Energy Tidbits

Oct 23, 2022

Produced by: Dan Tsubouchi

BC Says "LNG Canada Has Expressed the Wish to Explore the Possibility of Proceeding with Phase 2, and We're Engaged in Discussions with Them"

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. Looks like LNG Canada is trying to get BC onside for its 1.8 bcf/d Phase 2 (Click Here)

2. Fort St. John mayor Lori Ackerman joining the Blueberry River side is a positive indicator for a final BC agreement with Blueberry River First Nations. (Click here)

3. Biden doesn't plan to take any major actions against Saudi Arabia until he consults with Congress post midterm. (Click here)

4. Macron worries that high energy prices need to come down quickly or risk EU financial instability (Click Here)

5. NRDC report says Cdn logging industry emissions are at par with oil sands emissions. (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 +111 bcf, storage now -106 bcf YoY deficit

The YoY storage deficit started last winter at -282 bcf YoY at Oct 31 and is now -106 bcf YoY. The EIA reported a +111 bcf build (+108 bcf expectations) for the Oct 14 week, which was well above the 5-yr average build of +66 bcf, and above last year's injection of +92 bcf. Storage is 3.342 tcf as of Oct 14, with a narrowed YoY deficit of -106 bcf YoY vs -126 bcf YoY last week and is -183 bcf below the 5-year average vs -221 bcf below last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [LINK].

YoY storage at -106 bcf YoY deficit

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons: Year ago (10/14/21)		Historical Comparisons: 5-year average (2017-21)	
Region	10/14/22	10/07/22	net change	implied flow	Bcf	% change	Bcf	% change
East	812	782	30	30	858	-5.4	877	-7.4
Midwest	987	952	35	35	1,023	-3.5	1,030	-4.2
Mountain	195	190	5	5	211	-7.6	212	-8.0
Pacific	249	249	0	0	253	-1.6	290	-14.1
South Central	1,099	1,058	41	41	1,104	-0.5	1,116	-1.5
Salt	271	253	18	18	281	-3.6	282	-3.9
Nonsalt	828	804	24	24	823	0.6	834	-0.7
Total	3,342	3,231	111	111	3,448	-3.1	3,525	-5.2

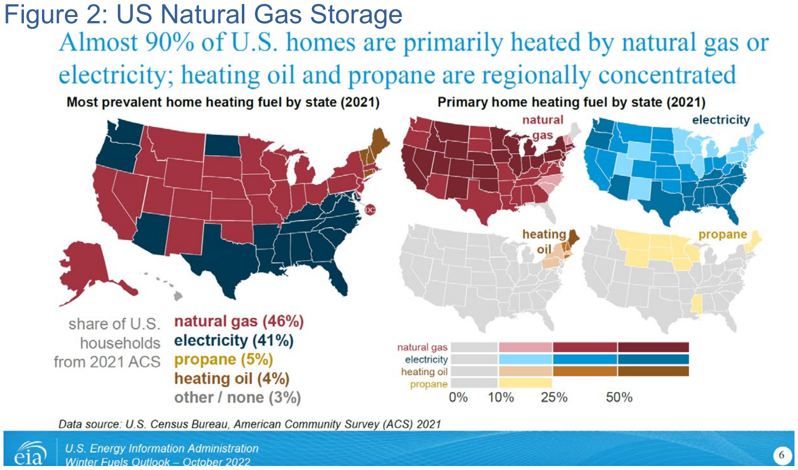
Source: EIA

Natural Gas – Key US regions for winter natural gas demand are NE/Great Lakes

Our primary focus for winter weather tends to be in the US NE and around the Great Lakes for the combination of population density, areas that have colder winters, and a higher percentage of the US homes in these regions that primarily use natural gas for heating. Below is the EIA's map from last week showing the primary fuel source for heating homes. The EIA didn't provide the backup to show for homes that are heated by electricity, how much of the electricity is provided by natural gas.

