no signs of a rebound. In the US and Europe, the rapid increase in interest rates created stress in the banking sector in H1 2023 and concerns have emerged about potential spill-overs to other financial institutions. Survey indicators point to flat growth, at best, in Europe and the US in H2 of 2023 and the start of 2024, with a material risk of recession in both regions. The manufacturing sector continues to struggle, and the Global Purchasing Managers Index has remained in contractionary territory since*

September 2022. Final demand has started to weaken, with investment spending, both capital expenditure and housing, suffering from the rapid increase in interest rates."

Oil & Natural Gas: Alberta and BC wildfires down

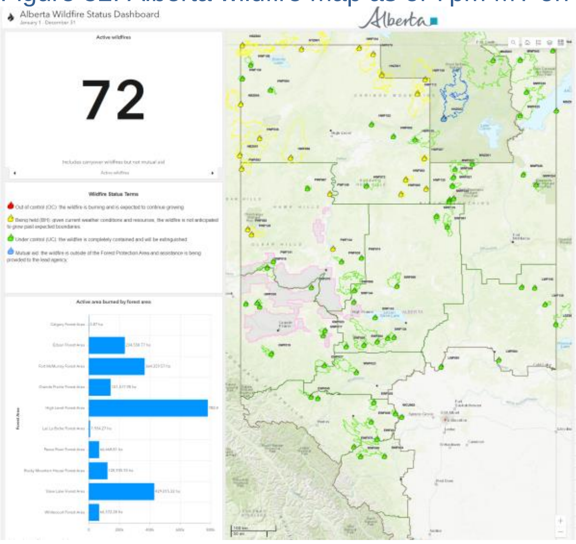
As of 7pm MT last night, there were 72 Alberta wildfires and zero Out of Control, which compares to a week ago at 79 Alberta wildfires and zero Out of Control. In BC, it was another week of decline in wildfires including Out of Control wildfires. As of 7pm MT last night, there were 245 wildfires including 31 Out of Control, which compares to a week ago at 247 wildfires included 35 Out of control.

BC and Alberta Wildfires

Links to Alberta and BC wildfire status maps

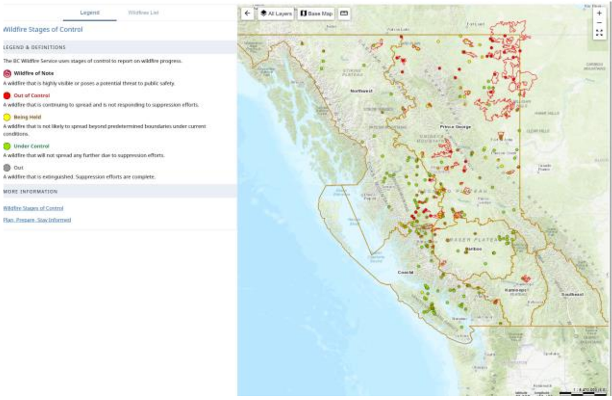
We recommend bookmarking the starting points for wildfire information are the Alberta Wildfire Status interactive map [LINK] and the BC Active Wildfires interactive map [LINK]. Please note these links have changed over the past few years. Both maps are interactive and open up for the information on any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

Figure 52: Alberta wildfire map as of 7pm MT on Nov 4



Source: Alberta Wildfire Status Dashboard

Figure 53: BC wildfire map as of 7pm MT on Nov 4



Source: BC Wildfire Service

Energy Transition: Do western leaders have to go along with UAE COP28 approach?

One month to COP28

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

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

Energy Transition: NDP to support Conservatives exempt all home heating carbon tax

It will be interesting to see if the Liberals make any other changes to their carbon tax on home heating given the NDP saying they will support the Conservatives motion to extend the pause on federal price on carbon tax to all forms of fuels/power that heat homes an dnot just exempting heating oil that is predominately an Atlantic provides break. It's a non-confidence motion but, even still, assuming party discipline, the Liberals will have a majority if the Bloc Quebecois vote with them as they have indicated. On Friday morning, we tweeted [LINK] "*ICYMI. NDP to back @PierrePoilievre motion to exempt #CarbonTax on all home heating , not just Liberals exemption only on heating oil predominantly being used in Atlantic Canada. Looks like NDP is starting to position for next election. Thx @CathLvesque #OOTT #EnergyTransition.*" And then later on Friday, we tweeted [LINK] "*OOPS! Did Trudeau not consider the 👇 @nationalpost Gary Clement cartoon scenario? Or were the Liberals just being "too smart by half" by only pausing carbon tax on home heating oil that primarily benefited Atlantic provinces? #OOTT #EnergyTransition.*" Below is the National Post cartoon attached to our tweet. Our Supplemental Documents package includes the National Post report.

