Energy Tidbits

November 13, 2022

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May be Gradual, But China's 20 Optimized Measures Look to be a Pivot Towards Reopening From Covid

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. Our priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector. Our target is to write on 48 to 50 weekends per year and to post by noon MT on Sunday. The Sunday noon timing was because PMs said they didn't have research to read on Sundays and Sundays are a day when they start to think about the investing week ahead.

This week's memo highlights:

1. China released 20 measures to relax Covid restrictions and urge development of "broad spectrum of vaccines & drugs". (Click Here)
2. Iraq PM doesn't want oil over $100, but doesn't't' want oil to fall that affects the level of supply. (Click Here)
3. TC Energy says revised LNG Canada agreement "creates strong foundation for Phase 2", surely there was some of understanding on LNG Canada Phase 2 FID to make this happen. (Click Here)
4. Liberals announce added regulations to further reduce methane emissions from oil and gas sector. (Click Here)
5. White House tries again but still doesn't deny Biden plans to shut down coal across America. (Click Here)
6. Pease follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

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Natural Gas – Natural gas injection of +79 bcf, storage now -37 bcf YoY deficit

YoY storage at -37 bcf YoY deficit

The YoY storage deficit started last winter at -282 bcf YoY at Oct 31 and is now -37 bcf YoY. The EIA reported a +79 bcf build (+80 bcf expectations) for the Nov 4 week, which was above both the 5-yr average build of +20 bcf, and last year's injection of +7 bcf. Storage is 3.580 tcf as of Nov 4, with a narrowed YoY deficit of -37 bcf YoY vs -142 bcf YoY last week and is -76 bcf below the 5-year average vs -135 bcf below last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [LINK].

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons			
					Year ago (11/04/21)		5-year average (2017-21)	
Region	11/04/22	10/28/22	net change	implied flow	Bcf	% change	Bcf	% change
East	865	848	17	17	897	-3.6	906	-4.5
Midwest	1,068	1,042	26	26	1,074	-0.6	1,080	-1.1
Mountain	208	204	4	4	213	-2.3	213	-2.3
Pacific	247	247	0	0	258	-4.3	290	-14.8
South Central	1,193	1,160	33	33	1,175	1.5	1,166	2.3
Salt	311	299	12	12	323	-3.7	314	-1.0
Nonsalt	882	861	21	21	850	3.8	851	3.6
Total	**3,580**	**3,501**	**79**	**79**	**3,617**	**-1.0**	**3,656**	**-2.1**

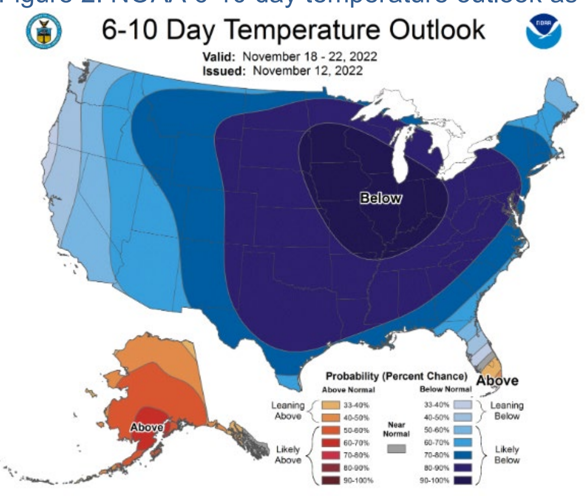
Source: EIA

Natural Gas – NOAA sees colder than normal temperatures in balance of Nov

NOAA 6-10 & 8-14 day temp outlook

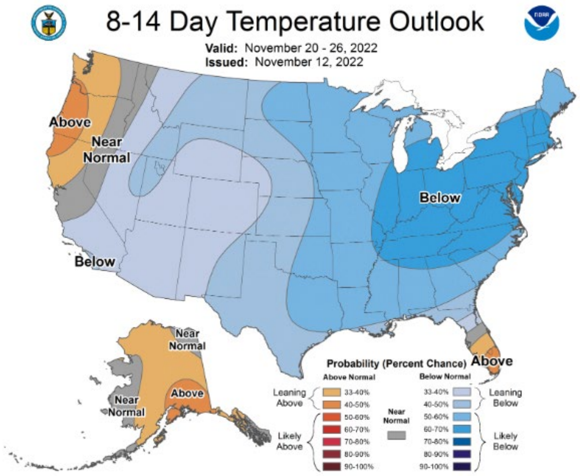
Weather forecasting is a tough business and longer term forecasts tend to get ignored. But it's now mid November and the near term temperature forecasts have been consistent, calling for very cold temperatures for next week, and then still colder than normal to end Nov. Our tweet yesterday reminded that very cold in Nov means daytime highs in Chicago around freezing. It's a positive, but not the natural gas demand impact as being really cold in Dec or Jan or Feb. Below are NOAA's latest 6-10 day and 8-14 day temperature probability forecasts as of yesterday afternoon.

Figure 2: NOAA 6-10 day temperature outlook as of Nov 12



Source: NOAA

Figure 3 NOAA 8-14 day temperature outlook as of Nov 12



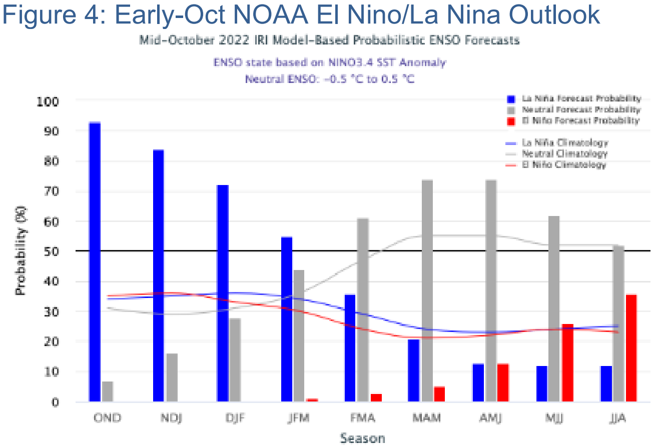
Source: NOAA

Natural Gas – Outlook also still calls for a La Nina/Neutral winter

Forecasts for La Nina winter

On Thursday, NOAA posted its updated El Nino/La Nina forecast [LINK], which still calls for a La Nina/Neutral peak winter Dec/Jan/Feb. The probability is for La Nina 75%, Neutral 25%, El Nino 0%. The El Nino/La Nina forecast isn't a temperature outlook. Perhaps the key for natural gas is to not have an El Nino winter that tends to be a warmer than normal winter. Whereas La Nina winters are typically viewed to more likely to be a normal type winter, but as noted in the following item, La Nina winters can be warm.

Figure 4: Early-Oct NOAA El Nino/La Nina Outlook



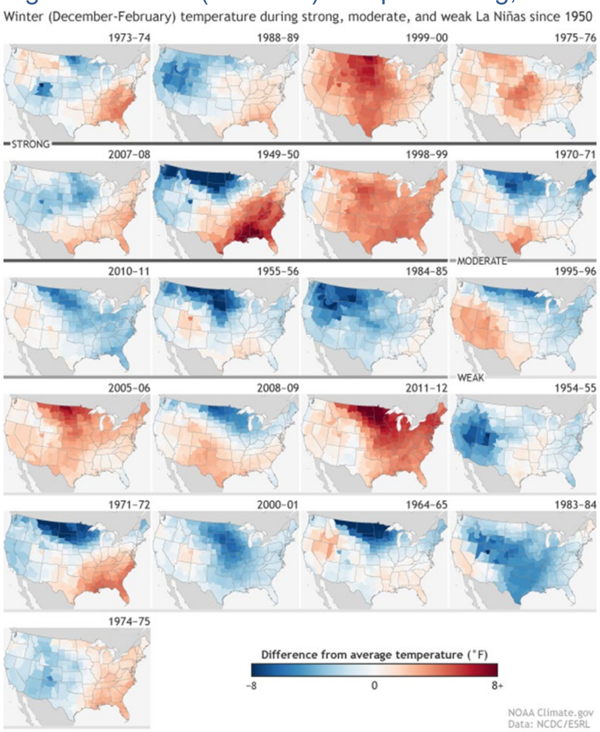
Source: CPC/IRI

Natural Gas – But La Nina correlations to cold winters are far from 100%

La Nina winters are unpredictable

La Nina winters are more often normal to colder than normal than a warmer winter. But we remind of an Oct 6, 2017 NOAA brief *"Temperature patterns during every La Niña winter since 1950"*, which looked at all La Nina winters from 1950 thru 2016/17, classified them as strong, moderate or weak La Ninas, and then showed the average winter (Dec thru Feb) temperature map. We checked this weekend and the link still works [LINK]. The bottom line is that it may slightly favor a normal to colder than normal winter, but there have some been near record high temperature La Nina winters. Below is the NOAA graphic.

Figure 5: Winter (Dec-Feb) Temp in Strong, Moderate And Weak La Ninas 1950 - 2017



Source: CPC

Natural Gas – EIA raises 2022 US gas production exit, immaterial increase for 2023

EIA US natural gas production forecast

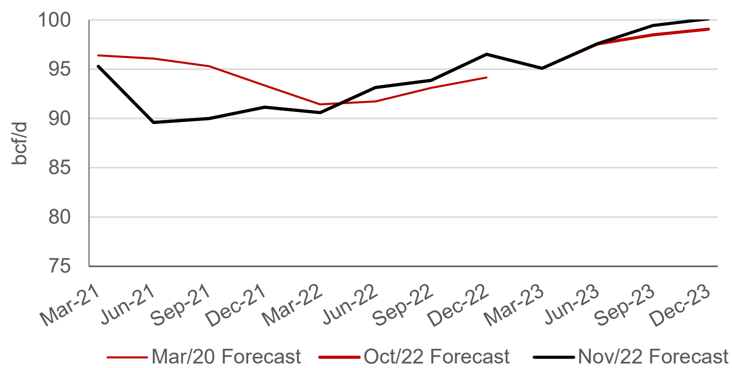
The EIA released its monthly Short Term Energy Outlook Nov 2022 [LINK]. (i) The EIA forecasts that lower prices and some constraints will reduce drilling activity. However, the EIA Nov STEO increased its Q4/22 US gas production forecast from 99.06 bcf/d to 100.11 bcf/d ie. more momentum to leave 2002. (ii) US natural gas production is expected to average 98.05 bcf/d in 2022 (97.54 bcf/d previously) and 2022 is up 4.50 bcf/d YoY. (iii) The EIA expects US gas production to dip in Q1/23 to 99.00 bcf/d. The EIA wrote "*natural gas production has increased steadily throughout 2022, and dry natural gas production averages 100.4 bcf/d in our forecast for November. We expect declines in natural gas production during the winter months due to the possibility of extreme weather, which can cause production shut-ins."* (iii) With the Q1 dip, the EIA only slightly increased its 2023 forecast to 99.68 bcf/d vs 99.62 bcf/d last month. This would be +1.63 bcf/d YoY. (iv) Our Supplemental Documents package includes excerpts form the STEO.

Figure 6: EIA STEO US Natural Gas Supply Forecasts by Forecast Month

bcf/d	Q1/20	Q2/20	Q3/20	Q4/20	2020	Q1/21	Q2/21	Q3/21	Q4/21	2021	Q1/22	Q2/22	Q3/22	Q4/22	2022	Q1/23	Q2/23	Q3/23	Q4/23	2023
Nov-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.52	93.55	95.08	97.58	99.43	100.11	98.05	99.00	99.42	99.99	100.33	99.68
Oct-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.52	93.55	95.08	97.55	98.48	99.06	97.54	99.19	99.57	99.73	100.00	99.62
Sep-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.52	93.55	94.60	96.87	97.85	98.99	97.08	99.65	100.51	100.59	100.67	100.36
Aug-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.52	93.55	94.60	96.61	97.02	98.09	96.59	98.90	100.13	100.52	100.51	100.02
July-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.53	93.55	94.61	95.51	96.88	97.89	96.23	98.40	99.62	100.60	101.25	99.98
June-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.53	93.55	94.61	95.48	96.90	98.94	96.50	99.94	101.30	102.33	102.66	101.57
May-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.53	93.55	94.66	95.82	97.17	99.14	96.71	100.25	101.55	102.42	102.42	101.71
Apr-2022	95.29	89.59	89.99	91.15	91.49	90.59	93.15	93.86	96.63	93.57	95.41	97.01	97.94	99.23	97.41	99.72	100.56	101.41	101.72	100.86
Mar-2022	95.29	89.59	89.99	91.15	91.51	90.59	93.15	93.86	96.57	93.54	95.69	96.09	96.97	98.00	96.69	96.11	98.75	99.60	100.10	98.64
Feb-2022	95.29	89.59	89.99	91.15	91.51	90.59	93.15	93.86	96.69	93.57	95.43	95.54	96.26	97.12	96.09	97.11	97.57	98.34	98.84	97.97
Jan-2022	95.29	89.59	89.99	91.14	91.50	90.59	93.15	93.89	96.33	93.49	95.94	95.55	95.96	96.69	96.04	96.71	97.13	97.89	98.45	97.55
Dec 2021	95.29	89.59	89.99	91.14	91.50	90.48	93.20	94.01	95.59	93.32	95.22	95.35	96.10	97.21	95.97					
Nov 2021	95.29	89.59	89.99	91.14	91.50	90.48	93.20	94.52	94.94	93.29	95.41	96.00	97.12	98.18	96.68					
Oct 2021	95.29	89.57	89.99	91.14	91.50	90.30	92.89	93.32	93.65	92.54	94.38	95.41	97.12	98.69	96.40					
Sept 2021	94.80	89.68	89.83	91.15	91.36	90.30	93.05	92.64	92.70	92.18	93.17	94.54	96.25	97.59	95.40					
Aug 2021	94.79	89.68	89.83	91.15	91.35	90.29	92.49	92.67	93.11	92.15	93.34	94.15	95.51	96.47	94.88					
July 2021	94.79	89.68	89.83	91.15	91.35	90.31	92.88	93.17	93.80	92.55	93.65	94.10	95.16	95.82	94.69					
June 2021	94.79	89.68	89.83	91.15	91.35	90.53	92.26	92.63	93.26	92.18	93.13	93.48	94.31	94.81	93.93					

Source: EIA STEO

Figure 7: EIA STEO US Natural Gas Supply Forecasts by Forecast Month



Source: EIA STEO

Natural Gas – EIA STEO: Nov 1, 2022 storage down -122 bcf YoY

EIA STEO storage forecast

The EIA STEO also forecasts US gas storage. No surprise, the higher actuals over the past few weeks has led the EIA to lower its gas storage forecast. (i) Winter 2022/23. The EIA forecasts end of summer/start of winter 2022/23 gas storage at 3.54 tcf, which is -0.122 tcf lower YoY, a narrowing of the YoY storage deficit vs -0.400 tcf lower YoY to start the summer 2022 injection season. A key reason for the narrowing of the YoY gas storage deficit has been the shut-in of the Freeport LNG facility. (ii) The EIA forecasts gas storage to end the winter 2022/23 at 1.433 tcf, which would be +0.032 tcf YoY. (iii) The EIA wrote *"we estimate working natural gas in storage was 3,544 billion cubic feet (Bcf), 4% below the five-year (2017–2021) average. Higher-than-average injections of natural gas into storage in September and October reduced the deficit of natural gas inventories to the five-year average and contributed to falling natural gas prices."*

Figure 8: EIA STEO forecast US gas storage

	US Working Natural Gas in Storage (billion cubic feet)					
	Storage	2016-2023				
	Level	Low	High	Range	Average	Deviation
Mar 2016	2,486.3	1,184.9	2,486.3	1,301.4	1,835.6	35.4%
Oct 2016	4,012.7	3,236.3	4,012.7	776.4	3,624.5	10.7%
Mar 2017	2,062.5	1,184.9	2,486.3	1,301.4	1,835.6	12.4%
Oct 2017	3,816.5	3,236.3	4,012.7	776.4	3,624.5	5.3%
Mar 2018	1,390.3	1,184.9	2,486.3	1,301.4	1,835.6	-24.3%
Oct 2018	3,236.3	3,236.3	4,012.7	776.4	3,624.5	-10.7%
Mar 2019	1,184.9	1,184.9	2,486.3	1,301.4	1,835.6	-35.4%
Oct 2019	3,762.0	3,236.3	4,012.7	776.4	3,624.5	3.8%
Mar 2020	2,029.4	1,184.9	2,486.3	1,301.4	1,835.6	10.6%
Oct 2020	3,928.5	3,236.3	4,012.7	776.4	3,624.5	8.4%
Mar 2021	1,801.2	1,184.9	2,486.3	1,301.4	1,835.6	-1.9%
Oct 2021	3,665.4	3,664.6	4,012.7	348.1	3,838.6	-4.5%
Mar 2022	1,401.5	1,184.9	2,486.3	1,301.4	1,835.6	-23.6%
Oct 2022	3,543.6	3,236.3	4,012.7	776.4	3,624.5	-2.2%
Mar 2023	1,433.4	1,184.9	2,486.3	1,301.4	1,835.6	-21.9%
Oct 2023	3,813.0	3,236.3	4,012.7	776.4	3,624.5	5.2%

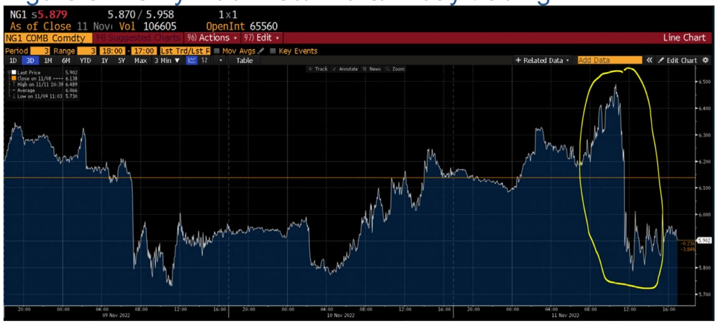
Source: EIA

Natural Gas – Freeport LNG says not legitimate tweet, but doesn't update restart date

Phony tweet on Freeport LNG

US natural gas markets got hit on Friday with what Freeport LNG later press released were false tweets. (i) Late Friday morning, HH fell 10% on a tweet (was deleted). We couldn't find the original deleted tweet that reportedly noted cracks in pipes. WSJ wrote [LINK] "*That speculation ratcheted up sharply Friday morning, when a Twitter account, @Lithium_Plays, made several unconfirmed statements regarding Freeport that were widely shared by other Twitter accounts, including a top, so-called energy Twitter influencer, an oil analyst for a major international bank whose account has 64,000 followers. But those tweets by @Lithium_Plays were then quickly deleted.*" (ii) Post the market close, Freeport LNG issued a short press release [LINK] "*In response to false information circulated today about the restart of Freeport LNG's liquefaction facility, the company provides the following statement: Freeport LNG has not made an any public statements today regarding the restart of our liquefaction facility. Any Tweets and/or posts on Freeport LNG branded letterhead that may have been obtained or published, are reporting false information and are not legitimate, official public information from Freeport LNG.*" (iii) The Freeport LNG short release did not mention any update to when they expect to restart Freeport LNG. Freeport LNG's last official update [LINK] was Aug 23 and said "*Although typical construction risks could impact the recovery plan, it is anticipated that initial production can commence in early to mid-November, and ramp up to a sustained level of at least 2 BCF per day by the end of November, representing over 85% of the export capacity of the facility. The recovery plan will utilize Freeport LNG's second LNG loading dock as a lay berth until loading capabilities at the second dock are reinstated in March 2023, at which time we anticipate being capable of operating at 100% of our capacity.*" (iv) From the outside, it's hard to see any restart within a few weeks. The plant has been shut down close to five months and there has to be some sort of restart process that would take some time. And we would expect that Freeport LNG would have indicated they were starting a restart process if that was the case. And until there is a restart, this is a negative on HH as it keeps ~2.2 bcf/d of natural gas demand offline. Our Supplemental Documents package includes the two Freeport LNG releases.