Natural gas home heating

Figure 2: US Natural Gas Storage



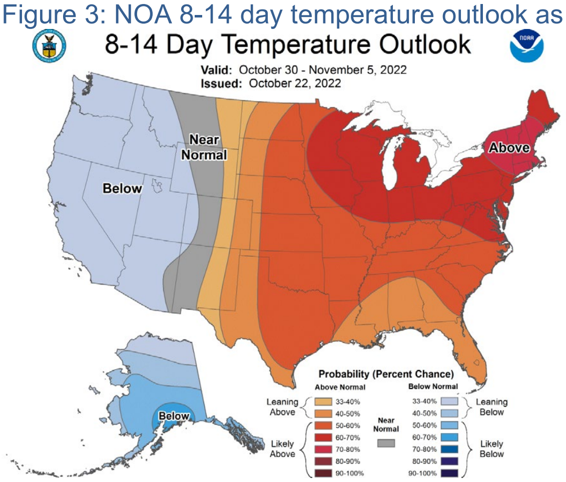
Source: EIA

Natural Gas – NOAA's 8-14 day calls for a warm start to Nov in eastern half of US

NOAA 8-14 day temperature outlook

It may have snowed last night in Calgary, but it looks like there will be a continued negative tone from weather on HH gas prices. It's going to be a very warm start to the winter natural gas season, which start on Nov 1. We know weather forecasts are far from perfect, but the very near term forecasts tend to be reasonably good. NOAA updates its 6-10 day and 8-14 day outlooks every day, normally at 1pm MT. Yesterday's 8-14 day outlook for Oct 30-Nov 5 came out a little late [LINK], but it calls for a much warmer than normal start to the eastern 2/3 of the US including the key natural gas for home heating regions in the around the Great Lakes and in the eastern US.

Figure 3: NOA 8-14 day temperature outlook as of Oct 22



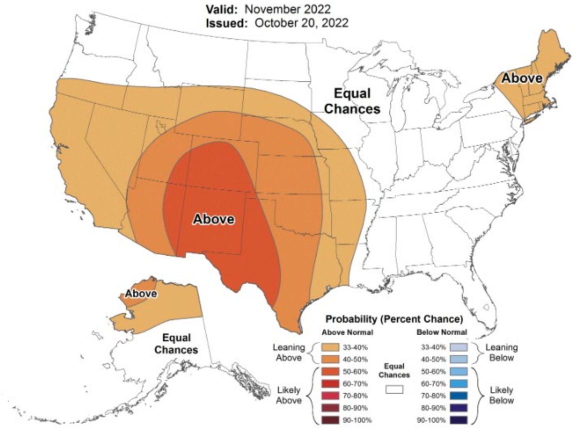
Source: NOAA

Natural Gas – NOAA, still expects a warm start to a warmer than normal winter

NOAA forecasts a warm 30-days and DJF

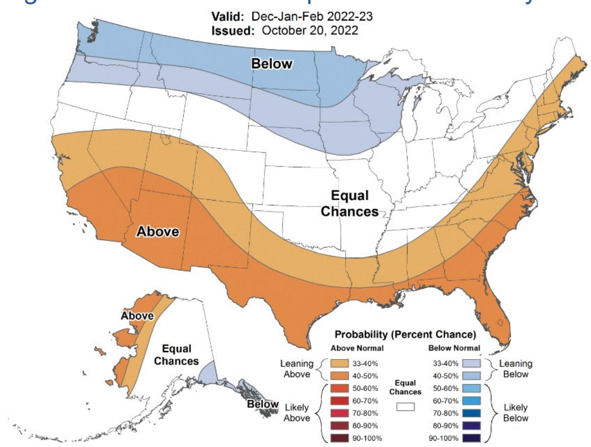
On Thursday, we tweeted [LINK] "*Updated @NOAA 30-day & DJF temperature outlook. Marginally colder DJF vs last mth forecast, but still not bullish for weather driven #NatGas demand in DJF. And still a warmer than normal Nov. HH would be way lower if not for #LNG exports. #OOTT".* NOAA's writeup was titled "*U.S. Winter Outlook: Warmer, drier South with ongoing La Nina"* [LINK]. Every month, NOAA posts updated 30-day [LINK] and seasonal outlooks [LINK] on the same day. Our tweet notes that the Oct 20 updates forecast a slightly colder peak DJF than the Sept forecast, but the updated forecasts still call for a warmer than normal start to the winter natural gas withdraw season in November, and a warmer than normal DJF. Below are the are the new NOAA temperature probability maps for the 30-day outlook forecasts and the DJF.