NDP to support Conservatives

Figure 54: National Post cartoon Liberals carbon tax exemption

Source: National Post

Energy Transition: Maersk notes "slower steaming" ie. save fuels/cuts emissions

On Friday, Maersk reported its Q3, which included its Market Insights. On Friday, we tweeted [LINK] "*#Maersk CEO. "Our industry is facing a new normal with subdued demand, prices back in line with historical levels and inflationary pressure on our cost base" Also note "slower steaming" ie. saves fuel consumption/reduces emissions. #OOTT.*" In their Q3 report, Maersk said "*Although some of the added capacity is being absorbed by slower steaming and cancelled sailings, the gap between demand and supply growth remained wide in Q3 2023 in year-on-year terms.*" "Slower steaming" caught our attention as it as slower ship steaming saves fuels and cuts emissions. The other reminder of slower steaming means that ships take longer voyages to travel the same distance ie. using more capacity to do the same distance of shipping. Our Supplemental Documents package includes the Maersk market insights.

"Slower steaming"

Slow ship steaming saves fuels and cuts emissions

Here is what we werote in our Aug 6, 2023 Energy Tidbits memo. "*Back prior to IMO 2020, it seemed like a regular update item was on how shipping companes were going to deal with IMO 2020 – with the two primary discussion actions were they going to install scrubbers or switch from HSFO to LSFO. And there was always the fallback option to go to slower steaming. We were reminded of slower steaming in Maersk Q2 report, although they were referencing it for the purpose reducing emissions. Rather it was used in the context of not seeing any significant recovery in container volumes. Maersk wrote "Seaintel data shows that the share of the Global container fleet absorbed by delays decreased from a peak in January 2022 of almost 14% to a post-pandemic low of 3.6% in May 2023. Some of the available capacity is being absorbed by slower steaming and cancelled sailings." But going back to the IMO writeups, the advantage of slower steaming is a significant reduction in fuel consumption and also emissions. Hereis what we wrote inour October 28, 2018 Energy Tidbits memo on fuel savings. "Slow steaming can reduce fuel consumption by over 50%. Here is what Wikipedia wrote about the fuel saving from slow steaming [LINK]. ""Rationale & History. Slow steaming was adopted in 2007 in the face of rapidly rising fuel oil costs (July 2007 to July 2008: 350 to 700 USD/tonne).[4] According to Maersk Line, who introduced the practice in 2009–2010,[5][6] slow steaming is conducted at 18 knots (33 km/h; 21 mph).[1][not in citation given] Speeds of 14 to 16 kn (26 to 30 km/h; 16 to 18 mph) were used on Asia-Europe backhaul routes in 2010.[7] Speeds under 18 kn (33 km/h; 21 mph) are called super slow steaming.[1][not in citation given] Marine engine manufacturer Wärtsilä calculates that fuel consumption can be reduced by 59% by reducing cargo ship speed from 27 knots to 18 kn (33 km/h; 21 mph), at the cost of an additional week's sailing time on Asia-Europe routes.[8] It adds a comparable 4-7 days to trans-Pacific voyages.[7] The large container ship Emma Maersk can save 4,000 metric tons of fuel oil on a Europe-Singapore voyage by slow steaming.[5] At a typical 2008 price of USD 600-700 per tonne,[4] this works out to USD 2.4-2.8 million fuel savings on a typical one-way voyage. Maersk's Triple E class of ships was designed for slow steaming, with hulls optimized for lower speeds. Because of this, it has less powerful engines than its predecessors.[5]"*