Figure 9: Henry Hub Wed/Thurs/Friday trading



Source: Bloomberg

AECO differentials risk next summer

Natural Gas – Traders expecting AECO differential hits next summer

On Thursday, our SAF Group commodity team highlighted the new TC Energy "*NGTL System and Foothills Pipelines Ltd. Customer Operations Meeting*", which is a good overview of all the expansion projects. They also warned that traders and producers will be expecting some AECO differential hits next summer. The TC Energy Nov 10 update noted the changes to any project timelines versus their Oct 13 presentation. This is a customer meeting so TC Energy's update notes where there is a new in-service date or where there is no change. To the most part, there were no delays but were some delay projects delay in 2023. But two points to note from TC Energy's 2023 Operational Outlook are "*Outages with the most significant impact to system capability have been added to the DOP •There will be more outages added over the next couple months" and* "*EGAT capability is not expected to be the limiting factor. The overall system bottleneck is still expected to be upstream in the USJR area*." Our Supplemental Documents package includes excerpts from the slide deck.

TC highlights revised LNG Canada deal

Natural Gas – Surely TC/LNG Canada revised cost deal signals Phase 2 is coming?

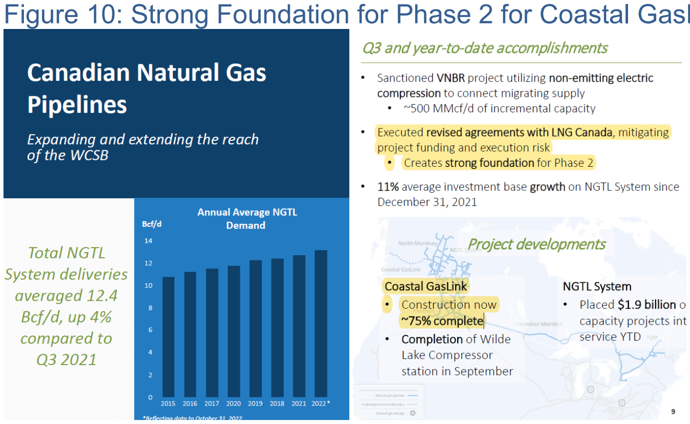
We continue to believe that, unless the province of BC isn't onside, we should soon see a FID for TC Energy's Coastal GasLink expansion and also for LNG Canada's 1.8 bcf/d Phase 2 brownfield expansion. TC Energy reported Q3 on Wed and they certainly seemed to highlight the importance of their recent revised agreements with LNG Canada on the costs. When we think about the huge cost for Coastal GasLink Phase 1 and also for LNG Canada Phase 1, it reminds that the way these big projects get higher returns is the brownfield expansion phases, especially for Coastal GasLink where the key element is adding compression and there isn't new pipeline to be laid. Think about that basic concept on the value of brownfield projects, especially for pipeline projects that don't need new pipe. And we believe that a part of the TC Energy/LNG Canada revised agreement was likely some sort of understanding that, unless some unforeseen events, the expectation between the two companies were for Phase 2 to be going ahead. And the significance of the revised agreements is why TC Energy highlighted how this revised agreement set a "*strong foundation for Phase 2*". Anyone who has ever been involved or seen major oil and gas projects would appreciate this basic concept of how a brownfield opportunity is the way to crank up returns. Keep this concept in mind as you read the TC Energy Q3 disclosure. Our Supplemental Documents package includes the TC Q3 disclosure on Coastal GasLink's deal with LNG Canada.

Natural Gas – Big teases, but no analyst questions Coastal GasLink expansion.

Coastal GasLink mechanical in-service by end of 2023

We listened to TC Energy Q3 call on Wed and we were surprised that there were no analyst questions on a potential FID for Coastal GasLink expansion despite a couple of big teases from TC Energy CEO Poirier. This is material to Cdn natural gas as it would mean a LNG Canada 1.8 bcf/d Phase 2 FID. (i) TC highlighted the "*strong foundation for Phase 2*" in their Q3 call slide deck. We tweeted [LINK] *"#CoastlalGasLink mechanical in-service end of 2023. TCEnergy Q3: revised agreement "creates strong foundation for Phase 2". Surely there was indication #LNGCanada 1.8 bcfd Phase 2 would go FID to get revised agreement. Cdn #NatGas will soon reflect LNG exports in ~2 yrs. #OOTT*." (ii) Then on the Q3 call, CEO Poirier highlighted they expect to sanction high-quality growth projects and the tremendous opportunities. TC highlights Coastal GasLink, an expansion is mostly adding compression so the torque to sunk costs of Phase 1 are big, and how strong foundation for Phase 2. Yet no analyst asked any questions on Phase 2 FID potential. The slides and CEO opening comments seemed like an invitation to ask about Coastal GasLink Phase 2. (iii) During the Q3 call, we tweeted [LINK] "*Hmm! #TCEnergy Q3 call just started. will analysts ask CEO Poirier on opening tease "being opportunity rich means we expect to sanction high-quality growth projects that will further differentiate as an industry leader". #CoastalGasLink 2 for #LNGCanada 1.8 bcfd Phase 2?? #OOTT*." And [LINK] *"Hmm! @TCEnergy Q3 Q&A still on. No analysts have bit on even bigger CEO tease "continue to see tremendous opportunity ahead to extend & expand our unparalleled network". #CoastalGas Link 2 for #LNGCanada 1.8 bcfd Phase 2? #OOTT."*

Figure 10: Strong Foundation for Phase 2 for Coastal GasLink



Source: TC Energy

Figure 11: TC Energy Coast GasLink Now ~75% Complete

Source: TC Energy

TC Energy Q2 call, they were discussing Phase 2 FID with LNG Canada

As a reminder, TC Energy certainly seemed to showcase Coastal GasLink and LNG Canada Phase 2 on its Q2 call. Here is what we wrote in our July 31, 2022 Energy Tidbits. "*For anyone who saw TC Energy's Q2 results & call, it would be almost impossible to have any other takeaway other than TC Energy is expecting LNG Canada Phase 2 to be FID and proceed. (i) Early Thursday morning, TC released its Q2 results and, before the Q2 call and their Q2 call slide deck was posted, we tweeted [LINK] "Buckle up! Feels like 👇 @TCEnergy showcasing #LNGCanada & related #CoastalGasLink expansion potential and why else other than a #LNGCanada Phase 2 1.8 bcf/d FID is coming?? Maybe Sept timing like Phase 1 FID? Very bullish for CA #NatGas thru 2030. #OOTT." TC Energy's Q2 report was showcased the progress of Coastal GasLink and the potential for Coastal GasLink expansion based on the market opportunity for LNG Canada Phase 2. (ii) It turns out that there was even greater showcasing in the Q2 call and slide deck. We recommend flipping thru the first slides & verbal comments from mgmt. on Coastal GasLink, LNG outlook and the potential for Coastal GasLink/LNG Canada expansion. When we see this type of showcasing, it infers that they expect something to happen before the next quarterly report. (iii) On the call, we were surprised by the direct TC Energy mgmt. comments that LNG Canada is going thru the FID decision making now. This is a great example of why we get the best insights from the Q&A of earnings calls. Note we listened to the replay so we could edit this part of the Bloomberg transcript to make sure it was accurate. In the Q&A, mgmt. said ""Yes. So we're in active discussions with LNG Canada around Phase two in the feasibility. Doing the appropriate front-end work to establish what the scope and scale of that project will be. The project looks very different than Phase 1. It's not a linear development, it is compression facilities and so that changes the risk profile to our benefit. In terms of the FID timing, that is one where our customers LNG Canada are in control of determining when they are prepared to bring a final investment decision and we're supporting them in that in that evaluation right now. There is a tremendous* *amount of work that needs to be accomplished. But it's important to do that work today so we have a high confidence decision in going into that FID." They are careful to not say it is going to happen, but it certainly seems TC Energy believes LNG Canada is going to FID Phase 2."*

Natural Gas – Eni ships 1st LNG cargo its 0.45 bcf/d Coral FLNG offshore Mozambique

1st LNG cargo from Mozambique

Earlier this morning, we tweeted [LINK] '*1st #LNG cargo now shipped from @eni Coral Sul 0.45 bcf/d FLNG offshore Mozambique. Reminder look for partners to push subsequent #FLNG phases on this massive Rovuma block in addition to their big Exxon operated Rozuma LNG project that has onshore LNG facilties. #NatGas #LNG."* Eni's press release [LINK] noted that first LNG cargo has now departed from the Coral Sul FLNG. This is a delay of over two months from the original expectation for first LNG cargos. Recall that there were last minute delays in August that pushed back the first LNG cargos until now. In early August, BP's British Mentor LNG tanker had signaled Coral South FLNG as its destination, arriving in the proximity on Aug 26, and then the LNG tanker sailed away after changing its destination to Oman. On Aug 28, Energy Intelligence reported [LINK] "*Mozambique's Coral South floating LNG plant is understood to have suffered technical issues, which could delay the start-up of the project, potentially further squeezing an already tight global LNG market. "Serious issues [were] reported at Coral FLNG with one critical distillation column (demethanizer) suspected of having internal damage. Shutdown is required for inspection and repair, which will delay the start-up schedule by several days, if not weeks," a source told Energy Intelligence."* Our Supplemental Documents package includes the Eni release.

Sounds like Eni/Galp/XOM will have more FLNG offshore Mozambique

Our tweet this morning reminded that we should look for the partners to push for subsequent FLNG phases in addition to their big Exxon operated Rozuma LNG that will be using onshore liquefaction facilities next door to TotalEnergies onshore liquefaction facilities. Here is what we wrote in our Oct 30, 2022 Energy Tidbits. "*Galp Energia is a partner in the Exxon/Eni offshore Rozuma Mozambique LNG block. Galp reported Q3 on Monday. (i) Eni, the operator of Coral FLNG, held its Q3 call on Friday and they did not mention any last minute delays to Coral FLNG tanker loadings or any subsequent FLNGs on the Exxon/Eni Rozuma block. (ii) Exxon operated Rozuma LNG project. Rozuma LNG was planned to follow TotalEnergies Mozambique LNG as a way to have the lowest capital instead of competing against TotalEnergies for services. As a result, the force majeure of TotalEnergies Mozambique means Exxon Rozuma is delayed. There was no indication from Galp that they see any status change or need to plan differently for Exxon Rozuma. So we have to assume, there is no discussion of any plans to move ahead on this soon. There was no mention by Galp of Rozuma in the Q3 report or presentation or Q3 call. (iii) Galp is also in the Mozambique Coral FLNG (floating LNG) offshore from the same offshore block. This is the Eni operated 0.45 bcf/d FLNG that is supposed to have its first LNG cargo loaded in the coming weeks. Galp seemed to point to the likelihood that the partners will have additional FLNG units in addition to the Exxon operated Rozuma LNG project. In the Q&A, mgmt. said "we've seen is floating LNG is working, is working well. It's cost effective on time and on budget. So there is an opportunity clearly. If you wanted to stay well offshore, would be to build another. Or you can get nearer to the coast, you can go modular, you can get small scale or the* *big scale scheme that we had before. And the partners are looking at all these schemes. And I have to say, that there is no decision at this stage. But what I think Coral has done, it creates optionality even in a deteriorated onshore security position, it does clearly show that the asset has significant value even on offshore solutions. That's not to say, that's the way we're going, but it creates the optionality for that. So just underlining, first of all, Coral seems to be really, really well done, it's on time and it's below budget. And we got first LNG drop in October. We do see that by doing a second one, you can actually optimize and make it even more efficient. So that is a natural that we study. But as Andy said, we have not taken decision, in my mind, the likely case forward will be that you will be doing both. He will both, because the resources are so enormous in Rovuma, we're talking 85 trillion cubic feet. So, a dual development offshore onshore is most likely, the way it will go forward. But the partnership is now starting the solutions and also learning from the various successful modular developments that has been achieved in the U.S., which might be applicable also for a situation in Mozambique."*

Eni wants to FID in 2023 a 2nd FLNG for offshore Mozambique

Here is another excerpt from our Oct 30, 2022 Energy Tidbits. "*As noted above, Eni made no comments on a potential 2nd FLNG in their Q3 call on Friday. Whereas the Galp Q3 comments are consistent with Eni's view that, in addition to the Exxon operated Rozuma LNG, the size of the resource means there should also be more FLNG. Here is what we wrote in our Oct 9, 2022 Energy Tidbits. "Eni is focusing on small scale FLNG like Coral South FLNG as a key to their LNG supply strategy with short times to get to first LNG cargos. So unless there is a fundamental design flaw with the FLNG, we wouldn't expect to see this delay cause any change to this small scale FLNG strategy. Here is what we wrote in or Aug 7, 2022 Energy Tidbits. "On Tuesday, Bloomberg interviewed Eni COO Guido Brusco, who advised that Eni is looking to move ahead with its second FLNG vessel offshore Mozambique as a way to develop more of the massive offshore Mozambique natural gas. This is in the Exxon operated block that has had its massive Rozuma LNG 2.0 bcf/d Phase 1 delayed due to the onshore violence that delayed TotalEnergies Mozambique LNG. Eni and Exxon are in the process of having 1st LNG cargos in Q4/22 from the Eni operated Coral FLN G in the Rozuma block. Bloomberg reported "If Eni decides to proceed by early 2023, output could begin even before TotalEnergies SE's $20-billion onshore project that abruptly halted construction last year due to security issues." Eni made it clear that, before any FID, they would need to have to have agreement with their partners – Exxon, CNPC and Mozambique state owned Empresa Nacional de Hidrocarbonetos. Eni looks at FLNG as an addition to develop the natural gas. Bloomberg wrote ""I believe that to fully develop Mozambique's considerable gas resources, the right decision is to move toward both an onshore concept and an offshore concept," Brusco said."*

Natural Gas – More support why TotalEnergies puts 1st Mozambique LNG after 2027

TotalEnergies Mozambique LNG

TotalEnergies stopping construction of its Mozambique LNG was a major positive for LNG markets as it delayed, by at least 3 years, the expected addition of 5 bcf/d of Mozambique LNG projects (combined from its Mozambique LNG and Exxon's Rozuma LNG). And it will be a major relief to future LNG markets whenever TotalEnergies restarts construction. It looks like any construction restart is still at least several months away. On Wednesday, we tweeted [LINK] "*No surprise, @FrancoisDeBeaup reports @PPouyanne may look to restart #MozambiqueLNG in H1/23, but requisite is must be given green light by @TotalEnergies security team that he can travel there. Fits 10/06 👎caveat & why they don't include 1st LNG until after 2027. #OOTT #NatGas.*" TotalEnergies CEO Pouyanne is saying TotalEnergies won't look at any potential construction restart decision until he is given the green light to travel there himself. Bloomberg wrote "*TotalEnergies will relaunch construction of the Mozambique LNG project when security is reestablished in the Cabo Delgado region, CEO Patrick Pouyanne said at parliamentary hearing in Paris Wednesday. * Company can restart the project when local population resumes normal activities, administrations function properly and economic activity returns ** Pouyanne says he must be given green light by TotalEnergies's security teams to travel to the region as a pre-requisite for project resumption ** CEO can't say when projects will resume, company may look into it in 1H 2023*"

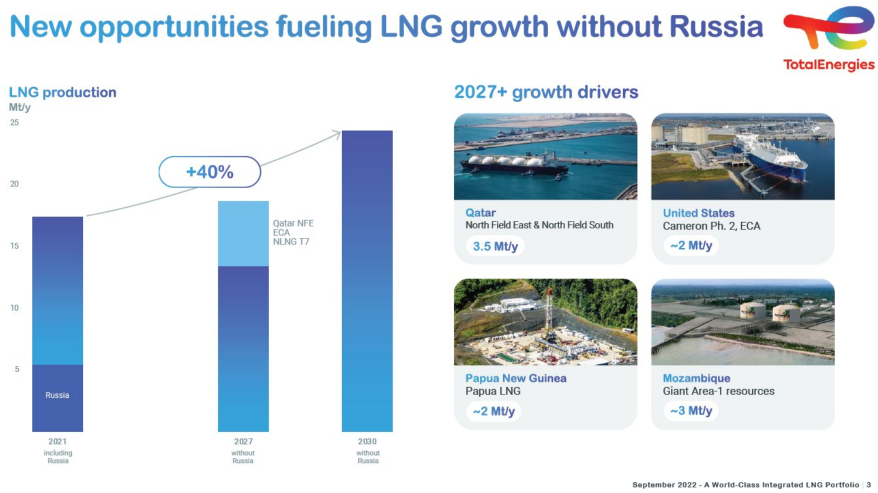
TotalEnergies CEO gave the same security caveat on Oct 6

This was not a new caveat from TotalEnergies CEO on what his test would be to restart construction. On Oct 6 he said that they will "think" to restart only on the day that Pouyanne can visit without a military escort. Here is what we wrote in our Oct 8, 2022 Energy Tidbits memo. *"It looks like TotalEnergies is resisting the urging from Mozambique to restart its flagship Mozambique LNG around year end TotalEnergies does not estimate any time frame to make a restart decision, but they don't point to a restart in early 2023. TotalEnergies CEO Patrick Pouyanne presented at the Energy Intelligence Group forum in London. On Thursday, we tweeted [LINK] "More support for why @TotalEnergies doesn't include #MozambiqueLNG until after 2027. @EI_Forum "we will think to restart" the Mozambique #LNG project only on the day Pouyanne himself can visit without a military escort, says Pouyanne. #EIForum". #NatGas. [LINK]." Assuming Pouyanne is serious that this is the test, it's relatively high bar and one that we have trouble believing will be met within the next year.*

TotalEnergies forecasts do not include Mozambique LNG until after 2027

Here is what we wrote in our Oct 2, 2022 Energy Tidbits. "*TotalEnergies held its investor day on Wednesday and did not give any expected restart to its Mozambique LNG. Circumstances can change, but, on the call, mgmt gave no indication or inference that they might be close to a restart around year end. Rather they just said a normal type line "And in Mozambique, I will come back on it. Of course, security is today improving, but yet to have to improve before we can restarted to project, but the project is there, and we are working to see how we can relaunch it." But it looks like TotalEnergies is not assuming any early 2023 restart at Mozambique LNG. We tweeted [LINK] "#TotalEnergies just posted #LNG slides for today's investor day. Not planning a quick restart to Mozambique LNG as NO volumes are included in LNG growth until AFTER 2027. #OOTT #NatGas." TotalEnergies includes Mozambique LNG in their forecast for sometime after 2027. Last week's (Sept 25, 2022) Energy Tidbits memo noted comments from TotalEnergies country manager. We then wrote "The latest Cabo Ligado Weekly: 12-18 September 2022 was posted on Tuesday. [LINK] The weekly highlighted Nyusi's comments from last week. But interestingly, the weekly also had comments from TotalEnergies Mozambique country manager. Cabo Ligado Weekly wrote "This recognition that there is still much work to be done* *was echoed by her colleague Stéphane Le Galles, Director of TotalEnergies' Mozambique liquefied natural gas (LNG) project, who said there are "visible signs of people coming back to the region but we are not there yet." "The journey is long but the direction is very good," he concluded."*

Figure 12: TotalEnergies LNG Growth Projects



Source: TotalEnergies

A TotalEnergies restart will set in motion 5 bcf/d of Mozambique LNG

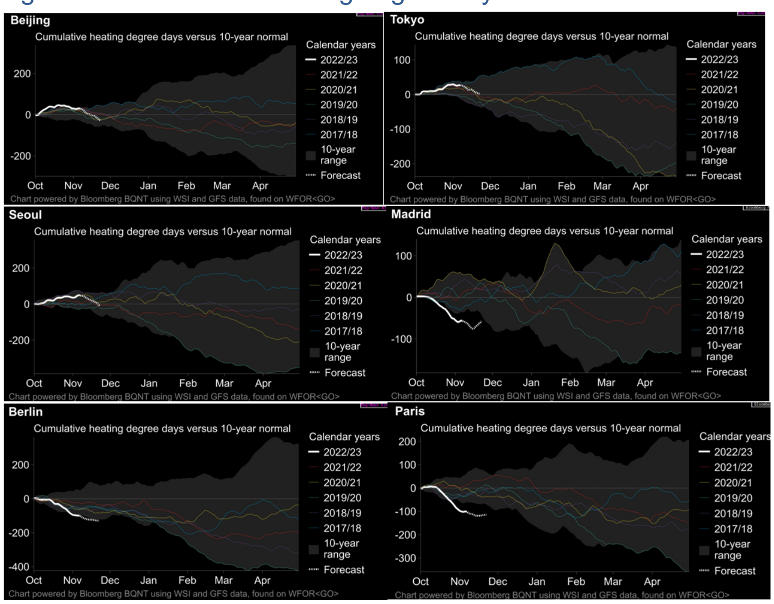
It is important to remember that a restart of TotalEnergies Mozambique Phase 1 is more than a restart of the 1.7 bcf/d for Phase 1 – it's really sets in motion 5.0 bcf/d of Mozambique LNG. This is why we have highlighting TotalEnergies force majeure on its Mozambique LNG Phase 1 for the past 17 months as the game changing event for LNG markets. TotalEnergies Mozambique Phase 1 at 1.7 bcf/d is significant, but our view has been because TotalEnergies delaying Phase 1 of 1.7 bcf/d is actually leading to a delay of 5.0 bcf/d. This was the reason why, on April 28 2021, we posted a 7-pg blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" [LINK] We thought, and still think, there has been a major change to the outlook for LNG supply in the 2020s and one that is still being overlooked – there is a big new LNG supply gap starting around 2025 that is hitting faster and bigger than anyone expects. We saw Total's April 27, 2021 announcement of force majeure at its Mozambique Phase 1 LNG of 1.7 bcf/d was much more significant that viewed. We just didn't see market focused on the fact that this situation backs up an additional 3.3 bcf/d of LNG supply that is also being counted on in all LNG supply forecasts. Total's Phase 2 of 1.3 bcf/d was to follow, and Exxon's Rozuma Phase 1 of 2.0 bcf/d was originally expected to go FID in 2019 but is now not expected to have a FID decision until 2022 at the earliest. Mozambique is considered a premium LNG supply region for Asia and is in LNG supply forecasts. Total's original in service for Phase 1 is 2024. We had been warning that Mozambique has a major LNG market impact and its why we posted the April 28 blog. Its also why earlier we said that this is starting the clock running for other LNG projects wanting to go FID to make their mind up ie. like LNG Canada Phase 2. Our Supplemental Documents package includes our 7-pg April 28, 2021 blog.