Figure 4: Monthly Temperature Outlook



Source: NOAA

Figure 5: NOAA DJF Temperature Probability Forecast

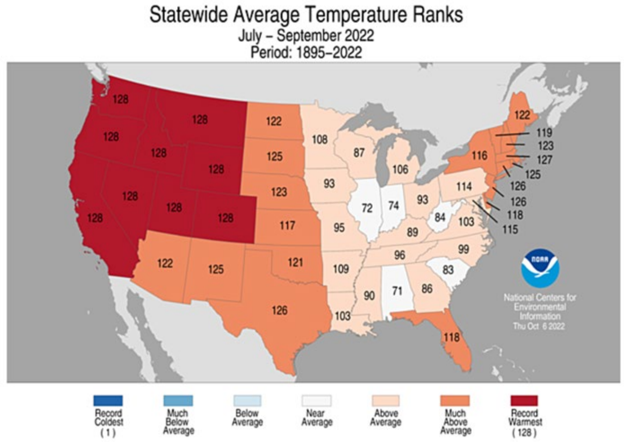


Source: NOAA

Peak winter DJF 2021/22 was 18th warmest on record

The new NOAA seasonal outlook for the peak winter DJF may not be great, but it will certainly be better for natural gas than the just passed winter 2021/22. Last winter was hot. Our April 10, 2022 Energy Tidbits memo highlighted NOAA's recap of winter 2021/22, when NOAA ranked DJF 2021/22 as the 18th warmest on record in the last 128 years.

Figure 6: US Statewide Average Temperature Ranks DJF 2021/2022



Source: NOAA

Natural Gas – EIA, US shale/tight natural gas breaking out, now >94 bcf/d

Shale/tight gas production

EIA's updated Drilling Productivity Report Oct 2022 was released on Monday, and the key takeaway is that it Nov would be the 7th consecutive month of growth, albeit the last few have been more modest MoM growth but growth nonetheless. The DPR [LINK] is the EIA's forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case Oct) and the next month (in this case Nov). Shale/tight natural gas has had 7 months is breaking out, as increasing US LNG export capacity out of the Gulf Coast is driving natural gas growth in Louisiana and Texas. Sept was the first month over 94 bcf/d at 94.135 bcf/d and Nov is forecasted at 95.084 bcf/d. The challenge for gas is that Appalachia is basically flat. And growth is linked to LNG with Haynesville at 16.078 bcf/d in Nov vs 14.291 bcf/d in Feb. Eagle Ford (a more gassy oil play) at 7.311 bcf/d in Nov vs 5.293 bcf/d in Feb. (ii) Three of the shale/tight gas areas were basically flat – Anadarko, Bakken and Niobrara. The largest increases came from Haynesville (+0.200 bcf/d MoM), Permian (+0.127 bcf/d MoM) and Eagle Ford (+0.091 bcf/d MoM).   (iii) All shale/tight plays except for the Niobrara are up YoY, with the most notable YoY increases being Haynesville +2.300 bcf/d YoY and Permian +1.759 bcf/d YoY. The two key shale/tight plays feeding growth US LNG exports. Total US shale/tight natural gas production is expected +5.934 bcf/d YoY for Nov. (iv) Remember US shale/tight gas is ~90% of total US natural gas production. So whatever the trends are for shale/tight gas are the trends for US natural gas in total. Below is our running table showing the EIA DPR data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes the EIA DPR.