Energy Transition: BHP "*massive wave*" of capital needed for critical minerals

Negative EV costs for Hertz

For the past few years, we have been highlighting that the world Is not anywhere near the pace and size of investment needed for critical minerals/metals for the energy transition. On Wednesday, we tweeted [LINK] "*BHP CEO "A massive wave of capital investment will be required to meet demand for these minerals" re minerals for #EnergyTransition. #NatGas is needed for way longer as Energy Transition is taking way longer, costing way more. #OOTT [LINK].*" BHP CEO Mike Henry's AGM speech had a clear message "*Globally, the mining sector is at a crossroads. The energy transition and broader decarbonisation efforts are expected to progressively shift demand growth towards future-facing commodities. A massive wave of capital investment will be required to meet demand for these minerals.*" The other area highlighted by Henry was Potash. Henry said "*Potash, used in fertilisers, will be essential for food security and more sustainable farming, against the backdrop of a growing global population. We believe the long-term fundamentals for the potash market are compelling and they have further improved since we sanctioned Jansen Stage 1.*" Henry also reminded of the fundamental demographic that has driven economies and markets this century – growing population moving to more to urban areas with higher income/standard of living. Henry said "*By 2050 the global population is projected to be around 10 billion, about two-thirds of whom will live in urban areas. These global citizens will quite rightly be seeking to improve their standard of living – raising demand for housing, better food, consumer goods, cars, infrastructure, power and utilities. These factors, together with the energy transition, are very metals and minerals intensive. The two to four-fold increase in demand we expect for key BHP commodities over the next three decades, versus the three decades past, presents both challenge and opportunity."* Our Supplemental Documents package includes the BHP CEO AGM comments.

Energy Transition: Toyota big recall for risk of battery fires was not for EVs, was RAV4

Toyota recalls 1.854 mm RAV4's

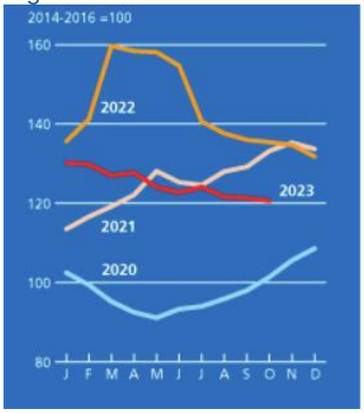
EVs are having enough problems in trying to move beyond early adopter high income households to middle and lower income households so it was good to see that Toyota's big recall of 1.854 million vehicles for risk of fires coming from batteries had noting to do with EVs or hybrids. On Thursday, we tweeted [LINK] "*Not #EVs! #Toyota recalls 1.854 mm RAV4's "replacement 12-volt batteries ...smaller top dimensions .. not tightened correctly, the battery could move when the vehicle is driven with forceful turns...could cause the positive battery terminal ... increasing the risk of a fire".* Toyota's recall [LINK] was "*Toyota Recalls Certain 2013-2018 Toyota RAV4 Models. Toyota is conducting a safety recall involving certain 2013-2018 model year Toyota RAV4 vehicles in the United States. Approximately 1,854,000 vehicles are involved in this recall. Some replacement 12-volt batteries of the size specified for the subject vehicles have smaller top dimensions than others. If a small-top battery is used for replacement and the hold-down clamp is not tightened correctly, the battery could move when the vehicle is driven with forceful turns. The movement could cause the positive battery terminal to c ontact the hold-down clamp and short circuit, increasing the risk of a fire. Toyota is currently preparing the remedy. When the remedy is available, Toyota dealers will replace the battery hold-down clamp, battery tray, and positive terminal cover with improved ones at no cost to owners. For all involved vehicles, Toyota will notify customers by late December 2023."*

Capital Markets: UN FAO Food Price Index down MoM in October, down -10.9% YoY

UN food price index down MoM

Other than two small blips in April and August 2023, the UN Food Price Index had declined for about a year prior to October 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 continue to ease 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 was down in October 2023. On Friday, the UN posted its monthly update of its FAO Food Price Index [LINK] titled "*FAO Food Price Index continues to drop, but at a slower pace".* Note that the index is calculated on a Real price basis. The FFPI averaged 120.6 points in October, down from 121.3 in September, and down -10.9% YoY. The FFPI also reported MoM declines for most of its sub-indices in October. The Vegetable Oil Index was down -0.7% MoM after a decrease last month, and is now down -20.7% YoY. The Meat Price Index and Cereal Price Index were down 0.6% and 1.0% MoM, and -3.4% and -17.9% YoY, respectively. The Dairy Price index was the only index that realized gains in October, up +2.2% MoM and down -20.1% YoY.