Natural Gas – It's been a warmer than normal Nov in most key regions of the world

It's been warm most everywhere

Nov has been a weak month for global weather driven natural gas demand – it's been warm than normal and that means it's not driving natural gas demand for homes. Rather, the weather in most parts of the northern Hemisphere have had Nov temperatures more suited to leave the windows open. Fortunately for natural gas markets, Nov is also the least important winter month for weather driven naturla gas demand. On Tuesday, we tweeted [LINK] *"#LNG101 #NatGas101. Winter is peak season for #NatGas demand. So forecasts for warmer than normal temperatures in November to start winter have led sky-high #LNG EU #NatGas prices to soften to just way higher than normal prices. Thx @BloombergNEF Michael Yip. #OOTT.* BloombergNEF posted cumulative heading degree days graphs for Berlin, Beijng, Madrid, Paris, Seoul and Tokyo that show a similar trend so far in Nov – it's been warmer than normal.

Figure 13: Cumulative heating degree days



Source: BloombergNEF

Natural Gas – Sky-high LNG prices force Pakistan to ration natural gas this winter

Pakistan natural gas rationing

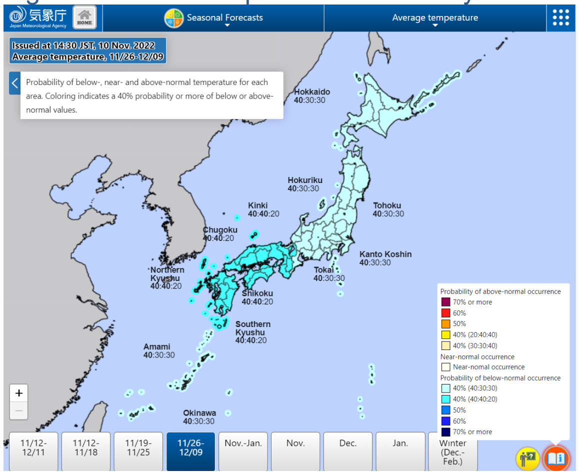
On Friday, Dawn (Pakistan news) reported that Pakistan government officials say they have no option but ration gas this winter [LINK]. Officials made it clear that every effort would be made to ensure gas supply to domestic consumers for three hours every morning, two hours in the afternoon and three hours in the evening. Natural gas was scarce in the country and the coming winter was quite difficult in terms of gas availability and hence could be provided only three times a day to domestic consumers for cooking. Secretary Incharge Capt Muhammad Mahmood was quoted, *"there would be no gas supply to household consumers for 16 hours."* Due to public instability, international oil and gas companies are not ready to invest here. Due to international sanctions, Pakistan cannot take gas from Iran and Russia given the circumstances. On Friday we tweeted [LINK] "*Poorer countries getting hammered as EU bid up #LNG to replace RUS. Pakistan says no #NatGas supply to household customers for 16 hrs/day, rationed to 3 hrs in am, 2 hrs in afternoon, 3 hrs in evening. Pakistan is ~220 mm population or 1/2 EU population. #OOTT*". Our Supplemental Documents package contains the Dawn report.

Natural Gas – A warm Nov expected to turn cold in Dec

Japan temperature outlook

Winter is here so we are back to including Japan Meteorological Agency's every Thursdays near term temperature forecast. The JMA forecasts a warm first few weeks of November but expects a shift to a cold Nov 26-Dec 9 period. [LINK] But, because it's November and early December, it's negative for electricity demand, but not huge. AccuWeather forecasts Tokyo daily highs around 17c and lows around 3c for the forecasted time period.

Figure 14: JMA Temperature Probability Nov 26 – Dec 9

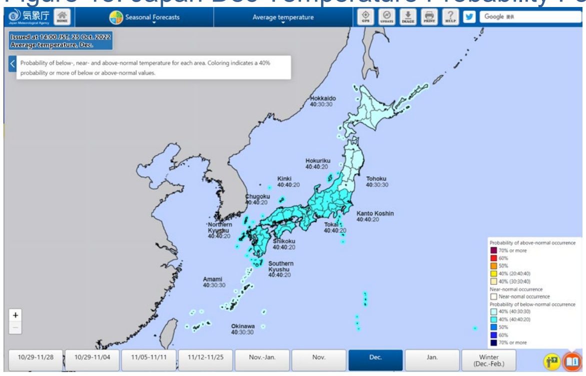


Source: Japan Meteorology Agency

Japan forecasts colder than normal Dec and Jan

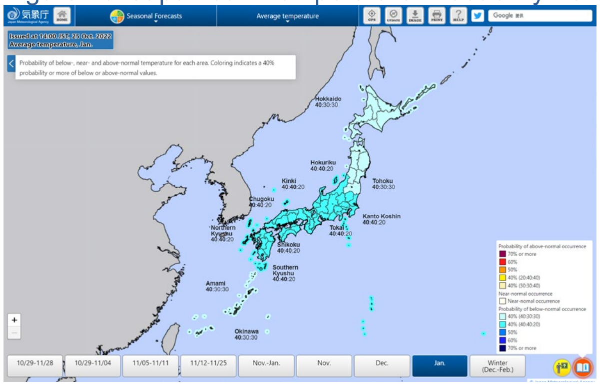
The updated JMA 30-day forecast calling for colder than normal weather to finally hit Japan at the end of November is consistent with the JMA's Oct 25 seasonal forecast for Nov/Dec/Jan. Here is what we wrote in the Oct 30, 2022 Energy Tidbits memo. *"On Thursday, we tweeted [LINK] "Still early, but Japan Meteorological Agency 10/25 forecast calls for colder than normal Dec and Jan. Nov expected warmer than normal. #NatGas #LNG #OOTT". With winter right around the corner, Japan expects a warmer end to fall with November being warmer than normal, but then switching to below normal temperatures in December and January. On Thursday, the Japan Meteorological Agency posted its seasonal forecast for Nov 2022 – Jan 2023 and overall it is a positive indicator for electricity demand as residents look to heat their* *homes [LINK]. So far in 2022, Japan has been trying to maximize coal and petroleum products due to the sky-high prices of LNG. But a cold Dec/Jan should lead to increased natural gas/LNG consumption. The JMA forecasts that most of the country should expect colder than average winter temperatures, especially in the southern regions of the island. Below is the current JMA forecast for Dec 2022 and Jan 2023.*

Figure 15: Japan Dec Temperature Probability Forecast



Source: JMA

Figure 16: Japan Jan Temperature Probability Forecast



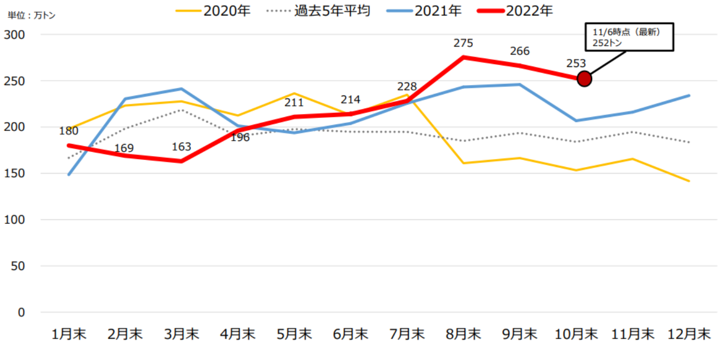
Source: JMA

Natural Gas – Japan's LNG stocks up +1.0% from last week

Japan LNG stocks +1.0% WoW

The risk for Japan in the winter is that they need full storage and continued LNG imports to avoid natural gas outages. That's because Japan's LNG stockpiles are not huge relative to LNG imports that have ranged from 7 to 14 bcf/d since Jan 1, 2021. A cold winter or interruption in LNG imports could easily lead to a shortage. LNG stockpiles held by Japanese power producers have exceeded both last year's level and the 4-year average. Japan's METI weekly LNG stocks data was released on Wednesday [LINK]. LNG stocks at Nov 6 were ~121 bcf, +1.0% WoW from 120 bcf and up from the 5-yr average of 104 bcf. Below is the LNG stocks graph from the METI weekly report.

Figure 17: Japan's LNG Stocks



Source: METI

Natural Gas – Japan Sept LNG imports hurt by LNG prices, down -1.6% YoY

Japan Sept LNG imports -1.6% YoY

Japan was early in working to have the nation reduce natural gas consumption. It was a major political request on citizens to minimize LNG imports in an environment of sky-high LNG prices. It has been working. Two weeks ago, Japan's Ministry of Finance posted its import data for Sept. [LINK].The MOF reported Japan's Sept LNG imports were 8.52 bcf/d, down -1.6% YoY and down 12.5% MoM. Below is our table that tracks Japan LNG import data.

Figure 18: Japan Monthly LNG Imports

bcf/d	2015	2016	2017	2018	2019	2020	2021	21/20	2022	22/21
Jan	13.06	11.22	12.85	12.79	11.69	11.63	12.48	7.3%	10.51	-15.8%
Feb	13.26	12.30	13.36	14.23	12.61	10.99	13.84	25.9%	12.19	-11.9%
Mar	12.60	12.62	12.61	12.28	11.30	11.16	11.04	-1.1%	10.07	-8.7%
Apr	10.56	10.21	10.52	8.97	9.00	8.31	7.96	-4.3%	8.92	12.0%
May	8.91	8.55	9.66	9.92	8.62	7.09	7.67	8.1%	8.92	16.3%
June	10.61	10.02	9.90	8.88	8.32	8.42	9.13	8.5%	9.29	1.7%
July	10.77	10.19	10.19	10.55	10.56	9.35	9.58	2.5%	9.54	-0.4%
Aug	10.93	11.96	11.24	11.73	9.45	9.04	9.75	7.8%	9.71	-0.4%
Sept	11.06	10.67	9.31	10.04	10.30	10.41	8.66	-16.8%	8.52	-1.6%
Oct	9.38	9.73	9.50	10.12	9.75	9.20	7.17	-22.1%		
Nov	10.71	12.07	10.26	10.15	10.03	9.63	9.38	-2.6%		
Dec	12.51	11.69	12.31	11.23	10.54	11.96	10.89	-8.9%		

Source: Japan Ministry of Finance

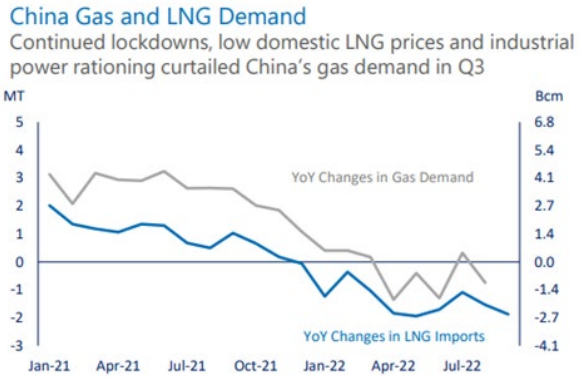
Natural Gas – 1st YoY decline in China natural gas consumption in ~20 years tweet

China natural gas demand down YoY

It seemed like there were many reports on China natural gas consumption being down in 2022 for the first time in ~20 years. Here is what we wrote in last week's (Nov 6, 2022) Energy Tidbits memo. "*One of the big global natural gas themes has been how sky-high LNG and global natural gas prices have led to fuel switching where possible and cuts in consumption. This is not just in Europe but also in China. We have been warning that China's LNG imports will be less in 2022 for three key reasons - higher pipeline imports of cheaper Russian natural gas via Gazprom's Power of Siberia, increasing domestic natural gas production, and sky-high LNG prices are seeing China switch to coal where possible. But the sky-high LNG prices have also meant something that hasn't happened in ~20 years – China's natural gas consumption will be down YoY in 2022. On Thursday, we tweeted [LINK] "1st YoY decline in China #NatGas consumption in ~20 years was the saving grace for*

Europe #NatGas this year. See 👇from @Cheniere just posted Q3 call slides. #OOTT." Our tweet included the below graph from Cheniere's Q3 call slide deck.

Figure 19: China natural gas and LNG demand



Source: Cheniere

Natural Gas – Engie sees large EU industrial gas users demand destruction 20-30%

EU industrial demand destruction

Engie (French multinational energy utility company) held its Q3 call on Thursday. Engie noted how warmer temperatures had helped lead to higher gas storage levels in Europe. And, in the Q&A, discussed how there was natural gas demand destruction in industrial users, more in the big industrial users than the smaller industrial users. Engie also noted that the natural gas demand destruction also included fuel switching. In the Q&A, mgmt. replied "*In terms of gas supply demand, obviously, we have models and trying to correct for whether I would say, in terms of European customer what we're seeing is that the very big giant type of customers of ENGIE I've shown a demand which is quite high between 20% and 30%, this demand destruction by the way is not just protection stopping or suspending it's also includes conversion from gas to fuel, fuel which is not great for climate but that the 30% that we think in the very, very big customers, of course, for smaller customers it's much less. And here, you will between 10% and 15% for the smaller companies."*

Natural Gas – Huge benefit of warm EU weather, storage keeps filling in Nov

Warm Nov means EU keeps filling storage

We have been highlighting the warmer than normal temperature in Europe in Oct and to start Nov. And, unfortunately, the industrial demand destruction. But the advantage of the warmer than normal weather is that there has been very little weather related demand. And the other big benefit is that the mild weather and industrial demand destruction also means that Europe can keep filling its natural gas storage so it has essentially full natural gas storage for longer.

Natural Gas – Link to Europe gas storage levels by country

Link to EU gas storage data

We pull our weekly Europe gas storage data from Bloomberg as it makes it easier to download the data and update our linked graphs. But there is also a link to the same data. On Thursday, we tweeted [LINK] *"Europe overall #NatGas storage 95.31% as of Nov 8 close. Directly due to warmer than normal temps across EU for Oct/Nov-to-date, also industrial demand destruction. Here is link to Gas Infrastructure Europe daily gas storage by country.*

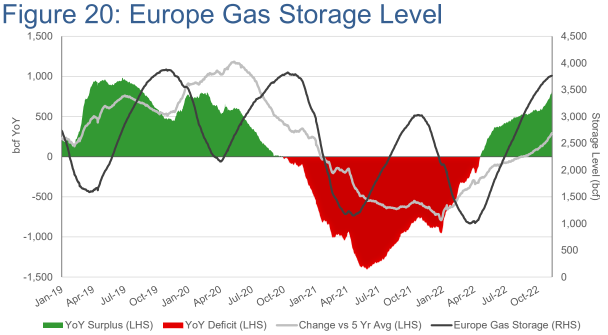
[LINK] #OOTT #LNG". The link is to the GIE gas storage levels by country and total. Our Supplemental Documents package includes the latest data posted on Friday for the Thurs gas storage levels. We double checked yesterday afternoon and there is no Friday close data posted. The GIE data for Nov 10 close was a total of 95.39% full for Europe. Bloomberg pulls the same data, which is why our below comment is also 95.39% full.

Natural Gas – Europe storage is now +20.40% YoY ie. 95.39% full vs 74.99%

It's been a very good Oct and start to Nov for lower natural gas consumption driven by warmer than normal weather and industrial demand destruction. And that means Europe gas storage continue to build instead of being drawn down as would normally be expected in Nov. So even with Nord Stream volumes down to zero, Europe storage continues to have increasing YoY levels. Europe gas storage began the year in a YoY deficit, but the YoY Europe storage deficit changed to a YoY storage surplus, and it continues to build this week. Europe gas storage started the winter 17.86% YoY and is now a YoY surplus of 20.40%. Inventories are rising all across Europe, as is normal during spring and early summer. Europe gas storage started 2020 winter (Nov 1/20) at basically full levels at 94.66% and had dropped by 65.77% to be 28.89% at Apr/21. Europe storage levels bottomed in late Apr/22 at 29%, which was the lowest level since Apr 2018. Last winter began (Nov 1/21) with gas storage at 77.14% capacity, down 18.52% YoY. The YoY deficit has turned to surplus after months of the deficit tightening. This winter (Nov 1/22) began with gas storage at 94.94% capacity, up 17.86% YoY. Thanks to the warm weather and US LNG, storage as of Nov 10 is at 95.39%, which is +20.40% greater than last year levels of 74.99% and are +7.28% above the 5-year average of 88.11%. Below is our graph of Europe Gas Storage Level.

Europe storage now 95.39% full

Figure 20: Europe Gas Storage Level



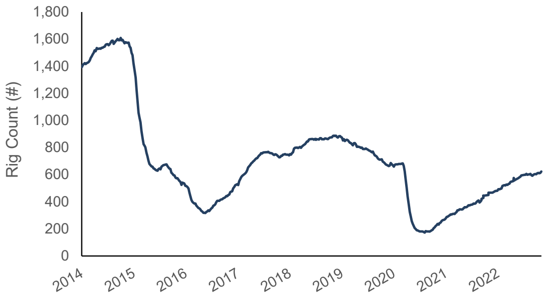
Source: Bloomberg

Oil – US oil rigs up +9 to 622 oil rigs at Nov 10

Baker Hughes released its weekly North American drilling activity data this morning. It doesn't show on the graph but, normally, US rigs are fairly flat in Nov/Dec, which would be a positive for building DUCs if frac spreads have their normally seasonal decline. This week US oil rigs were +9 to 622 oil rigs. The big changes this week are +4 Permian rigs and smaller basins add +5 rigs. US oil rigs hit a 14-week low of 591 eight weeks ago. US oil rigs are now +443 oil rigs since the Covid Sept 17, 2020 oil rigs of 179 oil rigs. And US oil rigs are +168 oil rigs YoY. US gas rigs were flat WoW at 155 gas rigs.

US oil rigs +9 WoW

Figure 21: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

Oil – US frac spreads +5 to 295 spreads for the week ending Nov 11

Frac spreads +5 to 295

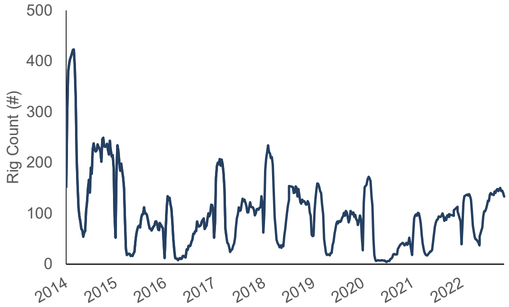
Please note that we hadn't expected to see a frac spread update as, two weeks ago, Rossano noted he was moving the weekly frac spread update behind a pay wall. But there was an update on Friday. So at least for this week, Mark Rossano (C6 Capital Holdings) held his weekly US frac spread recap for the week ending Nov 11 on the Primary Vision network. YouTube video is [LINK]. For the week ending Nov 11, US frac spreads at the high point in the week were +5 to 295 spreads. Here are some of his comments on the week. His key reminder is that this may be the peak, before move into the normal seasonal decline that happens moving into US Thanksgiving. He had been expecting one last push prior to the normal seasonal slowdown that happens around US Thanksgiving and continues thru next year. Had been expecting to get to 300 to 305, but thinks this is likely be the top but could get one last push to 297 or maybe 300 but just based on the Permian at this level, pretty much tapped out. Plus he looks at some of the other areas and are butting up against the available capacity. Reminds should start to see a bit of decline as go into Thanksgiving and then down from there. But Rossano sees a more muted seasonal drop down, but that is due to haven't gone up as high as before

Oil – Total Cdn rigs down -9 WoW to 200 total rigs, +33 rigs YoY

Cdn rigs -9 WoW

Total Cdn rigs were -9 to 200 rigs as of Nov 10, 2022. Cdn oil rigs were -8 to 133 oil rigs. Cdn gas rigs were -1 to 67 rigs. Normally rigs are fairly flat in early Nov although there can be down weeks. Total rigs are now +111 vs the comparable Covid period of 89 rigs on Nov 13, 2020. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 101 and Cdn gas rigs were 67 for a total Cdn rigs of 168, meaning total Cdn oil rigs are +32 YoY to 133 oil rigs and Cdn gas rigs are flat at 67 gas rigs.