Figure 7: MoM Change – Major Shale/Tight Natural Gas Production

mmcf/d	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Nov YoY	Nov YoY %	Nov less Oct
Anadarko	6,203	6,321	6,278	6,341	6,286	6,118	6,134	6,275	6,554	6,658	6,715	6,708	6,709	506	8%	1
Appalachia	35,601	34,825	34,988	35,716	36,298	35,443	35,476	35,155	35,121	35,332	35,486	35,577	35,666	65	0%	89
Bakken	3,012	3,071	3,150	3,137	3,079	2,932	3,076	3,088	3,086	2,915	3,191	3,156	3,189	177	6%	33
Eagle Ford	5,950	6,012	6,118	6,176	6,288	6,298	6,394	6,538	6,671	6,985	7,101	7,220	7,311	1,361	23%	91
Haynesville	13,778	13,874	14,019	14,291	14,425	14,527	14,863	15,023	15,261	15,643	15,835	15,878	16,078	2,300	17%	200
Niobrara	5,308	5,329	5,339	5,293	5,196	5,254	5,187	5,195	5,205	5,212	5,223	5,062	5,075	-233	-4%	13
Permian	19,298	19,573	19,936	20,233	20,160	19,533	19,870	20,227	20,373	20,417	20,584	20,930	21,057	1,759	9%	127
Total	89,150	89,005	89,828	91,187	91,732	90,105	91,000	91,501	92,271	93,162	94,135	94,531	95,084	5,934	7%	553

Source: EIA, SAF

Natural Gas – US LNG exports flat MoM in Aug at 9.7 bcf/d

US July LNG exports

As a reminder, the US Dept of Energy posts monthly US LNG export data at least a week before the EIA (part of the US Dept of Energy) posts US LNG export data in its monthly Natural Gas Monthly report (next report is Sept 30). Normally, the data points are the same. On Thursday, the DOE posted its LNG Monthly for US LNG exports in Aug. [LINK] The headline numbers as the US exported 9.7 bcf/d of LNG in Aug, which was down 0.1% MoM vs July 2022, and up +0.7% YoY vs Aug 2021. Our table below is rounded numbers to one decimal and the the actual Aug is 9.67 bcf/d. Reminder, US LNG is down because of the continued outage at Freeport LNG. The advantage of the DOE report is that it provides other LNG insights. The DOE reported *"Top five countries of destination, representing 55.9% of total U.S. LNG exports in August 2022 o Netherlands (50.4 Bcf), South Korea (36.0 Bcf), France (33.9 Bcf), Spain (26.1 Bcf), and United Kingdom (21.3 Bcf)."* Below is our table of EIA's monthly LNG exports. Our Supplemental Documents package includes excerpts from the DOE LNG Monthly.

Figure 8: US LNG Exports (bcf/d)

(bcf/d)	2016	2017	2018	2019	2020	2021	2022
Jan	0.0	1.7	2.3	4.1	8.1	9.8	11.4
Feb	0.1	1.9	2.6	3.7	8.1	7.4	11.3
March	0.3	1.4	3.0	4.2	7.9	10.4	11.7
Apr	0.3	1.7	2.9	4.2	7.0	10.2	11.0
May	0.3	2.0	3.1	4.7	5.9	10.2	11.3
June	0.5	1.7	2.5	4.7	3.6	9.0	10.0
July	0.5	1.7	3.2	5.1	3.1	9.7	9.7
Aug	0.9	1.5	3.0	4.5	3.6	9.6	9.7
Sept	0.6	1.8	2.7	5.3	5.0	9.5	
Oct	0.1	2.6	2.9	5.7	7.2	9.6	
Nov	1.1	2.7	3.6	6.4	9.4	10.2	
Dec	1.3	2.7	4.0	7.1	9.8	11.1	
Full Year	0.5	1.9	3.0	5.0	6.6	9.7	10.8
Full Year bcf	186.8	707.5	1,083.1	1,819.4	2,390.0	3,560.8	2,317.7