Figure 55: UN FAO Food Price Index



Source: UN

Capital Markets: USDA Consumer Price Index Sept for food +0.2% MoM, +3.7% YoY

USDA CPI for food +3.7% YoY

On Friday, the USDA posted its September Consumer Price Index for food [LINK], which reported the all-items Consumer Price Index (CPI) was +0.2% MoM and +3.7% YoY. The +3.7% YoY increase in the Consumer Price Index has a relative weighting for the various food categories. Some YoY index changes to the USDA's year-end inflation estimates are: sugar and sweets +9.2% YoY, beef and veal +3.8% YoY, processed fruits and vegetables +8.5% YoY, cereals and bakery products +8.5% YoY, eggs +0.3% YoY, and dairy products +4.0% YoY. It is important to note the USDA said that the "food-at-home (grocery store or supermarket food purchases) CPI" was +0.1% MoM and +2.4% YoY. The USDA wrote *"Food-at-home prices are predicted to increase 5.1 percent, with a prediction interval of 4.7 to 5.5 percent. Food-away-from-home prices are predicted to increase 7.1 percent, with a prediction interval of 6.9 to 7.3 percent*."

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

We recognize the US is different than Canada but we would expect the same food commodity to grocery shopping cart supply chain factors are in place in both countries. Here is what we wrote in our July 30, 203 Energy Tidbits memo. "*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 costs 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 CAD1 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 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: Jeff Bezos move to Florida also gives win from capital gains taxes

Washington state's capital gains tax

On Thursday, Jeff Bezos said he was moving to Florida and posted on his Instagram account [LINK] "*Seattle has been my home since 1994 when I started Amazon out of my garage. That's my dad behind the camera in this video, touring Amazon's first "office." My parents have always been my biggest supporters. They recently moved back to Miami, the place we lived when I was younger (Miami Palmetto High class of '82 — GO Panthers!) I want to be close to my parents, and Lauren and I love Miami. Also, Blue Origin's operations are increasingly shifting to Cape Canaveral. For all that, I'm planning to return to Miami, leaving the Pacific Northwest."* It's hard to disagree with Bezos wanting to be close to his parents, who just recently moved back to Florida. The part that he didn't mention is that there is a big tax advantage of such a move. The state of Washington, like Florida, does not have state income taxes, so there is not state income tax benefit for Bezos move. However, it also looks like a set up trade for the future. For someone like Bezos, the more important tax reason is capital gains tax on his stock and Washington put on a new capital gains tax in 2021 that would impact people like Bezos – there is a 7% tax on capital gains over $260,000 ie. $70 million on a $1 billion stock capital gain. A few months ago, in June, the state of Washington Supreme Court ruled that the state's 2021 new capital gains tax was constitutional.

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

@Energy_Tidbits on Twitter

For new followers to our Twitter, we are trying to tweet on breaking news or early views on energy items, most of which are followed up in detail in the Energy Tidbits memo or in separate blogs. Our Twitter handle is @Energy_Tidbits and can be followed at [LINK]. We wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

LinkedIn: Look for quick energy items from me on LinkedIn

Look for energy items on LinkedIn

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

Misc Facts and Figures

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

Day of the Dead is more than festivities/celebrations

Thursday was the El Día de los Muertos or The Day of the Dead in Mexico. It is a day of festivities, celebrations and fireworks and the common face painting to look like a skull. But it's more than festivities, it's all about remembering and celebrating family and friends who have passed away. A friend working at the well known Flora Farms in San Jose del Cabo told us about his 11 year old daughter's school where the students will stand up in the class and talk about someone they know who has recently passed.