Figure 22: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

Oil – US weekly oil production up to 12.1 mmb/d

US oil production up WoW

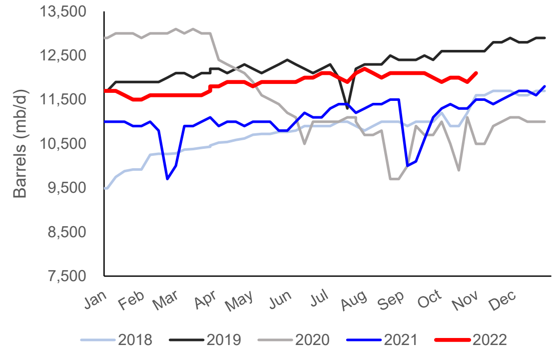
The EIA provides weekly estimates of US oil production, which was up to 12.1 mmb/d from 11.9 mmb/d for the week ended Nov 4. US oil production has been range bound between 11.9 to 12.1 mmb/d since the 2nd week of May other than when it touched 12.2 mmb/d in the 1st week of August. Lower 48 production was up WoW at 11.7 mmb/d this week and Alaska was flat WoW at 0.4 mmb/d. US oil production is up +0.603 mmb/d YoY at 12.1 mmb/d but is still down significantly at -1.0 mmb/d since the 2020 peak of 13.1 mmb/d on March 13.

Figure 23: EIA's Estimated Weekly US Oil Production

	Week 1		Week 2		Week 3		Week 4		Week 5	
Year-Month	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
2020-Jan	01/03	12,900	01/10	13,000	01/17	13,000	01/24	13,000	01/31	12,900
2020-Feb	02/07	13,000	02/14	13,000	02/21	13,000	02/28	13,100		
2020-Mar	03/06	13,000	03/13	13,100	03/20	13,000	03/27	13,000		
2020-Apr	04/03	12,400	04/10	12,300	04/17	12,200	04/24	12,100		
2020-May	05/01	11,900	05/08	11,600	05/15	11,500	05/22	11,400	05/29	11,200
2020-Jun	06/05	11,100	06/12	10,500	06/19	11,000	06/26	11,000		
2020-Jul	07/03	11,000	07/10	11,000	07/17	11,100	07/24	11,100	07/31	11,000
2020-Aug	08/07	10,700	08/14	10,700	08/21	10,800	08/28	9,700		
2020-Sep	09/04	10,000	09/11	10,900	09/18	10,700	09/25	10,700		
2020-Oct	10/02	11,000	10/09	10,500	10/16	9,900	10/23	11,100	10/30	10,500
2020-Nov	11/06	10,500	11/13	10,900	11/20	11,000	11/27	11,100		
2020-Dec	12/04	11,100	12/11	11,000	12/18	11,000	12/25	11,000		
2021-Jan	01/01	11,000	01/08	11,000	01/15	11,000	01/22	10,900	01/29	10,900
2021-Feb	02/05	11,000	02/12	10,800	02/19	9,700	02/26	10,000		
2021-Mar	03/05	10,900	03/12	10,900	03/19	11,000	03/26	11,100		
2021-Apr	04/02	10,900	04/09	11,000	04/16	11,000	04/23	10,900	04/30	10,900
2021-May	05/07	11,000	05/14	11,000	05/21	11,000	05/28	10,800		
2021-Jun	06/04	11,000	06/11	11,200	06/18	11,100	06/25	11,100		
2021-Jul	07/02	11,300	07/09	11,400	07/16	11,400	07/23	11,200	07/30	11,200
2021-Aug	08/06	11,300	08/13	11,400	08/20	11,400	08/27	11,500		
2021-Sep	09/03	10,000	09/10	10,100	09/17	10,600	09/24	11,100		
2021-Oct	10/01	11,300	10/08	11,400	10/15	11,300	10/22	11,300	10/29	11,500
2021-Nov	11/05	11,500	11/12	11,400	11/19	11,500	11/26	11,600		
2021-Dec	12/03	11,700	12/10	11,700	12/17	11,600	12/24	11,800	12/31	11,800
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								

Source: EIA

Figure 24: US Weekly Oil Production



Source: EIA, SAF

Oil – EIA's Nov STEO 2023 US oil production forecasts is -0.66 mmb/d vs June STEO

Marginal reduction to 2023 oil production forecast

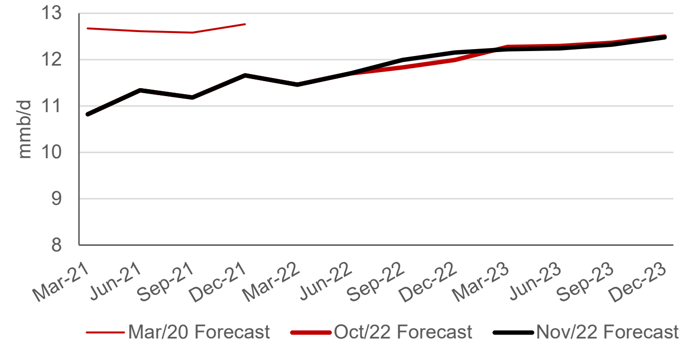
The EIA lowered its US oil production forecast for 2023 down by 40,000 b/d, while raising 2022 by 80,000 b/d. The EIA posted its Short-Term Energy Outlook November on Tuesday. (i) The EIA increased its 2022 US oil production forecast from 11.74 mmb/d to 11.82 mmb/d, which would be +0.57 mmb/d YoY vs 11.25 mmb/d in 2021. (ii) The EIA forecasts Q4/22 at 12.15 mmb/d, which would be +0.49 mmb/d vs Q4/21 of 11.66 mmb/d. This +0.49 mmb/d YoY is down from +0.85 mmb/d YoY as late as its June STEO. So it's a more reasonable forecast. To the end of August, the EIA "actuals" are +0.34 mmb/d vs Dec 2021, so it looks to be on track or close to the EIA's new STEO. (iii) Nov STEO 2023 average forecast is 12.31 mmb/d, which is down -0.66 mmb/d from their June STEO. It is only down marginally from Oct STEO of 12.35 mmb/d, Sep STEO of 12.63 mmb/d, Aug STEO of 12.70 mmb/d, July STEO of 12.77 mmb/d, and June STEO of 12.97 mmb/d.

Figure 25: Estimated US Crude Oil Production By Forecast Month

(million b/d)	Q1/20	Q2/20	Q3/20	Q4/20	2020	Q1/21	Q2/21	Q3/21	Q4/21	2021	Q1/22	Q2/22	Q3/22	Q4/22	2022	Q1/23	Q2/23	Q3/23	Q4/23	2023
Nov-2022	12.83	10.69	10.83	10.94	11.32	10.82	11.34	11.18	11.66	11.25	11.46	11.70	11.99	12.15	11.82	12.22	12.24	12.32	12.48	12.31
Oct-2022	12.83	10.69	10.83	10.94	11.32	10.82	11.34	11.18	11.66	11.25	11.46	11.70	11.83	11.99	11.74	12.27	12.29	12.36	12.50	12.35
Sep-2022	12.83	10.69	10.83	10.94	11.32	10.82	11.34	11.18	11.66	11.25	11.47	11.70	11.81	12.16	11.79	12.42	12.55	12.70	12.87	12.63
Aug-2022	12.83	10.69	10.83	10.94	11.32	10.82	11.34	11.18	11.66	11.25	11.46	11.69	12.01	12.28	11.86	12.39	12.50	12.82	13.10	12.70
July-2022	12.81	10.68	10.79	10.87	11.28	10.69	11.28	11.13	11.63	11.19	11.46	11.75	12.08	12.34	11.91	12.45	12.58	12.87	13.17	12.77
June-2022	12.81	10.68	10.79	10.87	11.28	10.69	11.28	11.13	11.63	11.19	11.45	11.71	12.08	12.43	11.92	12.64	12.82	13.07	13.33	12.97
May-2022	12.81	10.68	10.79	10.87	11.28	10.69	11.28	11.13	11.63	11.19	11.42	11.78	12.07	12.35	11.91	12.56	12.71	12.94	13.18	12.85
Apr-2022	12.81	10.68	10.79	10.87	11.28	10.69	11.28	11.13	11.63	11.19	11.52	11.90	12.15	12.46	12.01	12.73	12.88	13.02	13.17	12.95
Mar-2022	12.81	10.68	10.79	10.87	11.28	10.69	11.28	11.13	11.62	11.18	11.59	11.89	12.15	12.48	12.03	12.75	12.91	13.06	13.24	12.99
Feb-2022	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.13	11.69	11.20	11.67	11.86	12.06	12.27	11.97	12.46	12.54	12.63	12.75	12.60
Jan-2022	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.12	11.54	11.16	11.58	11.70	11.88	12.05	11.80	12.26	12.33	12.46	12.58	12.41
Dec-2021	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.11	11.63	11.18	11.67	11.72	11.91	12.09	11.85					
Nov-2021	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.07	11.47	11.13	11.69	11.77	11.97	12.16	11.90					
Oct-2021	12.81	10.67	10.79	10.87	11.28	10.69	11.28	10.98	11.13	11.02	11.54	11.64	11.78	11.96	11.73					
Sept 2021	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.06	11.28	11.08	11.42	11.58	11.81	12.06	11.72					
Aug 2021	12.81	10.67	10.79	10.87	11.28	10.69	11.22	11.26	11.30	11.12	11.46	11.62	11.86	12.11	11.77					
July 2021	12.75	10.81	10.81	10.90	11.31	10.70	11.20	11.17	11.34	11.10	11.54	11.72	11.95	12.20	11.85					
June 2021	12.75	10.81	10.81	10.90	11.31	10.70	11.04	11.17	11.38	11.08	11.55	11.67	11.88	12.05	11.79					

Source: EIA STEO

Figure 26: Estimated US Crude Oil Production By Forecast Month



Source: EIA STEO

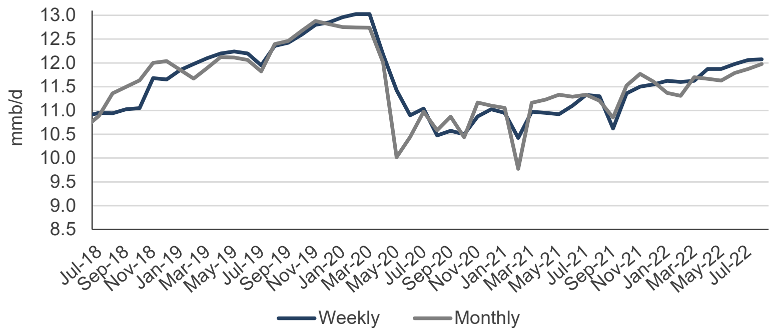
Oil – EIA Form 914 August oil production is only +341,000 b/d vs Dec 2021 exit
As noted above, it looks like the EIA's lowering of its 2022 and 2023 US oil production forecasts since June look to bring their forecast more in line with the actuals. But the lowering also reminds that the growth in 2022 has been less than expected. There are two key takeaways from the EIA's recent look back at August actual oil production – August is only +341,000 b/d vs the Dec 2021 exit and was -100,000 b/d below the weekly estimates. The EIA released its Form 914 data on [LINK] on Oct 31, which is the EIA's "actuals" for August US oil and natural gas production. (i) Form 914 estimates total US oil production is up 1.002 mmb/d MoM to 11.975 mmb/d in August. The actuals for August were 100,000 b/d lower than the EIA's weekly estimates that worked out to just over 12.075 mmb/d. (ii) One of the growing questions has been how much US oil will grow in 2022. August actuals at 11.975 mmb/d is only +341,000 b/d more than the year end Dec 2021 average of 11.634 mmb/d.

Figure 27: EIA Form 914 US Oil Production

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	11,369	11,316	11,701	11,668	11,629	11,797	11,873	11,975				
2021	11,124	9,925	11,326	11,305	11,356	11,356	11,347	11,277	10,918	11,569	11,790	11,634
2020	12,852	12,842	12,797	11,914	9,713	10,442	11,006	10,577	10,921	10,457	11,196	11,168
2019	11,869	11,673	11,913	12,149	12,154	12,218	11,902	12,486	12,590	12,809	13,000	12,978
2018	10,001	10,281	10,467	10,500	10,435	10,641	10,897	11,392	11,443	11,509	11,886	11,945
2017	8,875	9,110	9,166	9,101	9,185	9,111	9,247	9,250	9,517	9,669	10,085	9,983
2016	9,202	9,066	9,101	8,874	8,835	8,676	8,662	8,690	8,544	8,804	8,903	8,816

Source: EIA

Figure 28: EIA Form 914 US Oil Production vs Weekly Estimate



Source: EIA

Oil – Expect Biden to keep focusing on the oil industry post the midterms

Biden keeps threatening oil companies

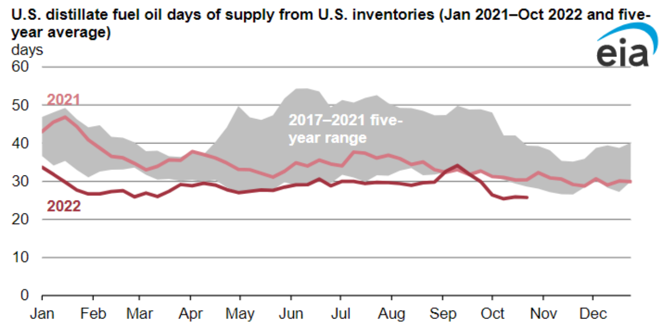
There shouldn't be any doubt that one of Biden's priorities in the last two years of his term will be to keep going after the oil and gas sector, and also the coal sector. In his post-midterms press conference, the only industry he called out was the oil and gas sector. Given he is feeling good about the results, it is a reminder that he plans to keep going after the oil and gas sector. (i) This was before the election, but Biden said no more drilling offshore. Last Sunday night, Biden spoke at a rally for NY Governor Hochul. Early Monday morning, we tweeted [LINK] *"#Biden gives answer to @amoshochstein 👇 problem on why #Oil companies aren't investing all their cash flow into accelerating drilling. See last night [LINK] Biden "No more drilling. There is no more drilling. I haven't formed any new drilling."* Here is the White House transcript "*THE PRESIDENT: No more drilling. There is no more drilling. I haven't formed any new — new drilling. AUDIENCE MEMBER: You released five more years of offshore drilling. THE PRESIDENT: No, I — AUDIENCE MEMBER: (Inaudible) Atlantic or the Pacific but in the Antarctic and off the Gulf of New Mexico — off the Gulf of Mexico. THE PRESIDENT: That was before I was President. We're trying to work on that, get that done.*" (ii) Post-election Biden calls out oil sector. On Wednesday, Biden held what was his feeling good about the midterms press conference. We tweeted [LINK] *"See 👇 transcript, #Oil companies are only group specifically called out by #Biden in his post midterms press conference. Looks like anti oil will continue as a priority in last 2 years of term. Also said still intention to run in 2024, expects to reveal post Xmas holiday. #OOTT."* We created a transcript of his comment. At 2:49pm MT, Biden ".. *but what I can't do, I can't guarantee that we're going to be able to get rid of inflation. But I do think we can. We've already brought down the price of gasoline by about $1.20 a gallon across the board. And I think the oil companies are really doing the nation a real disservice. They've made, six of them made over $100 billion dollars in the last quarter, profit. $100 billion dollars. In the past, if they had done the two things they had done before. One, invest in more refineries to producing more product and/or passing on the rebates to the gas stations, they sell the oil at a cheaper rate than they are selling it now. Not taking advantage and that lowers the price of a total gallon of gas because that gets passed on. So there's a whole lot of things we can do that are difficult to do, but we're going to continue to push to do them."*

Oil – EIA reminds diesel inventories well below normal especially in NE US

Diesel inventories well below normal

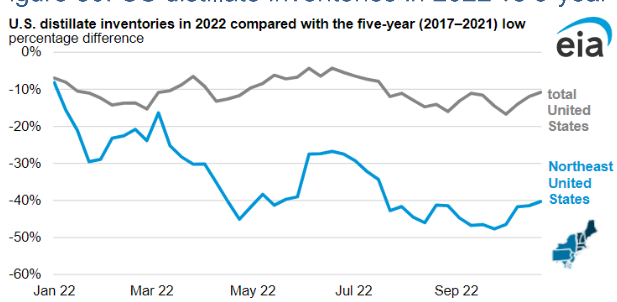
On Thursday, the EIA posted its blog "*Strong demand for diesel leads to high prices and tight inventories going into winter*" [LINK]. Strong demand and reduced global production combined to result in lower ultra-low sulfur diesel demand in October. In October 2022, the US had only 25 days of diesel supply, below the average of 34 days and the fewest since 2008. An important note is that the number does not include production, imports, or any other sources of supply. Diesel prices averaged $4.36 per gallon in October, the highest since May 2022 and impacted by drivers such as tight global inventories, reduced refinery production, labor strikes, and the start of seasonal demand. The Northeast, comprised of New England and mid-Atlantic regions, has had even tighter inventories than the US average. The tighter inventories have contributed to rising prices in the region. Our Supplemental Documents package includes the EIA blog.

Figure 29: US distillate fuel oil days of supply from inventories



Source: EIA

Figure 30: US distillate inventories in 2022 vs 5-year average



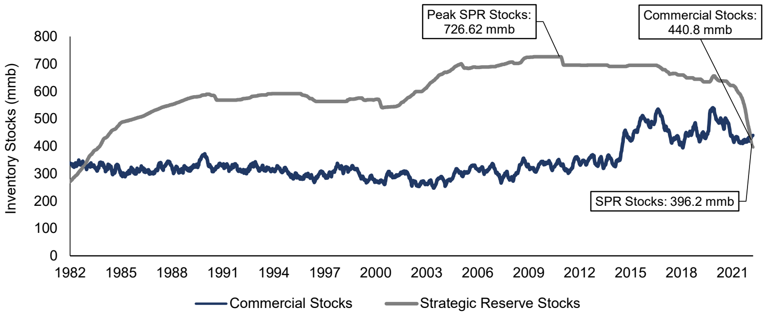
Source: EIA

Oil – US SPR reserves now 44.5 mmb less than commercial crude oil reserves

SPR reserves keep going lower

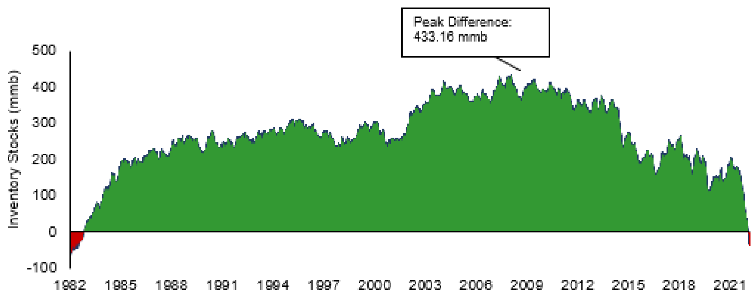
Oil in US Strategic Petroleum Reserves (SPR) moved below total US commercial crude oil reserves in the Sept 16 week for the first time since 1983, and the deficit continues to widen each week. The EIA's new weekly oil data for Nov 4 has SPR reserves at 396.22 mmb vs commercial crude oil reserves at 440.76 mmb. The below graph highlights the difference between commercial and SPR stockpiles.