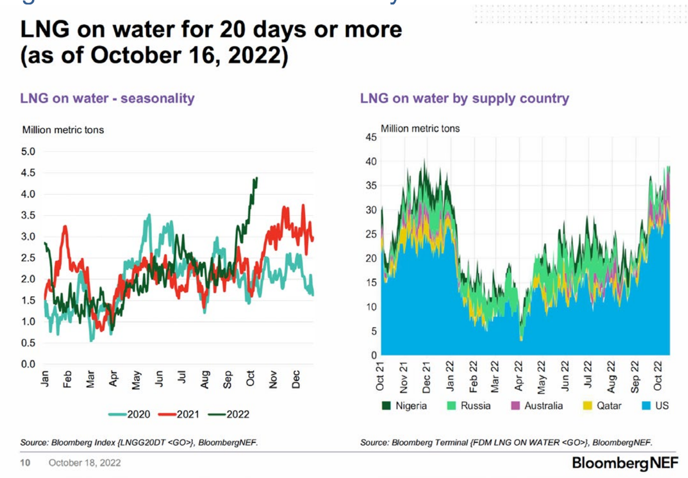
Source: EIA, DOE

Natural Gas – US LNG cargos are waiting to unload in Europe

US LNG cargos waiting off Europe

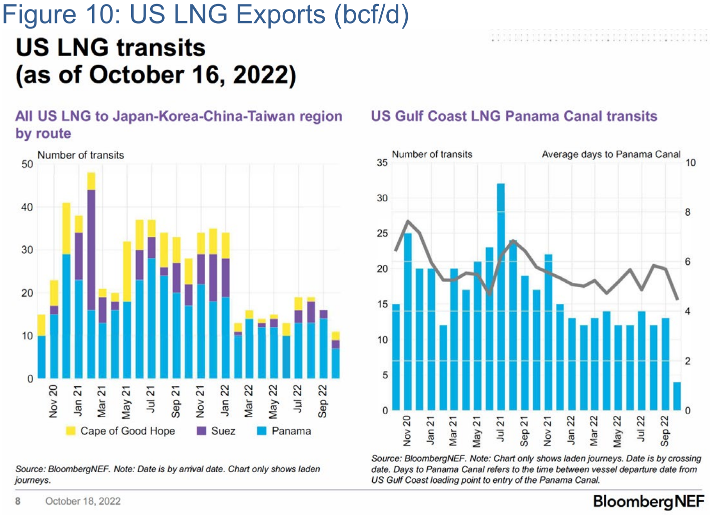
There were multiple reports in the last week on the build up of LNG tankers offshore Europe. Ie. the WSJ reported [LINK] "*Dozens of ships laden with natural gas are floating off the coast of Europe, many of them waiting for berths to unload as the continent races to top up storage ahead of a winter without Russian gas. Thirty-five tankers are idling or sailing slowly around northwest Europe and the Iberian Peninsula, according to Felix Booth, head of LNG at energy and shipping data firm Vortexa. Six of the giant tankers are moored in Spain's Bay of Cadiz, and there is another cluster in the English Channel.*" We saw some good data indicators to support that these are mostly carrying US LNG. On Tuesday, BloombergNEF posted its "*LNG Trade Weekly: Floating Cargoes at Record High Levels*", which included the below two graphs. BNEF shows the big jump in US LNG tankers on water for 20 days or more, which in the pre-Russia/Ukraine days, likely pointed to more US LNG tankers were enroute to Asia. But the second BNEF graph shows the massive decline in US LNG tankers going thru the Panama Canal, which is the route to Asia, which means that these US LNG tankers are going to Europe or South America.

Figure 9: LNG on water for 20 days or more



Source: US LNG transits

Figure 10: US LNG Exports (bcf/d)



Source: BloombergNEF

Natural Gas – Looks like a BC/Blueberry First Nations final deal is coming soon

BC/Blueberry First Nations deal soon?

There still isn't any announced final deal agreement between British Columbia and the Blueberry River First Nations, but it news) reported looks like a final agreement is coming soon given the appointment of Lori Ackerman (now an outgoing Mayor for Fort St. John) as CEO of Blueberry River Resources, a new entity to manage the Blueberry River First Nations business interests. Energetic City (Fort St. John region "*Ackerman will begin her duties on November 1st. "[Ackerman] has long-standing and positive relationships with Northeastern*

B.C. First Nations, as well as with local industry and provincial administrative entities, and is well placed to advance the interests of the nation in a way that benefits all parties," said a release." And "*The Blueberry River First Nations and its leadership have done a significant amount of work preparing to move forward with a structure that acknowledges opportunities for reconciliation and economic benefit for its members and ultimately our region," said Ackerman*." Our Supplemental Documents package includes the Energetic City report. [LINK]