Figure 31: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 32: US Oil Inventories: SPR less commercial



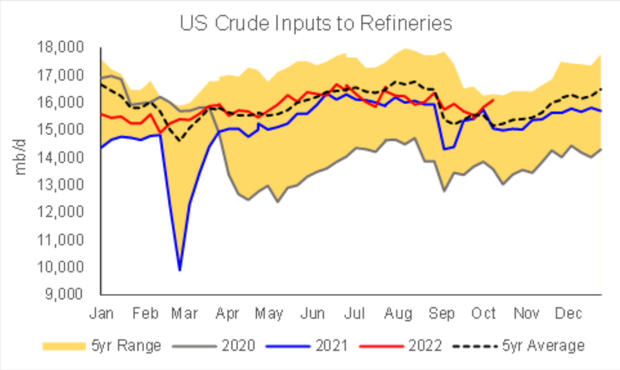
Source: EIA

Oil – Refinery inputs +0.247 mmb/d WoW to 16.089 mmb/d

Refinery inputs up WoW

It's Nov, which is normally the start of the seasonal increase in crude oil inputs to refineries as they have finished their normal Sept/Oct seasonal refinery maintenance period as refineries change from summer to winter fuel blends. Crude oil input into refineries tends to slightly increase in Nov and Dec. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended Nov 4. The EIA reported crude oil inputs to refineries up +0.247 mmb/d WoW to 16.089 mm/d, which is +0.723 mmb/d YoY from 15.366 mmb/d for the week ended Nov 5, 2021. Note last year's week ended Nov 12, refineries continued to recover from the impacts of Covid and Hurricane Ida and we observed inputs decline as refineries progress through regularly schedules seasonal maintenance. Total products supplied (i.e., demand) increased WoW, up +0.785 mmb/d to 21.267 mmb/d, and Motor gasoline was up 0.352 mmb/d at 9.011 mmb/d from 8.660 mmb/d last week. The 4-week average for Motor Gasoline was down -0.610 mmb/d YoY to 8.820 mmb/d.

Figure 33: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

Oil – Kuwait starts up 615,000 b/d Al Zour refinery

Kuwait 615,000 b/d Al Zour refinery

On Monday, we tweeted [LINK] "*Kuwait's new 615,000 b/d Al Zour refinery is the largest refinery in the @EIAgov estimated 2.9 mmb/d of new refinery capacity additions in 2022/2023. See 👇 excerpt from SAF Group Aug 7, 2022 Energy Tidbits memo. #OOTT.*" The startup of the massive Al Zour refinery has been built into all forecasts, or at least, should have been. Argus reported [LINK] "*Commercial operations have started at the first phase of Kuwait's 615,000 b/d al-Zour refinery, project operator Kipic said today. The refinery is "a vital outlet for the disposal of heavy Kuwaiti oil and provides refined products for export in global markets with standard specifications", acting Kipic chief executive Waleed al Bader told state news agency Kuna. Al-Zour will expand Kuwait's refining capacity to 1.415mn b/d from around 800,000 b/d when it reaches full capacity in 2023.*" There was one other key aspect Argus also reported "*US engineering company Fluor, one of the companies working on the project, has said al-Zour will have capacity to process 615,000 b/d of light Kuwaiti crude or 535,000 b/d of heavy grades.*" Our Supplemental Documents package includes the Argus report.

2.9 mmb/d of refining additions in Asia and Middle East for 2022 and 2023

Our tweet on Kuwait's 615,000 b/d Al Zour refinery included an excerpt from our Aug 7, 2022 Energy Tidbits. Here is what we then wrote "*We recommend adding to reference libraries the new EIA blog on Tuesday that listed all the new refinery capacity additions in the Middle East and Asia scheduled to come onstream in 2022 and 2023. The EIA identified nine refinery projects beginning operations or scheduled to come online before the end of 2023. On Wednesday, we tweeted [LINK] "Who doesn't love a great map! @EIA shows ~2.9 mmb/d of 2022/23 refinery additions by refinery. China 1.120 mmb/d, Kuwait 0.615 mmb/d, Saudi 0.400 mmb/d, Malyasia 0.300 mmb/d, Oman 0.230 mmb/d, Iraq 0.140 mmb/d & India 0.135 mmb/d. #OOTT". The EIA highlighted that China's refinery capacity is scheduled to increase significantly this year. The 320,000 b/d Shenghong Petrochemical facility in Lianyungang reports that trial crude oil-processing operations began in May 2022. In addition, PetroChina's 400,000 b/d Jieyang refinery is expected to come online in Q3/22. A planned 400,000 b/d Phase II capacity expansion also began operations earlier this year at Zhejiang Petrochemical Corporation's Rongsheng facility. Outside* *of China, the 300,000 b/d Malaysian Pengerang refinery restarted in May 2022 after a fire forced the refinery to shut down in March 2020. In India, the Visakha Refinery is undergoing a major expansion, scheduled to add 135,000 b/d by 2023. Our Supplemental Documents package includes the EIA article."*

Figure 34: Selected Major Global Refinery Projects Scheduled for 2022 and 2023

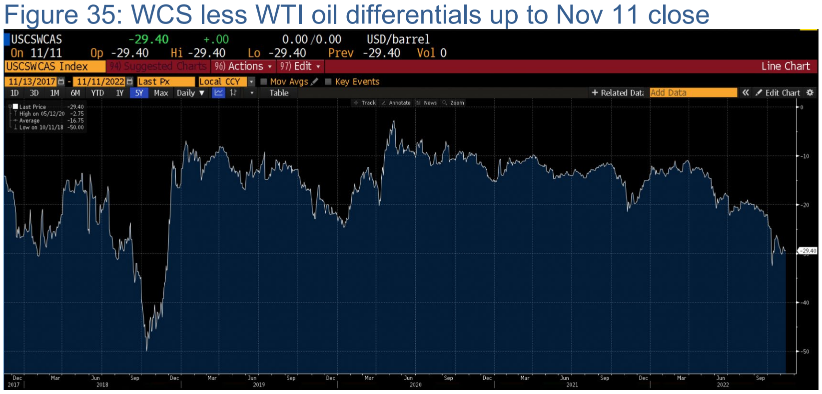
Source: EIA

Oil – Cdn oil differentials basically unchanged at $29.40

Explaining Cdn oil differentials

We have been highlighting the widening Cdn oil differentials over the past few months driven by changing oil supply impacts post Russia/Ukraine and items such as the BP Toledo refinery shutdown. Cdn oil differentials closed on Friday at $29.40, which is basically unchanged WoW from $29.00 as of Nov 4 close. The BP 160,000 b/d Toledo refinery temporary shutdown remains a factor, but we believe the bigger challenge to Cdn medium/heavy oil differentials is the impact of Russian oil flows to India and China. Here is what we wrote in our Oct 30, 2022 Energy Tidbits memo on Valero's explanation of why Cdn oil differentials have been hit. We wrote "*We try to look at as many earnings call transcripts as possible. Not being a stock analyst, we have the luxury of looking for sector and commodity insights. And we normally find the best insights come in the Q&A. Valero held its Q3 call on Tuesday and included a good explanation for their view of why Cdn oil differentials have been hit. Valero reminded that Cdn oil differentials have been hit this year the redirection of Russian crudes from Europe to China/India and forcing more US Mars crude to stay in the Gulf of Mexico. We tweeted [LINK] "#Valero EVP Simmons explains why Cdn #Oil diffs have been hit - China/India refiners taking lot more RUS Urals crude backed up Mars & Cdn heavy into Gulf Coast refineries. Cdn normally narrow in spring but didn't this year and widened in summer/fall. Thx @business. #OOTT". Our transcript was Valero EVP Gary Simmons comment in the Q&A. ""Yeah, so this is Gary. As Joe touched on a few of these things, but there is a number of factors that have been really driving the heavy sour discounts. First the sanctions put on Russia have caused some rebalancing, a lot of the Indian and Chinese refineries are running Urals, it's backed-up Mars and heavy Canadian into the Gulf, which are driving those discounts wider. So we talked about the higher prices in natural gas around the world cause the operating expenses running heavy and medium, sours to be higher so that causes discounts to be wider, there's a higher naphtha content in heavy Canadian crude, naphtha has been discounted so that drives the discounts wider, we've seen some* *unplanned maintenance in the U.S., which has also contributed. But overall, I think we continue to see weakness in high sulfur fuel oil combined with higher refinery utilization putting more product on the market. So some of that what we expected in IMO 2020, we're finally starting to see in the market, lack of Chinese demand is certainly also contributing to that. So for us, when we look at the market going forward, seasonal maintenance in Western Canada is coming to an end, you'll see higher diluent volumes as we head into winter, so all of that's putting more heavy Canadian on the market. We expect to see even more rebalancing occur if sanctions are wrapped up in Russia. And so we expect this market to continue, we're certainly maximizing heavy Canadian in our system today and seeing a lot of opportunity to buy high-sulfur fuel blend stocks as you mentioned that we're putting into our Cokers."* Below is Bloomberg's current WCS–WTI differential as of Friday Nov 11 close.

Figure 35: WCS less WTI oil differentials up to Nov 11 close



Source: Bloomberg

Oil – US "net" oil imports up 0.653 mmb/d WoW at 2.933 mmb/d

US "net" oil imports up WoW

US "NET" imports were up +0.653 mmb/d to 2.933 mmb/d for the Nov 4 week. US imports were up +0.249 mmb/d to 6.454 mmb/d. US exports were down -0.404 mmb/d to 3.521 mmb/d. The WoW increase in US oil imports was driven Top 10 with and increase of 0.198 mmb/d and "other" posting a smaller increase of +0.051 mmb/d. Some items to note on the by country data. (i) Canada was down this week by -0.175 mmb/d to 3.235 mmb/d. (ii) Saudi Arabia was down -0.014 mmb/d to 0.519 mmb/d this week. (iii) Colombia was up +0.123 mmb/d WoW to 0.341 mmb/d. (iv) Ecuador was up +0.102 mmb/d to 0.102 mmb/d. (v) Iraq was up +0.369 mmb/d to 0.503 mmb/d. (vi) Mexico was down -0.245 mmb/d to 0.503 mmb/d.

Figure 36: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Sep 2/22	Sep 9/22	Sep 16/22	Sep 23/22	Sep 30/22	Oct 7/22	Oct 14/22	Oct 21/22	Oct 28/22	Nov 4/22	WoW
Canada	3,538	2,937	3,868	3,775	3,298	3,300	3,372	3,483	3,410	3,235	-175
Saudi Arabia	423	425	489	422	398	370	230	325	533	519	-14
Venezuela	0	0	0	0	0	0	0		0	0	0
Mexico	965	484	855	598	539	759	747	509	748	503	-245
Colombia	261	288	212	72	360	242	214	215	218	341	123
Iraq	222	343	120	202	275	109	130	220	134	503	369
Ecuador	144	199	319	191	203	136	134	201	0	102	102
Nigeria	2	232	0	0	0	0	29	42	81	119	38
Kuwait	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0
Top 10	5,555	4,908	5,863	5,260	5,073	4,916	4,856	4,995	5,124	5,322	198
Others	1,224	884	1,084	1,189	874	1,147	1,052	1,185	1,081	1,132	51
Total US	6,779	5,792	6,947	6,449	5,947	6,063	5,908	6,180	6,205	6,454	249

Source: EIA

Oil – Russia increases oil exports to India, India increases products exports to west

How Russian oil sanctions work

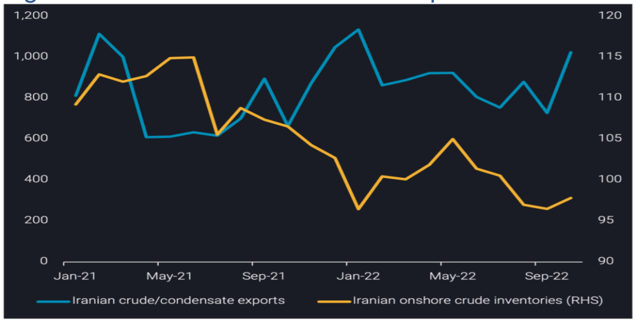
Last week's (Nov 6, 2022) Energy Tidbits memo highlighted our Nov 2 tweet [LINK] *"India imports 946,000 b/d #Oil Plus 106,000 b/d #FuelOil from Russia in Oct. See 👇Oct 8 thread, @HardeepSPuri warned @SecGranholm that if "you believe in energy security, energy affordability you will buy from wherever you have to." Thx @EconomicTimes @Vortexa. #OOTT."* This week, we built on that India oil import record from Russia once we saw India's Dept of Commerce's Tuesday's posting of petroleum products export data by country. We tweeted [LINK] "*Here's how Russian sanctions work. Russia increases #Oil & #PetroleumProducts exports to India. See 👇Nov 2 tweet India increases Petroleum Products exports to Netherlands & UAE YoY. US flat YoY. #OOTT."* We don't know if you call it Russian oilwashing, but its basically India imports more oil from Russia and increase petroleum products exports to countries like the Netherlands. We attached the Dept of Commerce petroleum products exports for the month of August: Netherlands was jet fuel +57% Yoy and diesel +115% YoY. UAE gasoline +68% YoY, Other +125% YoY, but diesel -56% YoY. USA was basically flat YoY across the total Petroleum Products spectrum. Our Supplemental Documents package includes the Dept of Commerce petroleum products export data.

Oil –Vortexa est Iran's floating storage down to 16 mmb oil and 41 mmb condensate

Iran crude and condensate floating storage and exports

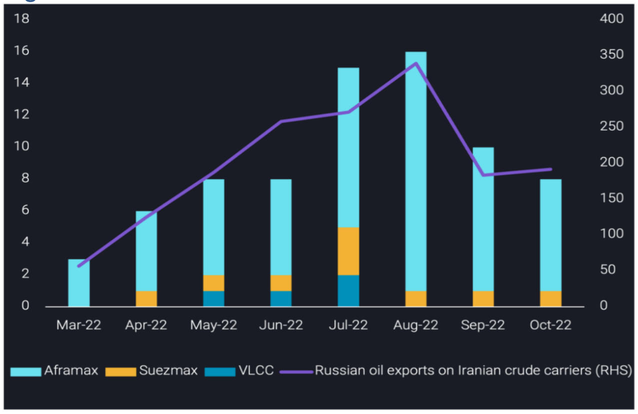
One of the big oil market unknowns is how much oil and condensate is in Iran floating storage around the world. There was a good Vortexa Tuesday blog "*Iran's crude/condensate exports reached nine-month highs in October*" [LINK]. (i) The headline was on "*Iran exported 1mbd of crude/condensate in October 2022, a 300kbd increase m-o-m and 100kbd above the 12 month average. This marks October as Iran's highest crude/condensate exports since January 2022, where exports surpassed 1.1mbd."* (ii) But there was insight on a big unknown for oil markets – Iran's floating storage. We expect that most will be surprised by the low level of Iran "crude oil" in floating storage estimated by Vortexa. We tweeted [LINK] "*Iran floating storage down to 16 mmb #CrudeOil + 41 mmb #Condensate. But #Vortexa estimates 103 tankers likely have switched from Iran to Russian trade. Thx @Vortexa Armen Azizian. #OOTT."* Vortexa wrote "*As of 1 November, Iranian crude/condensate in floating storage is assessed at 57mb, a mix of 70% condensate and 30% crude. The 70% condensate is accounted for by 26 NITC tankers storing condensate floating offshore Assaluyeh or Malaysia. The 30% crude is stored on non-NITC tankers floating offshore Malaysia awaiting buyers. In total, Iranian floating storage is 3mb lower m-o-m, but the mix of crude and* *condensate in floating storage has changed. As of 1 November, South Pars Condensate in floating storage is assessed at 41mb, a 4mb increase m-o-m. There are two primary reasons behind this increase. Firstly, there is a decline in NITC tankers sailing for Venezuela. Venezuelan crude production was assessed at 12 month lows in September (OPEC), and has hence resulted in lower demand for Iranian condensate for blending purposes. Secondly, two non-NITC VLCCs newly joined the Iranian trade in October (port loadings), reducing the need to utilise NITC tankers. This has resulted in a larger number of NITC tankers on floating storage duty. Iranian crude in floating storage is assessed at 16mb in October, a 7mb decline m-o-m. This decline is driven by China's increased demand for Iranian crude."* (iii) The other key insight and reason for lower Iran floating storage is that tankers have switched from Iran to Russian oil. Vortexa wrote "*As of 1 November, we track 40 unique tankers which have loaded Russian crude/products since March 2022, having previously carried Iranian crude/products. The 40 tankers account for 99 Russian oil liftings since March."* And Vortexa writes "*As of 1 November, we have grouped an additional 178 tankers based on their likelihood (%) of switching from Iranian trade to Russian trade into four groups: > 75% (highly likely): 56 tankers with an average age of 20 years. This includes tankers 17 years and older, have China/India/Russia/UAE ownership interest, tankers belonging to the North Atlantic China network, no IR or EU flags and sanctioned under OFAC. > 50% – 75% (likely): 47 tankers with an average age of 20 years. This includes tankers 17 years and older and ownership interest other than those listed above."*. Our Supplemental Documents package includes the Vortexa blog.

Figure 37: Iran crude/condensate exports and inventories



Source: Bloomberg, Vortexa

Figure 38: Tankers switched from Iranian to Russian crude



Source: Bloomberg, Vortexa

Oil –Iraq PM wants oil below $100 but high enough to have oil supply investment

Iraq PM on oil prices

Yesterday, we tweeted [LINK] "*Is Goldilocks #Oil price $90 to $100. See 👇, sounds like Iraq PM al-Sudani sees Goldilocks not too high, not too low oil price range is $90 to $100 range. Thx @charliebruneau. #OOTT.*" Iraq PM doesn't want to see prices go above $100 but also can't go too low to affect supply. And given the challenge to get oil investment under $100 oil, he can't be thinking that the floor can be much lower than $100. Yesterday, Reuters reported [LINK] "*Iraq is keen to maintain stable oil prices at not more than $100 per barrel, Prime Minister Mohammed Shia al-Sudani told reporters on Saturday. Iraq, a member of the Organization of the Petroleum Exporting Countries (OPEC), will have discussions with other members to reconsider and increase its production quota, he added in a briefing. "Iraq is keen for stability of energy prices, we do not want prices to increase above $100 and neither, at the same time, for them to fall in a way that affects the level of supply and demand," he said.*" Our Supplemental Documents package includes the Reuters report.

Oil – Libya NOC says oil production is stable at 1.2 mmb/d

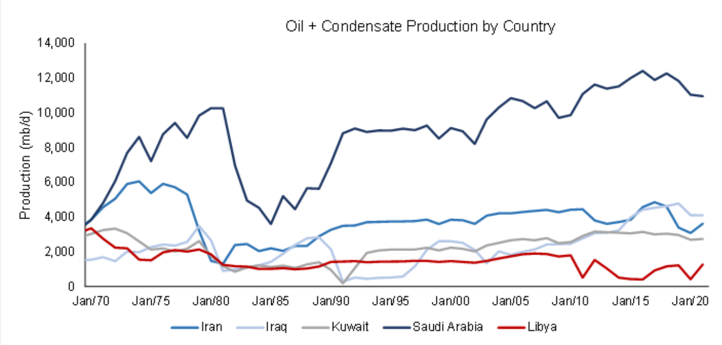
Libya oil production stable at 1.2 mmb/d

It's been a few week since Haftar called for protests, but Libya oil production continues to e stable right around 1.2 mmb/d. Yesterday, the Libya National Corporation posted on its Facebook [LINK] a short update on oil production. The Google Translate was "*Crude oil production amounted to one million and 205 thousand barrels, and condensate production amounted to 54 thousand barrels during the past 24 hours*."

Libya NOC targets oil production to hit 2 mmb/d in 3 to 5 years

Last week's (Nov 6, 2022) Energy Tidbits memo highlighted two excerpts posted on Nov 1 on the Libya National Oil Corporation Facebook [LINK] of NOC Chair Farhat bin Qadara comments at ADIPEC 2022. Qadara said "*We annually need up to 4 billion dollars in investments to modernize the infrastructure of the oil sector in addition to developing services at the oil sites. We aim to raise production to 2 million barrels per day over a period of 3 to 5 years. We expect oil revenues for this year to reach between 35 and 37 billion dollars.*" We also highlighted that Libya has big oil production growth if there is lasting domestic peace. Libya's oil growth all comes is there a stable lasting domestic peace. Because if Libya returns to east vs west fighting, Libya oil production could drop to almost zero again. But, and a big but, if there is a stable lasting peace, we believe Libya's oil production growth potential is much more than the Libya NOC Chair's target of 2 mmb/d. One we saw the Libya NOC Chair oil target, we tweeted [LINK] "*Imagine if #Libya ever gets lasting peace? Could blow away @NOC_Libya Chair target to get to 2 mmbd in 3 to 5 yrs. Current 1.2 mmbd. Gaddafi took over 09/01/69 & #Oil went down from there. #OPEC 1970: Saudi 3.85 mmbd, Iran 3.85 mmbd, Libya 3.34 mmbd, Kuwait 3.04 mmb. #OOTT.*" Those numbers remind of how Saudi Arabia benefited by being the US ally whereas Iran and Libya got creamed for decades.

Figure 39: Iran, Iraq, Kuwait, Libya & Saudi Arabia oil + condensate production



Source: BP

Oil – US/India don't mention India's record Russia oil imports or Russia oil price cap

Silence on Russian oil

US Treasury Secretary Janet Yellen met with her counterpart in India. Post the meeting, US Treasury Department posted a lengthy "*Joint Statement on the Ninth India-U.S. Economic and Financial Partnership"* [LINK]. Earlier this morning, we tweeted [LINK] "*ICYMI. Lengthy joint US/India statement post @SecYellen meeting in India. No mention of record India #Oil imports from Russia in Oct, or US/EU proposed RUS oil price cap. See 👇 Oct 8 thread, @HardeepSPuri already gave those answers to @SecGranholm in Washington in Oct. #OOTT."* There was no mention of Russian oil, whether it be India's record imports of Russia oil in October, or the US/EU proposed Russian oil price cap. Our Supplemental Documents package includes the joint US/India statement.

India told US will buy oil from anyone, priority is energy security & affordability

No one should be surprised that the US/India joint statement did not mention Russian oil in any way. India has made its position clear that it will be buying Russian oil. They said this clearly last month when India's Energy Minister Puri met with US Energy Secretary Granholm in Washington. Our tweet this morning included our Oct 8 tweet that we expanded upon in our Oct 9, 2022 Energy Tidbits. Here is what we then wrote "*It got very little press but US Energy Secretary Jennifer Granholm met in Washington with India oil minister Hardeep Singh Puri. The US Dept of Energy released a joint ministerial statement from the ministers that does not even note their names or quotes. Not the norm. And, to no surprise, it made zero mention of oil, LNG or Russia. We did see the photo-op but didn't see a joint press conference as is* *normally the case. No surprise why it looks like they didn't have a joint press conference based Puri's comments at a subsequent press conference in Washington. We watched multiple ANI (Indian news) video clips and their posted stories hit the highlights. (i) Russian oil. We tweeted [LINK] "1/3. Great @ANI reporting on clear India energy position from @HardeepSPuri post @SecGranholm meeting. "Have I been told by anyone to stop buying Russian oil? The answer is a categorical No". #OOTT #NatGas #LNG". (ii) India will buy oil from anyone. We tweeted [LINK] "2/3. "India will buy oil from wherever it has to for the simple reason that this kind of a discussion cannot be taken to the consuming population of India" says @HardeepSPuri. #OOTT @ANI." (iii) Priority is energy security/affordability. We tweeted [LINK] "3/3. ""If you are clear about your policy, which means you believe in energy security, energy affordability you will buy from wherever you have to. Our energy purchases from sources hitherto unheard of, we are in discussion with them." @HardeepSPuri. Thx @ANI. #OOTT." (iv) India has been able to keep prices down. Puri also noted that they have been able to keep oil price impact low. ANI wrote ""In terms of petrol and diesel, if the increases in North America are 43-46 per cent, in India we allow prices to go up by only 2 per cent or so. In terms of gas, global benchmarks went up by 260-280 per cent and our own ability to contain gas price increases was something around 70 per cent," Puri told reporters in Washington DC." (v) There are other items n the ANI reports. Our Supplemental Documents package includes three ANI reports."*

Oil – Oil up as China relaxes some Covid restrictions & look for other vaccines

China relaxing Covid restrictions

As of our 7am MT news cut off, we have not seen any China state media reports that would contradict the takeaway from the big report by the Global Times on Friday morning. If anything, it seems like Chinese authorities are doing their best to try to not say they are reopening. We recognize that China is still, as of yet, hasn't oved off its official Covid Zero approach, but, the Global Times Friday early afternoon (local time) report put a big jump up in oil. Global Times is part of the China Communist Party media, so this report was coming right from the Communist party. And the Global Times report clearly shows where China is relaxing is Covid restrictions, and, just as importantly, China looks like it is open to a "*broad spectrum of vaccines and drugs*." Ie. open to more foreign vaccines to more than just foreigners. Early Friday morning, we tweeted [LINK] "*Must Read 👇. Not speculation, China communist party media. Authorities release 20 measures to relax Covid restrictions ie. shortened quarantines, at home vs centralized quarantine AND urge development of "broad spectrum of vaccines & drugs". No surprise, Brent #Oil +$2.90. #OOTT*". Global Times report "*China shortens quarantine period for intl arrivals, cancels 'circuit breaker' for inbound flights*" [LINK] "*Chinese authorities on Friday released 20 optimized measures to further enhance scientific and precise work of epidemic prevention and control, one day after the Chinese leadership held a meeting to hear a report on the COVID-19 response, and discussed and arranged the 20 measures. The newest steps include shortened quarantine period for international arrivals and close contacts of confirmed cases from 7+3 (seven days of centralized quarantine and three days of health."* There were other measures in the 20 optimized measures. Global Times also reported "*The latest measures also called for promotion of mass vaccination in China, especially the administration of booster shots among the elderly group. The measures also urged accelerated research and development of broad spectrum vaccines and drugs. The measures vowed to deal with excessive and one-size-fits-*

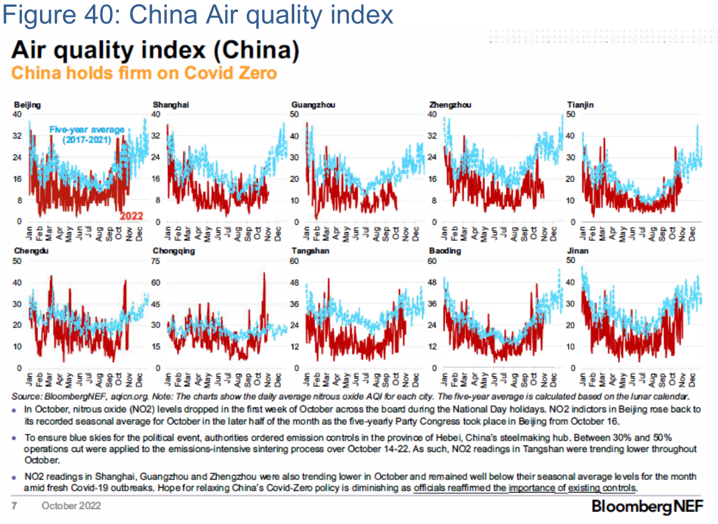
all measures seriously, banning unreasonable steps to lock down schools, suspend traffic or clinical service. Such violations would be punished seriously according to regulations and laws, read the measures." Yesterday, Global Times report "*Strict COVID prevention and control must be combined with optimized measures; 'strenuous efforts on both': Chinese authorities"* [LINK] didn't pull back on the 20 optimized measures. Rather it seemed like they were trying to not say they were moving to a reopening phase even if they are, albeit modestly. Yesterday, it is tried to say they can be strict on Covid and implement the 20 optimizing measures. China stressed that they must continue Covid measures combined with the optimized measures. It is not a giving up of Covid measures. Global Times reported "*At a press conference held by the State Council Joint Prevention and Control Mechanism against COVID-19 on Saturday, Mi Feng, a spokesperson from the China's National Health Commission (NHC) reiterated that the 20 measures are designed to optimize the country's nineth edition of diagnostic and treatment protocols for COVID-19, to make the implementation of the measures more science-based and precise. "They certainly do not mean we can slacken our response or even simply end COVID restrictions and lie flat."* Our Supplemental Documents package includes the Global Times optimized measures report.

Oil – China NO2 levels remain well below seasonal levels

China NO2 levels

On Thursday, we saw another good indicator that any relaxation in China Covid Zero restriction is modest, at best – NO2 levels which go higher with more industrial activity and travel. So if there isn't a big increase, it points to continued weaker industrial activity and travel. China isn't seeing a big boost in NO2 levels, which is why we tweeted [LINK] "*Good indication that any China Covid relaxation is modest at best as NO2 emissions remain below normal in most parts of China. Thx @BloombergNEF. #OOTT."* BloombergNEF posted its "*Industrial Metals Monthly: China holds firm on Covid Zero*", which included the below graphs for China's major cities showing nitrous oxide (NO2) levels. BNEF noted how NO2 levels dropped in the 1st week of Oct during the National Day holiday. And Beijing had a bounce back during the Party Congress. But "NO2 readings in Shanghai, Guangzhou and Zhengzhou were also trending lower in October and remained well below their seasonal average levels for the month amid fresh Covid-19 outbreaks. Hope for relaxing China's Covid-Zero policy is diminishing as officials reaffirmed the importance of existing controls."

Figure 40: China Air quality index



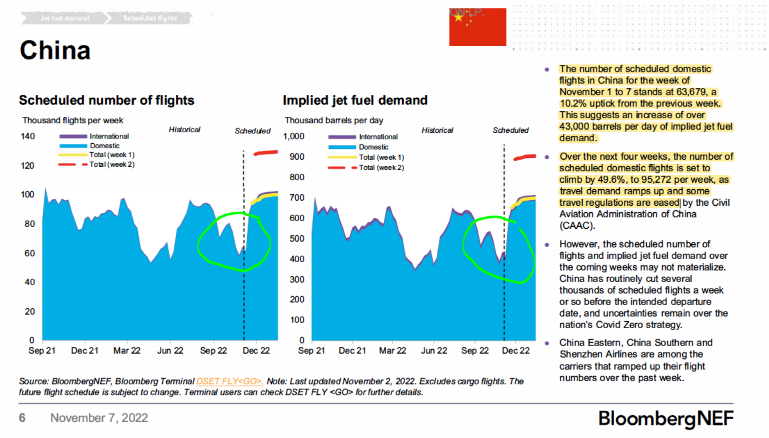
Source: BloombergNEF

Oil – Chinese domestic flights up small, perhaps more small increases to come

Uptick in scheduled China air flights

It wasn't a negative WoW change in China scheduled airflights, but BloombergNEF estimates only a very modest uptick for Nov 1-7 week. We are still waiting on the big jump up. Last week's (Nov 6, 2022) Energy Tidbits highlighted that the worries that China's air flights would be hit by China not having a broad reopening have come true. And that the week for Nov 6 saw a 8.4% WoW drop in scheduled domestic air flights. This week saw a reversal. On Wednesday, we tweeted [LINK] "*#Oil. China domestic air flights weren't down WoW, but a modest WoW +10.2% to 63,679 flights. Next 4 weeks, set to rise +49.6% to 95,272 flights, but 2 weeks ago, fcast was to 127,159 flights. Perhaps the start to some modest WoW increases? Thx @BloombergNEF Claudio Lubis. #OOTT."* Our tweet included the below graph from BloombergNEF's Aviation Indicators Weekly. BNEF wrote "*The number of scheduled domestic flights in China for the week from November 7 stands at 63,679 a 10.2% uptick from the previous week. This suggests an increase of over 43,000 barrels per day of implied jet fuel demand."* This 10.2% WoW uptick contrasts the 8.4% WoW decline for the prior week. BNEF also wrote "*Over the next four weeks, the number of scheduled domestic flights is set to climb by 49.6%, to 95,272 per week, as travel demand ramps up and some travel regulations are eased by the Civil Aviation Administration of China (CMC)."* The new look ahead for the next four weeks # of schedule domestic flights is to climb 49.6% to 95,272 per week is a drop from last week's BNEF Nov 6 report that then forecast the then next four weeks to climb by 64.5% to 95,092 flights and two weeks ago forecast for domestic air flights to reach 127,159 flights.

Figure 41: China Scheduled # of flights & Implied jet fuel demand



Source: BloombergNEF

Oil – Vortexa crude oil floating storage 73.03 mmb as of Nov 11, -12.82 mmb WoW

Vortexa crude oil floating storage

There will be another big watch on Vortexa data over the next couple weeks to see if there will be any revisions to the new Nov 11 to see if this is a big outlier data point or the start of a trend? We are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 11am 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 today on the new estimates are compared to the prior weeks Vortexa estimates posted on Bloomberg on Nov 5 at 11am MT. (i) As of 11am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate Nov 11 at 73.03 mmb, which is -12.82 mmb WoW vs upwardly revised Nov 4 of 85.85 mmb. Note Nov 4 of 85.85 mmb was revised +6.24 mmb vs 79.61 mm posted on Bloomberg at 11am MT on Nov 5. (ii) We were watching to see if Nov 4 was going to be revised up and it was to 85.85 mmb as opposed to an outlier 79.61. This week's 73.03 is an even bigger outlier so we will be watching to see if revised up or if this is the start of a trend. (iii) Other than the Nov 4 upward revision, revisions for the past several weeks were mostly small and generally down small. The revisions posted at 11am yesterday vs the estimates posted on Bloomberg at 11am MT on Nov 5 were: Nov 5 revised +6.24 mmb. Oct 28 revised +0.75 mmb. Oct 21 revised -1.10 mmb. Oct 14 revised -0.58 mmb. Oct 7 revised -1.25 mmb. Sept 30 revised -1.64 mmb. Sept 23 revised -2.19 mmb. (iv) If you put aside the outliers in Nov 4. Oct 28, and Sept 23, there is still a good sized range, but I would pick an number +/- 90 mmb. Last week, it would have been +/- 95 mmb. (v) Also remember Vortexa revises these weekly storage estimates on a regular basis and we do not track the revisions through the week. (vi) Nov 11 estimate of 73.03 mmb is -147.50 mmb vs the post-Covid peak on June 26, 2020 of 220.53 mmb. (vii) Note that the below graph goes back 3 years and not just 2 years as floating oil storage was in the big ramp up period in Q2/20 as Covid started to have a huge impact. Nov 11 estimate of 73.03 mmb is +13.77 mmb vs pre-Covid Nov 11, 2019 of 59.26 mmb. Nov 11 estimate of 73.03 mmb is -38.28 mmb YoY vs Nov 112, 2021 of 111.31 mmb. (viii) Below are the last several weeks of estimates posted on Bloomberg as of 11am yesterday, 11am on Nov 5, and 10am MT on Oct 31.

Figure 42: Vortexa Floating Storage posted on Bloomberg Nov 12 at 11am MT

Source: Bloomberg, Vortexa

Figure 43: Vortexa Estimates Posted Nov 12 11am MT, Nov 5 11am MT, Oct 31 10am MT

Posted Nov 12, 11am MT

	Date	Last Px
Fr	11/11/2022	73025
Fr	11/04/2022	85848
Fr	10/28/2022	102.944k
Fr	10/21/2022	94914
Fr	10/14/2022	87931
Fr	10/07/2022	84311
Fr	09/30/2022	90252
Fr	09/23/2022	105.552k
Fr	09/16/2022	89540
Fr	09/09/2022	84530
Fr	09/02/2022	79960

Nov 5, 11am MT

	Date	Last Px
Fr	11/04/2022	79612
Fr	10/28/2022	102.199k
Fr	10/21/2022	96010
Fr	10/14/2022	88505
Fr	10/07/2022	85558
Fr	09/30/2022	91891
Fr	09/23/2022	107.74k
Fr	09/16/2022	92314
Fr	09/09/2022	85715
Fr	09/02/2022	80070
Fr	08/26/2022	87045

Oct 31, 10am MT

	Date	Last Px
Fr	10/28/2022	96787
Fr	10/21/2022	94281
Fr	10/14/2022	94734
Fr	10/07/2022	86539
Fr	09/30/2022	90020
Fr	09/23/2022	106.173k
Fr	09/16/2022	90027
Fr	09/09/2022	84088
Fr	09/02/2022	79371
Fr	08/26/2022	85033
Fr	08/19/2022	100.664k

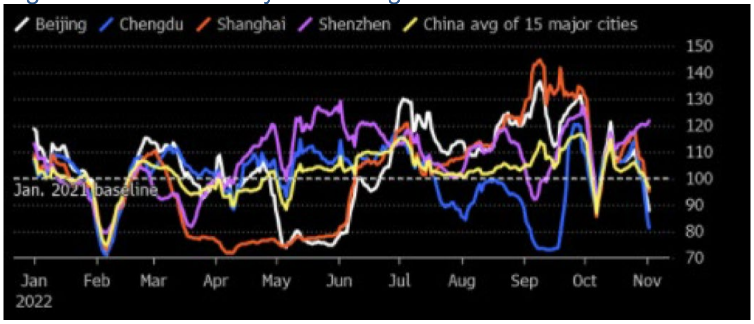
Source: Bloomberg, Vortexa

Bloomberg Oil Demand Monitor

Oil – Bloomberg Oil Demand Monitor: Global travel held back by China

We recommend reading the Bloomberg Terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. The Oil Demand Monitor noted China's unpredictable lockdown rules continue to hold sway over global oil demand and congestion sits above 2019 average in Taipei and London. The Chinese lockdowns cause large swings in commuter traffic and eliminating one out of every three airline seats that used to fill before the pandemic. Gasoline demand in the U.S. and U.K. has consistently lagged pre-pandemic levels, with diesel sales also trailing in Britain, in contrast to India where consumption of both fuels is significantly stronger than it was before the pandemic. Given the latest data, gasoline use was down 12% and 8% versus 2019, respectively, in the U.S. and U.K. and up 21% in India. An aggregate measure of congestion across 15 Chinese cities with the most cars fell to 96 on Nov 2, a few percentage points below the early-2021 baseline level of 100. This measure has been above the 100 baselines since May apart from a brief period in early October that coincided with national holidays, and aside from the latest dip. Elsewhere, a monitor of city congestion across 13 world cities on the morning on Monday, Oct 31 found that only London and Taipei had greater congestion than the 2019 average for that time of the week, while the others including New York and Tokyo were all below. Holidays weakened road use in some parts of Europe. Chinese air travel has struggled all year to attain normal levels. In September, it sank to about 20 million passengers in the month, compared with the five-year average of 44 million, and dropped out of the seasonal range for 2017-2021. Even so, China is working on plans to scrap the system that penalizes airlines for bringing virus cases into the country, a sign authority is looking for ways to ease the impact of the Covid Zero policy. Globally the number of seats offered by airlines on planes for the week ahead is very close to dropping back below 90 million a week after riding above that level since June. The figure was about 107 million for the same week of 2019. Global airline activity stuck between the late-pandemic year of 2021 and pre-pandemic 2019. Recent data shows a minor uptick, with the global number currently trailing 2019 by 9.3% versus a lag of 10% in early October and 14% in early September. The combined domestic and international seat capacity for Northeast Asia, which includes China, trails the equivalent period of 2019 by 32%, which is the biggest deficit out of all 17 large geographical areas measured. China's Covid-19 rules have a much greater impact on its international flights than on its domestic market. Among other regions, Western Europe is 7% lower than 2019, and North America is down 9%. In Europe, the number of flights increased in late October, when compared against 2019, before tumbling back again in early November, according to daily tracking by Eurocontrol. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Figure 44: Chinese city road congestion



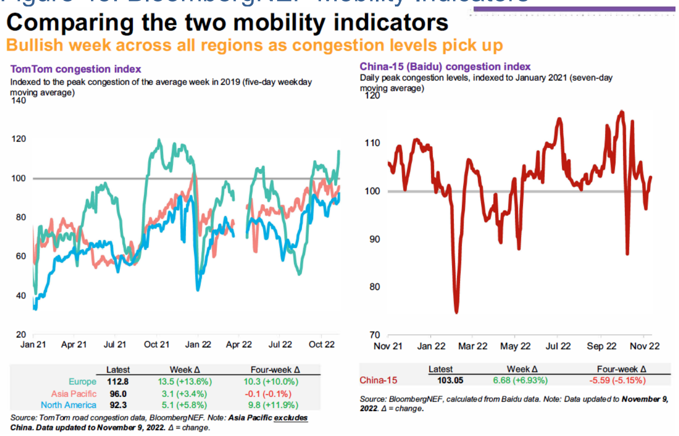
Source: BNEF, EIA

Oil – BNEF, Mobility up WoW globally, biggest jump comes from Europe

Mobility up globally WoW

We are big fans of the BloombergNEF weekly indicators reports as they provide updates on WoW changes, but also remind that WoW changes do not necessarily mark a trend. On Friday, BloomergNEF posted its Global Road Traffic Indicators which included a WoW increase in mobility across the globe. Over the previous weeks TomTom trends moved lower relative to 2019, but the three regions increased WoW. So, it's worth keeping an eye on these indicators as they are happening at the same time as places like the US have seen lower gasoline prices. TomTom congestion index showed Europe up 13.6%, Asia Pacific up 3.4%, China up 6.93%, and North America up 5.8% from last week. Europe and North America are bullish and subject to drivers responding to rising cost, including high gasoline prices. China's mobility data highlights the impact of easing the zero-covid policy and lockdowns throughout the country. Our Supplemental Documents package includes excerpts from the BNEF Global Road Traffic Indicators report.