Natural Gas – BC says it is in discussions with LNG Canada on potential Phase 2

BC discussing Phase 2 with LNG Canada

It looks like it is coming down to British Columbia to decide if LNG Canada will proceed with its brownfield 1.8 bcf/d Phase 2. We have a clear statement from British Columbia that they are in discussions with LNG Canada on their wish for the potential Phase 2. Last week's (Oct 16, 2022) Energy Tidbits highlighted the separate comments from Canada Deputy Prime Minister Freeland and External Affairs Minister Joly that seemed to point to LNG Canada Phase 2 coming and that the Liberals would be onside. We haven't seen comments from the BC Govt on Phase 2 until this week. On Monday, we tweeted [LINK] "*#LNGCanada 1.8 bcfd Phase 2 FID. Liberals seem onside see 👇 @cafreeland. BC. @brentcjang reports @BruceRalston "LNG Canada has expressed the wish to explore the possibility of proceeding with Phase 2, and we're engaged in discussions with them. #OOTT [LINK]."* The Globe and Mail wrote *"In a recent media briefing in Kitimat, however, LNG Canada chief executive officer Jason Klein said LNG from B.C. will play a crucial role in helping displace coal used in Asia for electricity generation. "The climate challenge isn't a B.C. challenge. It is a global challenge," Mr. Klein said. "It's not just about displacing coal. It's also about getting people out of energy poverty around the world." He said Shell, Petronas and the three other co-owners of the megaproject will ultimately decide whether it makes economic sense for Phase 2 to use lower-carbon hydroelectricity from BC Hydro to power motors to produce LNG. There isn't sufficient infrastructure today for BC Hydro to provide enough hydro power for electric-drive technology at the Kitimat facility, but new transmission lines are possible. B.C. Energy Minister Bruce Ralston, who is the cabinet minister responsible for BC Hydro, said electrification would be an important aspect of LNG Canada's potential expansion. "LNG Canada has expressed the wish to explore the possibility of proceeding with Phase 2, and we're engaged in discussions with them," Mr. Ralston said."* Our Supplemental Documents package includes the Globe and Mail report.

Natural Gas – Baker Hughes keeps its bullish LNG demand outlook

Bullish LNG view by Baker Hughes

Baker Hughes reported Q3 on Tuesday and kept its bullish LNG demand outlook, but it feels like they may be slightly less convinced on the 2030 LNG demand estimate. (i) LNG FIDs in 2022 and 2023. On Tuesday, we tweeted [LINK] *"#LNGCanada 1.8 bcfd Phase 2? See 👇$BKR @simonelli_l expects 13.2 to 19.7 bcfd of #LNG FIDs in 2022/23, incl 4.1 bcfd FID'd to date in 2022. But landscape shifting to established LNG developers with brownfield projects and projects utilizing faster to market modular lines. #OOTT*"." This is an unchanged forecast. On the Q3 call, mgmt said "*"The primary growth driver for TPS continues to be LNG where multiple projects are expected to move forward for FID in 2022 and 2023. Although inflationary pressures and rising interest costs have slowed progress on some projects we remain comfortable with our expectation of 100 to a 150 MTPA reaching FID by the end of*

2023, including the 31 MTPA that at has reached FID year to date." (ii) LNG demand forecast in 2030. In the Q&A, mgmt. was asked if they still see 800 MTPA (105 bcf/d) LNG demand forecast for 2030. Mgmt replied "*Yeah, definitely Dave. And again I mentioned we feel-good about the LNG outlook and we stated $100 million to $150 million and also mentioned that as you look at projects going-forward brownfield projects as well as those that utilize the fast-to-market modular design. Likely to be particularly advantaged in the coming years. As we look at it we've always said, we're going to have a complete solution offering for LNG. And definitely the aspect of fast LNG and modular is gaining traction right now and they could lead to more players coming into the field as you look at different gas reserves that are being found and also look to capitalize on those as the need for energy continues. I'd say right now still the outlook is 800 million tonnes by 2030. I wouldn't go off that at this time and we'll continue to monitor the situation.*" Note it's not 100% clear but we don't think he would talk about monitoring the situation to potentially move off the 2030 target if it wasn't to the downside.