Figure 45: BloombergNEF Mobility Indicators



Source: BloombergNEF

Oil – International air passenger travel keeps getting better YoY, except China

September 2022 passenger data

The International Air Transport Association (IATA) announced passenger data for September 2022 on Monday [LINK]. Total traffic in September 2022, measured in revenue passenger kilometers, rose 57.0% YoY. Globally, traffic is now at 73.8% of September 2019. Domestic traffic for September 2022 was up 6.9% YoY. Total September 2022 domestic traffic was at 81% of the September 2019. International traffic climbed 122.2% YoY, with September 2022 reaching 69.9% of September 2019 levels. All markets reported strong growth, led by Asia-Pacific. IATA's Director General Willie Walsh stated, *"even with economic and geographical uncertainties, the demand for air transport continues to recover ground. The outlier is still China with its pursuit of a zero COVID strategy keeping borders largely closed."* And *"strong demand is helping the industry cope with sky high fuel prices. To support that demand in the long-term, we need to pay attention to what travelers are telling us."* Our Supplemental Documents package includes the release.

Figure 46: September 2022 Air passenger market

AIR PASSENGER MARKET DETAIL-SEPTEMBER 2022	WORLD SHARE[1]	RPK	ASK	PLF(%-PT)[2]	PLF(LEVEL)[3]
Total Market	**100%**	**57.0%**	**29.1%**	**14.5%**	**81.6%**
Africa	1.9%	89.2%	50.2%	15.3%	74.3%
Asia Pacific	27.5%	51.9%	22.2%	14.6%	74.7%
Europe	25.0%	60.4%	34.1%	13.9%	84.7%
Latin America	6.5%	47.8%	39.4%	4.7%	82.3%
Middle East	6.6%	138.6%	57.7%	26.9%	79.5%
North America	32.6%	39.7%	18.1%	13.3%	85.5%

Source: IATA

Oil – Air cargo demand softens in September

The International Air Transport Association (IATA) announced global air cargo markets showing that air cargo demand softened for September 2022 on Monday [LINK]. Global demand, measured in cargo tonne-kilometres, fell 10.6% compared to September 2021, -10.6% also for international operations, but continued to track at near pre-pandemic levels -3.6%. IATA's Director General Willie Walsh said, *"While air cargo's activity continues to track near to 2019 levels, volumes remain below 2021's exceptional performance as the industry faces some headwinds. At the consumer level, with travel restrictions lifting post-pandemic, people are likely to spend more on vacation travel and less on e-commerce. And at the macro-level, increasing recession warnings are likely to have a negative impact on the global flows of goods and services, balanced slightly by a stabilization of oil prices."* Asia-Pacific airlines saw their air cargo volumes decrease by 10.7% in September 2022 YoY. Airlines in the region continue to be impacted by the conflict in Ukraine, labor shortages, and lower levels of trade and manufacturing activity due to Omicron-related restrictions in China. North American carriers posted a 6.0% decrease in cargo volumes in September 2022 YoY. European carriers saw a 15.6% decrease in cargo volumes in September 2022 YoY. Middle Eastern carriers experienced a 15.8% YoY decrease in September 2022. Latin American carriers reported an increase of 10.8% in cargo volumes in September 2022 YoY. Our Supplemental Documents package includes the release.

Air cargo demand softens

Figure 47: September 2022 air cargo market

AIR CARGO MARKET DETAIL-SEPTEMBER 2022	WORLD SHARE[1]	CTK	ACTK	CLF(%-PT)[2]	CLF(LEVEL)[3]
Total Market	**100%**	**-10.6%**	**2.4%**	**-7.0%**	**48.1%**
Africa	1.9%	0.1%	-4.1%	1.9%	45.1%
Asia Pacific	32.6%	-10.7%	2.8%	-8.7%	57.2%
Europe	22.8%	-15.6%	0.2%	-9.9%	52.8%
Latin America	2.2%	10.8%	18.4%	-2.6%	38.1%
Middle East	13.4%	-15.8%	-2.8%	-7.4%	47.8%
North America	27.2%	-6.0%	4.6%	-4.4%	39.6%

Source: IATA

Oil & Natural Gas – Liberals to add regulations to reduce oil & gas methane emissions

No one should have been surprised to see the oil and gas sector being the focus of any Canada climate change announcements for COP27. The Liberals are putting more regulations on the oil and gas sector to accelerate the reduction of methane emissions from the oil and gas sector. On Thursday, the Liberals announced "*Proposed regulatory framework for reducing oil and gas methane emissions to achieve 2030 target"* [LINK] that led off "*The Government of Canada is proposing to amend the existing federal regulations for methane emissions from the oil and gas sector in order to achieve at least a 75% reduction in oil and gas methane by 2030 relative to 2012. The proposed amendments would achieve this goal by expanding the scope of the existing regulations to apply to a wider set of sources, eliminating exclusions, and driving as many individual sources as possible toward zero emissions:"* Some of the items are "*Expanding application of the regulatory measures to apply to virtually all facilities potentially handling natural gas*", "*Expanding the application and*

More federal regulations on oil and gas

intensity of inspection programs, including non-producing assets", "*Flaring • Would be prohibited at oil sites*". "*General Facility Venting and Flaring • Would no longer be bound by conditional requirements. All oil facilities exceeding a 5 m3/day (combined flare + vent volume) threshold would be required to eliminate venting by complying with only gas conservation requirements*" , and "*Pneumatic Devices •Would no longer be bound by conditional requirements. All pneumatic pumps and controllers at oil and gas facilities would be required to be non-emitting or captured.*" Our Supplemental Documents package includes the Liberals announcement.

Reducing oil & gas methane emissions is relatively low hanging fruit

We have written on reducing methane emissions for several years and well before there were any regulatory requirements in Canada. And it should also be clear that Cdn oil and gas companies have been working on the low hanging fruit to reduce methane emissions for several years. Yes, it adds costs to oil and gas, but it is relatively low hanging fruit. Here is an example of how we wrote this up in our Feb 28, 2021 Energy Tidbits memo. "*Oil & Natural Gas – Reducing methane emissions is relatively low hanging fruit Marathon Oil held its Q4 call on Tues and one of its ESG highlights was on reducing methane emissions. MRO said ""We have also disclosed a new medium-term goal. By 2025, we expect to reduce our GHG intensity by at least 50% relative to 2019. We have already identified concrete actions to assist in achieving our goal and have incorporated approximately $100 million of cumulative funding within our five-year benchmark scenario to ensure our progress. Specific initiatives include continued replacement of natural gas pneumatic equipment with lower emitting technologies, connecting additional sites to utility power, tankless facilities and investing in soil carbon sequestration to offset emissions." We say reducing methane emissions from oil and gas is relatively low hanging fruit as it is a straightforward area for any oil and gas company and one that has been done for several years in the Cdn oil patch with off the shelf equipment. We have to believe the Cdn oil and gas companies are well ahead of the US peers. Several years ago, Encana had a group focused on reducing methane emissions from pneumatic equipment. Post that group disbandment, the former project leader took me thru the thesis of stopping methane emissions from pneumatic equipment. At that time, he estimated there were ~245,000 pneumatic devices in the oil patch including pneumatic pumps, level controllers, wellhead choke controllers, electro-pneumatic transducers, dehydrations still columns, casing gas vents, and production tank methane. Basically methane was leaking from pretty well all oil and gas equipment. But as they implemented at Encana, they were able to make eliminate methane emissions with off the shelf equipment. We don't know specifically what Cdn oil and gas companies have done in the past several years, but we expect many of them have, as a normal course of operations, have captured methane from pneumatic devices.*"

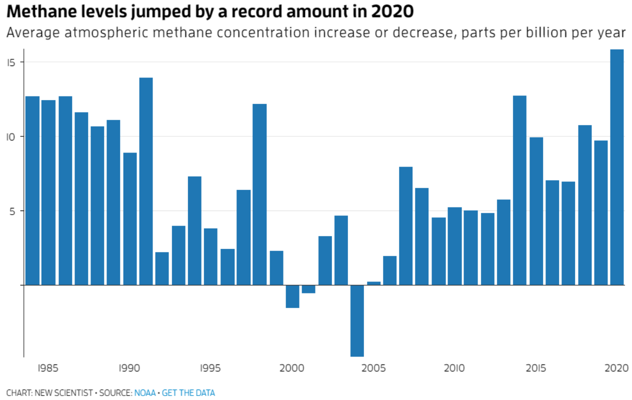
Federal govt regulatory moves are Alberta Premier Smith's big concern

One of, if not the big fear on the Liberals federal government is their increasing use of regulatory and policies that will have a big impact on Alberta. Here is what we wrote in the Oct 9, 2022 Energy Tidbits. "*On Thursday night, Danielle Smith won the leadership race for Alberta's United Conservative Party, which means she became* *the Alberta Premier designate. She won on the 6th and final round with 53.3% of the vote vs 46.7% for former finance minister Travis Toews. There were approx. 85,000 UCP party members voting, or ~69% of the party's 124,000 eligible members. We hadn't weighed in on the leadership race, but have been most interested in what was her feature platform item, her Alberta Sovereignty Act. [LINK]. On Friday morning, we tweeted [LINK] "Attention to details. Think new Allberta Premier @ABDanielleSmith recognized that it's federal minister's POLICIES & and department regulations that can violate provincial jurisdiction and have a big negative impact ie. policies/regulations re #ClimateChange. #OOTT." Smith is putting the Liberals on notice that Alberta is going to pay attention to details. She realizes how it's all the policy initiatives and regulatory changes that end up having a huge impact. And she has clearly warned the Liberals, she will make sure that Alberta will make sure none of these cross jurisdictional authorities. Two excerpts from her description of the Alberta Sovereignty Act are "What is the Alberta Sovereignty Act? A proposed law that would affirm the authority of the Provincial Legislature to refuse provincial enforcement of specific Federal laws or policies that violate the jurisdictional rights of Alberta under Sections 92 – 95 of the Constitution or that breaches the Charter Rights of Albertans. How would the Legislation work? Prior to being introduced in the Legislature for debate and vote this Fall, I will work with Cabinet and Caucus to draft the Alberta Sovereignty Act in accordance with sound constitutional language and principles. However, as a starting point for discussion, this proposed legislation is intended to function as follows: When the Federal Government institutes a law or policy that appears to violate Alberta's jurisdictional rights under the Canadian Constitution or Albertans' Charter rights, the Government of Alberta may introduce a Special Motion for a free vote of all MLAs in the Legislature. Each such Special Motion would need to include the following detailed information:".*

Global methane emissions record up in 2020 vs record oil prod down

We understand that Canada and the US have picked the oil and gas sector as THE group to go after to reduce methane emissions. It was interesting to note the 2020 methane emissions vs crashing oil production. Here is what we wrote in our Jan 9, 2022 Energy Tidbits. "There was no way we could miss the headline "*Record levels of greenhouse gas methane are a 'fire alarm moment'*" [LINK] in our Saturday morning news check. The New Scientist reported "*Rising levels of the powerful greenhouse gas methane reaching a new milestone should serve as a "fire alarm moment", say researchers. According to data compiled by the US National Oceanic and Atmospheric Administration (NOAA), average atmospheric concentrations of methane reached a record 1900 parts per billion (ppb) in September 2021, the highest in nearly four decades of records. The figure stood at 1638 ppb in 1983."* And "*The new high is unsurprising because methane levels have been climbing since 2007, thought to be driven primarily by changes in wetlands and agriculture in the tropics and – to a lesser degree – by leaks from oil and gas production. "The September data continues the exceptional trends that we've been seeing over the past few years," says Keith Shine at the University of Reading, UK. However, the rate at which concentrations are rising is concerning researchers, with 2020 marking the biggest annual jump since records began in 1983."* The New Scientist report included the below graph. Governments around the world have had targeted the oil and gas sector. And the first thought that came to mind was this record jump in methane in 2020 came in the same year as the record drop in global oil consumption. We tweeted [LINK] "*Global #methane levels jumped by record amount in 2020 vs record YoY decline >9 mmb/d (~10%) in #Oil production. Reminds govts shouldn't just target oil & gas, who have a concerted (rightfully so) push to reduce methane emissions. Thx @adamvaughan_uk for the @NOAA data. #OOTT",*

Figure 48: Global methane levels jumped by a record amount in 2020



Source: New Scientist, NOAA

UN reminded Ruminants (cows, etc) almost 2x methane emissions vs oil & gas

No one should expect western governments to turn away from its priority to focus less methane emissions from the oil and gas sector and that other sectors will continue to fly under the radar. And this is despite other sectors emitting more methane. Our May 9, 2021 Energy Tidbits wrote "*This week, the UN Environment Programme published their major report – "Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissons" [LINK] . The US starts right at the start and reminds that methane is way worse the CO2 "Methane, a short-lived climate pollutant (SLCP) with an atmospheric lifetime of roughly a decade, is a potent greenhouse gas tens of times more powerful than carbon dioxide at warming the atmosphere". We have been highlighting for years how the Cdn oil and gas sector has been reducing methane emissions going back to when one of our friends was in the Encana group doing so. The reality is that fossil fuels are the easy target for governments even if they were already reducing methane emissions. And the first set of measures recommended by the UN are against fossil fuels "Oil, gas and coal: the fossil fuel sector has the greatest potential for targeted mitigation by 2030. Readily available targeted measures could reduce emissions from the oil and gas sector by 29–57 Mt/yr and from the coal sector by 12–25 Mt/yr. Up to 80 per cent of oil and gas measures and up to 98 per cent of coal measures could be implemented at negative or low cost. (Section 4.2)". We understand why fossil fuels are the easiest to go after, but the UN report also reminds of the leading cause of methane emissions. For example, ruminants (ie. cattle, etc) cause 73% more methane emissions than oil and gas. Its why we tweeted [LINK] "Interesting data from*

@UNEP global #Methane emissions report. worst are Freshwaters 159 mt/yr, Wetlands 145, Ruminants (cattle etc) 115, #Oil & #NatGas 84. Termites 9 are ~= to all offshore oil & gas. Fortunately, oil & gas will keep doing more. #OOTT" Below is the table we created to rank the US methane sources table.

Figure 49: Sources of Methane 2017

Sources of Methane Ranked (2017)	
Source	**Magnitude (MT/yr)**
Freshwaters	159
Wetlands	145
Ruminants (Cattle, goats, etc.)	115
Oil and gas industry	84
Landfill and waste	68
Geological	45
Coal mining	44
Rice cultivation	30
Biomass burning	16
Biofuels	13
Termites	9
Oceans	6
Transport	4
Industry	3
Wild animals	2
Permafrost soils	1

NATURAL SOURCES	MAGNITUDE (MT/YR)	ANTHROPOGENIC SOURCES	MAGNITUDE (MT/YR)	SINKS	MAGNITUDE (MT/YR)
Wetlands	145 [100–183]	Coal mining	44 [31–63]	Soils	40 [37–47]
Termites	9 [3–15]	Oil and gas industry	84 [72–97]	Total chemical loss	531 [502–540]
Oceans	6 [4–10]	Landfill and waste	68 [64–71]	Total loss	571 [540–585]
Geological	45 [18–65]	Ruminants	115 [110–121]		
Wild animals	2 [1–3]	Rice cultivation	30 [24–40]		
Freshwaters	159 [117–212]	Biomass burning	16 [11–24]		
Permafrost soils	1 [0–1]	Industry	3 [0–8]		
		Biofuels	13 [10–14]		
		Transport	4 [1–13]		
Total natural	367 [243-489]	Total anthropogenic	380 [359–407]		
Total natural (top-down)	232 [194-267]	Total anthropogenic (top-down)	364 [340-381]		

Source: UN Environment Programme

Oil & Natural Gas – Russia sends oil tanker thru Northern Sea route in Arctic in Nov

Ice tanker thru Russia's Northern Sea Route

We are a little surprised the Russian oil tanker being sent thru the Northern Sea route in the Arctic didn't get more attention. On Tuesday, Bloomberg reported "*Russia sent its second-ever crude oil shipment east through the Arctic Circle toward China, a route that could one day give the country a faster way to buyers in Asia. The Vasily Dinkov, a specialized ice-breaking tanker, is traveling along the Northern Sea Route after loading crude late last month from a storage tanker moored at Murmansk, vessel tracking data compiled by Bloomberg show. The ship, hauling a relatively tiny cargo, crossed Russia's northern coast and passed through the Bering Strait, separating the country from Alaska, over the weekend. It's due to arrive at the Chinese port of Rizhao on Nov. 17.*" We were impressed that they are doing it in November and not in Aug/Sept or early Oct when the ice is at its lowest. Sending a tanker thru in Nov is a great extension of a potential tanker season thru this route. This was a small tanker with only 0.5 mmb capacity vs 2 mmb for the big tankers. But we wouldn't expect the super tankers to use this route. Recall the Northern Sea route is a Putin priority for Russia's future. Our Supplemental Documents package includes the Bloomberg report.

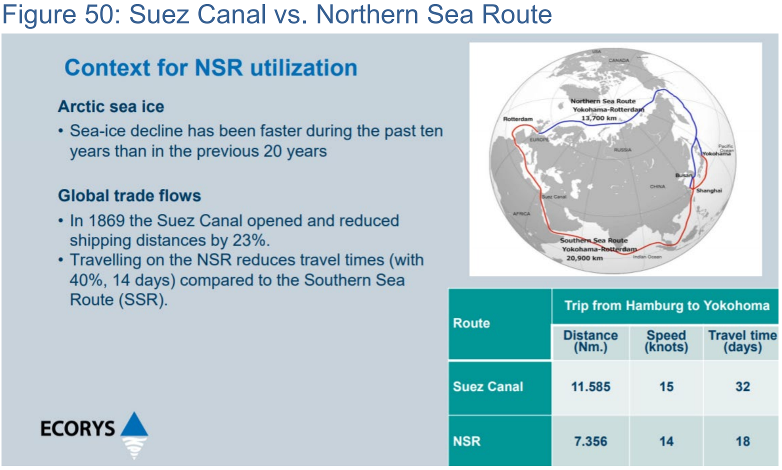
Putin reminds Northern Sea Route is the shortest sea route

We have followed the Northern Sea route and Canada's Northwest Passage route for decades as sea routes that will play an increasing role over the coming decades. Here is what we wrote in our Oct 17, 2021 Energy Tidbits as one example. "*There should be no surprise that Putin's Oct 14 speech to UN transport conference highlighted Russia's Northern Sea route. Putin confirmed that Russia has been* *transporting cargoes along the unique route and believes the role of the passage will continuously grow as the needs to ship goods between east and west along the shortest and most cost-effective route grows; specifically; with the industrial growth of the Asia Pacific region and the changing climate. Putin said "we intend to increase freight traffic along the entire 10,500 km Northern Sea Route multiple times over, build infrastructure, including for reliable communications and navigation, and promote port development. We are also working hard to develop the nuclear-powered icebreaking fleet of Russia. In the process, we are inviting all interested partners, including our Chinese friends, to use more actively the opportunities of the Northern Sea Route for expanding trade transactions with Europe." Putin concluded his comments on this topic by inviting all interested parties, with emphasis on China, to use more actively the opportunities the Norther Passage presents in expanding trade."*

Russia's Northern Sea Route shortens shipping time by 14 days

Our primary highlighting of the Northern Sea route in 2021 was in our April 4, 2021 Energy Tidbits at the time of the Suez Canal shutdown. The Northern Sea route is a much sorter and faster sea route. Time is money and this is a huge savings in time and cost even if there could be added insurance costs in the northern route. This was very topical as at the time of writing the Evergiven was stuck, blocking the Suez Canal. We noted that we had to believe that the Suez Canal stoppage got shippers thinking more about the utilization of Russia's Northern Sea Route. We also noted in our Jan 24, 2021 Energy Tidbits that Russia would be attempting the earliest ever LNG shipment to Asia through the Northern Sea Route in May, as the transit season is getting longer for the NSR. The NSR is a much shorter route from Europe to Asia than through the Suez, with a trip from Hamburg to Yokohoma taking 14 days less using the NSR and is ~4,000 Nm shorter. Below is a good graphic from the ECORYS discussion paper at the International Transport Forum. [LINK]

Figure 50: Suez Canal vs. Northern Sea Route



Route	Trip from Hamburg to Yokohoma		
	Distance (Nm.)	Speed (knots)	Travel time (days)
Suez Canal	11.585	15	32
NSR	7.356	14	18

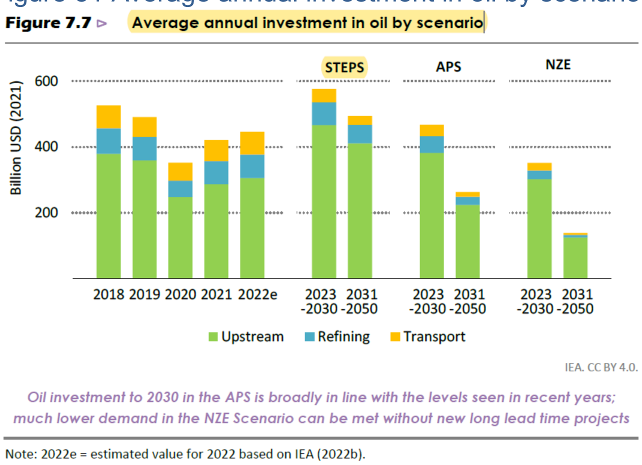
Source: International Transport Forum, ECORYS

Energy Transition – IEA needs increasing oil & gas for secure/clean energy future

IEA assumes increased oil & gas spending

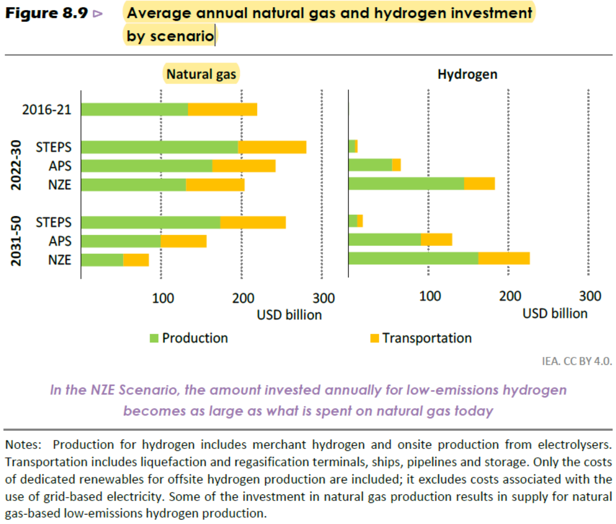
We think it is important to try to parse thru what people like IEA Executive Director Birol are saying and if there is more behind their general statements. This week, we noted that Birol talked about “fossil fuels”, when there is more to the story when we split his fossil fuels commentary into oil and natural gas. What wasn’t clear from Birol’s comments is that the IEA believes oil and natural gas capex has to increase in the next decade for the energy transition. That is different than Birol generalizing that fossil fuels spending has to be flat. The IEA clearly says oi land gas capex has to increase for its energy transition case if the world is to have a secure and clean energy future. On Wednesday, we tweeted [LINK] “*ICYMI. @fbirol "to be secure and clean energy future, this $1 investment in #FossilFuels should continue". Note this is for fossil fuels incl #Coal, his 👇 @IEA World Energy Outlook actually says need INCREASED #Oil #NatGas investment. Thx @flacqua. #OOTT.”* Birol was on Bloomberg TV on Wednesday in an interview from COP27. We created a transcript of his comments. Bloomberg’s Francine Lacqua asks “*“oil and gas, are they investing the right amount or are they investing too much or too little for the transition to green?”* Birol replies “*I think for the transition, it is very harsh about this year, the fossil fuel investments are close to one trillion US dollars. But it could be only meaningful, it could only provide us with a secure energy world if we were, at the same time, make major investments in clean energy because the global energy demands will grow. The world will need a lot of energy. The question is are we going to get this energy from fossil fuels or from clean energy. So this is the decision that we have to make. Currently, we are in between. We invest in both of them, but not enough.”* Lacqua follows up *“do you have an analysis, like $1 for example in old fossil fuels needs to be like $5 spent?”* Birol replies*: “Today, just very simple, today, there is $1 investment cost in fossil fuels and $1.50 goes for clean energy. To be secure and clean energy future, this $1 for fossil fuels should continue but $1.50 for clean energy needs to go to $9. So there is a need for six times increase for clean energy investment, which is a topic for here COP27”.* Birol was referencing the IEA World Energy Outlook 2022 from two weeks ago. Our tweet included the IEA’s investment scenario from the WEO and it shows increasing oil and natural gas investment in their base Stated Energy Policies scenario.

Figure 51 Average annual investment in oil by scenario



Source: IEA World Energy Outlook 2022

Figure 52: Average annual natural gas and hydrogen investment by scenario



Source: IEA World Energy Outlook 2022

Energy Transition – COP27 is mostly future promises ie. kick the can down the road

Week 1 of COP27 in the books

We believe the world is going to continue to try to reduce emissions as quickly as possible under an energy transition, but we also continue to believe the energy transition will take longer, be a bumpy/rocky road and cost a lot more than aspirations. The question coming out of COP27 will be how much momentum can be maintained for Net Zero goals. Because it's hard to see, with Week 1 of COP 27 now in the books, how the Net Zero side goals can't be pulled back. So far, it's been a week of no major breakthroughs for firm action. Rather it's been what we call kick the can down the road ie. agree to come back with a plan or commitment but not a firm commitment. The Week 1 focus and press has been on the criticism of the developing world that the developed countries aren't stepping up with firm commitments on money and accepting liability for causing the climate crisis. Last Sunday, we tweeted [LINK] "*Kick the can down the road has to be a key theme from #COP27 given global economic slowdown ie. breakthrough agreement on financing damages caused by extreme weather events would aim to reach a conclusive decision on loss and damage no later than 2024. Thx @business. #OOTT* ." This should not be a surprise given the global setup of an energy crisis, Russia/Ukraine war, increasing anti-China chatter, poor countries not being able to afford energy, increasing coal generation, increasing interest rates, a global economic slowdown, etc. We will see what Week 2 brings, but it's hard to see how the world can agree on "firm" commitments to accelerate emissions reductions. That doesn't mean there won't be what look to be some bold statements and commitments. However, we repeat our warning from our Oct 9, 2022 Energy Tidbits that there will be bold commitments, but there will be qualifiers to those commitments and kick the can down the road commitments. Here is what we wrote in our Oct 9, 2022 Energy Tidbits "*Energy Transition – COP 27 "taking into account different national circumstances" The lack of media coverage and leaders statements is a good indicator that the expectations are low for COP27 in Egypt that starts on Nov 7. We expect to see many statements that, will on the surface, look to be big successes.*

However, just like we noted posted COP26, we expect to see these statements with the big qualifier "taking into account different national circumstances. We were reminded of this by the joint US/India ministerial statement post the Granholm/Puri meeting. Yesterday, we tweeted [LINK] "Key caveat in joint @SecGranholm @HardeepSPuri #CleanEnergy statement "taking into account different national circumstances." No one can deny India wants to reduce emissions, etc, but will do so in the way, pace and cost impact to India consumers that is best for them. #OOTT." The joint statement had a number of strong clean energy joint efforts. It says "As climate and clean energy leaders, the United States and India share a common vision to deploy clean energy at scale during this critical decade to reduce emissions and achieve climate change mitigation goals, taking into account different national circumstances." We don't doubt that reducing emissions is a priority for India, but the joint statement using "taking into account different national circumstances". This caveat is what India and other countries will use to remind they will go on emissions at their own pace and cost."

Energy Transition – White House won't say Biden doesn't plan to shut down coal

Biden plans to shut down all coal mines

The other key group that Biden will be going after in the last two years of his term is the coal sector. Last week's (Nov 6, 2022) Energy Tidbits memo highlight the Biden Nov 4 comment "*We're going to be shutting these plants down all across America and having wind and solar*." And how Sen Manchin had some blunt comments that we noted in or Nov 5 tweet [LINK] "*WOW. Dem @Sen_JoeManchin "Biden's comments [ton shutting down #Coal plants] are not only outrageous and divorced from reality", America "believes he does not understand the need to have an all in energy policy that would keep our nation totally energy independent & secure." #OOTT.*" We also highlighted what we called a White House Press Secretary Jean-Pierre non-denial denial on Biden's shutting down coal. Jean-Pierre gave another non-denial denial on Monday. We tweeted [LINK] "*See 👎 today's non-denial denial by @PressSec. a lot of words but doesn't deny Biden's intention "We're going to be shutting these plants down all across America and having wind and solar." Reminds still more hits to come vs #Coal #Oil #NatGas in last 2 yrs of Biden term. #OOTT.*" Jean-Pierre talked about Biden fighting for coal "*communities*" and was asked "*That doesn't mean that he's fighting to keep these coalmines open, does it?.* Jean-Pierre gave a lengthy answer about fighting for coal communities but wouldn't hint or suggest Biden would do anything to keep coal mines open or that Biden wouldn't work to shut down coal mines as he said on Nov 4. Jean-Pierre replied "*Look, the President — I — I laid out very clearly about how the President sees — sees his — his part in this and what he has done. You know, he has — he has — you know, through the work of Working Group on Coal and Power Plant Communities, President Biden has already delivered more than $23 billion to energy communities across the country. He has put forward plans that are bringing new energy and manufacturing jobs to states like West Virginia, to states like Pennsylvania. And he has secured critical investment through the Inflation Reduction Act to support coal communities as well, which he believes is incredibly important, which is why it was included in the Inflation Reduction Act. And that's from funding for coalminers suffering from respiratory challenges to billions of dollars in loans to help them seize new energy opportunities. So, again, you know, I mentioned this, I just laid this out: While we're trying to help coal communities, while we're trying to do everything that we can to make sure that they have the funding that they need, Republicans — that very same — same policy, same monies that I just laid out — Inflation Reduction Act, which is that where it's coming from — Republicans want to repeal that, taking away the efforts that we're trying to* *provide for coal communities."* And then the followup exchange "*So that sounds like you're helping them as the market, through economic transition, is moving away from coal. That doesn't sound like you're taking any deregulatory efforts or any steps to help the mines themselves stay open. Is that correct?"* Jean-Pierre replied "*Look, I've been very clear. The President has been very clear on this. I don't have anything more to add. Again, we believe what he was trying to say was twisted. And we've laid that down very clearly. You heard from my statement. You heard from what I just say — said here today."* Can't get any more chances to actually say Biden doesn't plan to shut down all coal mines as he clearly said on Nov 4.

Will Manchin lose his big leverage in midterms?
The big midterm election news yesterday was the calling of Nevada senate race for Democrat Cortez-Masto, which with the Friday night call of the Arizona senate race for Democrat Kelly has given the Democrats a 50-49 seat in the Senate with the Georgia senate seat runoff on Dec 6. Even if the Democrats lose Georgia, they will still be in control of the Senate with a 50-50 split and the VP having a final vote if needed. This is the status quo and one where Senator Manchin has had huge leverage with his fellow Democrats. But more significantly would be if the Democrats win Georgia, it will be a 51-49 majority. And if that is the case, Manchin will lose his sole leverage. Doesn't mean that it will open runway for the progressive wing, but it would seem Manchin will lose some of his leverage.

Energy Transition –UAE/Indonesia lead push to plant/preserve mangrove trees
No one should be surprised by a focus this week on mangrove trees at COP27. Just like there are superfoods, mangroves are a super carbon storage tree. So if anyone wants to plant a tree, mangroves will do the most to store carbon. On Tuesday, UAE announced "*Mariam bint Mohammed Almheiri, Minister of Climate Change and the Environment, today announced the launch of the Mangrove Alliance for Climate (MAC). Led by the UAE and Indonesia, the initiative seeks to scale up and accelerate the conservation and restoration of mangrove ecosystems for the benefit of communities worldwide. The announcement took place at the 27th UN Climate Change Conference (COP27), running in Egypt from 6th to 18th November. Five other countries – India, Sri Lanka, Australia, Japan, and Spain – have joined the Alliance."* Almheiri highlighted UAE intends to plant 3 million mangroves within the next two months. At COP26, the UAE presented their target to plant 100 million mangroves by 2030. Our Supplemental Documents package includes the UAE announcement. [LINK]

Major mangrove tree push

Saudi's also have been focusing on mangroves as part of its carbon reduction plans
We have been following mangrove planting initiatives. Here is what we put in our Oct 24, 2021 Energy Tidbits. "*The SPA reporting of MBS speech yesterday also noted the Saudi focus on trees as part of their Net Zero 2060 plans "His Royal Highness confirmed the start of the first phase of afforestation initiatives by planting more than 450 million trees, in addition to rehabilitating eight million hectares of degraded lands, and allocating new protected areas, bringing the total protected areas in the Kingdom to more than 20% of its total area. MBS did not specifically mention mangrove trees, but that is part of this tree focus. We have been surprised to not see many announced mangrove forest projects as a way to meet net carbon reduction targets. We would have thought that the 4x higher carbon absorption by mangrove forests vs*

regular forests would have led to more announced projects. Especially in countries like Mexico that have global manufacturing and are familiar to oil and gas companies. But Friday night MT (Saturday morning local time), Arab News reported [LINK] that, as part of Saudi Green Initiative hat starts on Oct 23/24, "Plans to establish Saudi Arabia's first national mangrove park are underway to enhance the Kingdom's efforts in environmental protection and tourism development through vast green spaces." And "Mangrove forests are vital for climate change, as highly productive and biodiversity-rich inter-tidal forests sequester carbon faster than terrestrial forests. The more CO2 the mangroves capture, the faster the greenhouse gases are removed from the atmosphere. The distinctive ecosystems also protect shores and can help prevent direct damage in case of storms. More than a quarter of the world's mangroves have been lost over the past decade due to artificial intrusions."

Indonesia, Mangrove forests absorb 4x carbon vs tropical forests

Our April 25 2021 Energy Tidbits included this item. "*One of the big emissions reductions themes will be tree planting. But we hadn't appreciated (and should have realized) that not all tree planting is created equal. Makes perfect sense. Indonesia President Jokowi's speech certainly fit into the category that they are open for investment. Earlier this morning, we tweeted [LINK] "Did you know carbon absorption of mangrove forests is multiples higher than tropical forests? Indonesia Pres @jokowi says 4 times higher. Makes sense not all plants absorb the same amount of carbon. Good for ID, MEX, others. #OOTT #NetZero." In his Biden climate speech, Jokowi said "We are currently rehabilitating 620 thousand hectares of mangrove forests until 2024, the largest in the world with carbon absorption reaching fourfold higher than that of tropical forests". Currently rehabilitating sounds like an invitation for capital. 620,000 hectares is ~2,400 square miles."*

Capital Markets – California voters don't pass Proposition 30

California Proposition 30

The Tax Foundation provided results of the State Tax Ballot Measures [LINK]. Californians voted to not pass the Proposition 30 with results being 41% For and 59% Against. We highlighted Proposition 30 in our Oct 30, 2022 Energy Tidbits. It would have increased marginal tax rates on high income earners and also add a "marriage penalty" for high income earners. We wrote, *"what makes this interesting is that this is not a straight tax the rich, it also includes a use of these proceeds with the majority of the added tax revenues to go for zero-emission vehicle infrastructure and purchasing incentives."* We thought it might be a closer vote. There were other state ballot measures that were passed that did increase income tax take from higher income families. It's also a reminder why we think more Americans move to low tax states like Texas, Florida, Arizona and more high income to move offshore. Over time, we will see more of these tax measures in the US and Canada. Our Supplemental Documents package includes the Tax Foundation article.

Demographics – Will this supply chain shortage be the end of printed newspapers?

Lack of delivery people for newspapers

We recognize that there are no longer paperboys delivering newspapers, but papermen and paperwomen delivering the dwindling number of paper newspapers delivered to homes. But we have to believe the lack of people to deliver newspapers to home may well be the accelerator to ending printed editions of newspapers. We have been one of the holdouts to keep getting the Calgary Herald delivered to our home. But received a letter from the distributor warning how many of their "*long term carriers have opted to move on with different opportunities over the past few months and it is posing a significant staffing issue*" and the "*labor crunch*" is "*posing a problem for my company to hire at this time*". As a result, "*I may have to deliver every 2nd day for a short period as I am rotating areas daily to try and deliver what I can*". We feel for the local newspapers as they have had to cut local staff so most of the news is national feeds or other regional feeds. And they have been hit by less advertising in the downward spiral of less readers means less advertising. Then throw on top of the non-daily delivery of a daily newspaper, it will just be one more negative against printed newspapers.

Figure 53: Toronto Star paperboy in early 1960s delivering in Whitby

Source: Wikimedia

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.

Iranian man who inspired "The Terminal" movie dies at Paris airport

We suspect who saw the 2004 movie "The Terminal" starring Tom Hanks never realized it was inspired by the story of Mehran Karimi Nasseri. Yesterday, CNN reported [LINK] "*Mehran Karimi Nasseri, the man who had lived inside the Paris-Charles de Gaulle airport for years and inspired Steven Spielberg's 2004 film "The Terminal", died Saturday at the same airport. Nasseri was pronounced dead by the airport medical team at Terminal 2F and had died of natural causes, a spokesperson for the airport told CNN. Nasseri, an Iranian refugee, was en route to England via Belgium and France in 1988 when he lost his papers and could not board a flight nor leave the airport and was stuck in limbo until 2006. He had "returned to live as a homeless person in the public area of the airport since mid-September, after a stay in a nursing home," the spokesperson said."* One difference from the movie is that "*the spokesperson for the airport noted that: "The Spielberg film suggests that he was stuck in a transit zone at Paris-Charles de Gaulle. In reality, he spent several stays there, but always in the public area of the airport, he was always free to move around."*

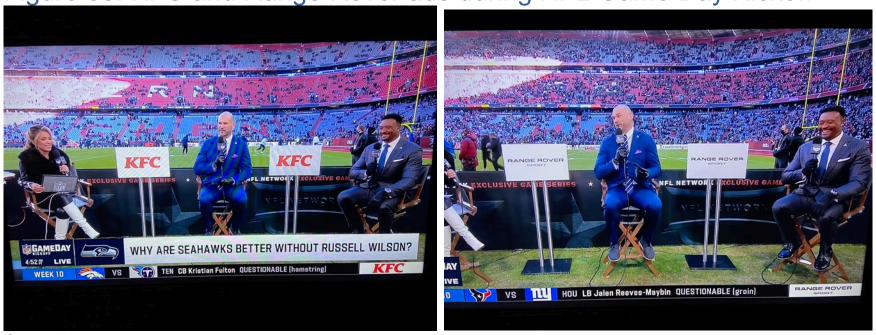
Figure 54: Mehran Karimi Nasseri standing next to poster of The Terminal movie

Source: CNN

Surely they could have better advertiser signage on NFL Game Day Kickoff

We were watching NFL Game Day Kickoff as we finished off the last minute editing for today's memo. NFL Game Day Kickoff was early given the Bucs/Seahawks 7:30am MT kickoff with their game today in Munich. The NFL is probably the most polished TV sports events so it was surprising these cheap looking KFC and Range Rover signs standing in between the panel. Don't ever recall this type of in-camera advertiser signage. But even it's only in Munich, surely, there could have been something better?

Figure 55: KFC and Range Rover ads during NFL Game Day Kickoff



Source: NFL Network

If it walks like a duck, talks like a duck, it probably is a duck
We recognize that China doesn't want to go all in on a reopening particularly given it's winter and they don't have the same quality of vaccines. But, when we see Chinese authorities talk about maintaining the strict fight against Covid but also implementing 20 optimized measures, we can't help think of the saying "*if it walks like a duck, talks like a duck, it probably is a duck*".

COP27 vendor food looked terrible and wasn't cheap
We often make fun of the quality and price of vendor food at English Premier League matches, but they look great to what appears to be the available vendor food at COP27 in Egypt. CNBC's Dan Murphy tweeted the below sandwich pictures. Apparently with all the complaints, they reduced the cost of sandwiches by 50% mid week.

Figure 56: 10 COP27 sandwiches

Source: Dan Murphy, CNBC