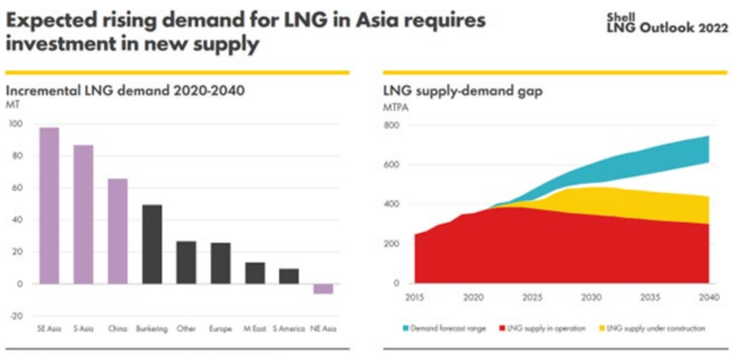
Baker Hughes 800 MTPA LNG forecast from Q1 call on April 20

The Baker Hughes forecast for 800 MTPA (105 bcf/d) LNG capacity is not new. Rather they highlighted this in their Q1/22 call on April 20. Our April 24, 2022 Energy Tidbits memo was titled "*Baker Hughes' Hugely Bullish LNG Forecast Calls For 24 Bcf/d of New LNG FIDS by 2025 to Meet 2030 Required Capacity*." Here is what we wrote in our April 24, 2022 Energy Tidbits memo. "*There is no other way to describe it but to say Baker Hughes has a hugely bullish view for LNG and the need for massive LNG export FIDs over the next 3 years. We were on the Bloomberg terminal and missed the first 10 minutes of the Baker Hughes Q1 call on Wednesday morning, but jumped on the call as soon as we saw the headlines coming across the terminal on CEO Simonelli's opening comments. We had to tweet [LINK] "LNG growth is hugely more than expectations. On @business "Baker Hughes CEO Says Global LNG Capacity Will Exceed 800 MTPA By End Of This Decade". That's 105 bcf/d capacity. Recall Shell's LNG Outlook 2022 on 02/21 forecast #LNG demand of ~92 bcf/d in 2040. #LNGCanada #OOTT." Fortunately, we had recorded the call so was able to make a quick transcript and attach it to our followup tweet [LINK] "Must read transcript 👇. Huge #LNG growth fcast by #BakerHughes @simonelli_l. LNG capacity in 2030 >105 bcfd less current cap 61 bcfd less under construction 20 bcfd = FIDs needed by 2025 of 24 bcfd. Surely Shell will FID #LNGCanada Phase 2? Big plus to Cdn #NatGas. #OOTT". Baker Hughes sees the need for 24 bcf/d of LNG export FIDs by 2025 to meet their forecast. Here is the transcript we created of Simonelli's comments/ At 2:45 min mark. Simonelli "Recent geopolitical events have severely constrained what was already a tight global natural gas market and have refocused the world on the importance of energy security, diversity, and reliability. As the world reacts to the rapid changes in the global commodity market, governments are prioritizing natural gas and LNG as a key transition and destination fuel. We continue to see a focus on prioritizing LNG from stable, lower cost markets, and locations that can provide cleaner LNG. Given the current LNG price environment and the quickly changing dynamics, we believe that global LNG capacity will likely exceed 800 MTPA by the end of this decade to meet growing demand forecasts. This compares to the current global installed base of 460 MTPA and projects under construction totalling almost 150 MTPA. In order to be operational by*

2030, this additional capacity will need to reach FID by around 2025." Note Simonelli is referencing capacity and not LNG demand. A higher level of capacity is always needed to meet certain levels of demand. This is a hugely bullish LNG forecast from the company that is likely the most plugged into what is happening on LNG export project planning and discussions. Our tweet highlighted LNG Canada Phase 2, which as readers know we have been bullish on the potential for Phase 2 FID in 2022 and still expect to see it happen."

Baker Hughes LNG forecast for 2030 is about the same as Shell's for 2040
Here is another excerpt from our April 24, 2022 Energy Tidbits memo. "*Our tweets tried to put in perspective the Baker Hughes LNG forecast. Baker Hughes forecasts LNG capacity needed of 105 bcf/d by 2030. That is capacity, so it probably links to a LNG demand forecast of 90 to 95 bcf/d assuming an average across the board throughput of 85-90%. Shell had its LNG Outlook 2022 on Feb 21, 2022 and forecast LNG demand of approx. 92 bcf/d but for 2040. So Baker Hughes has about the same LNG demand forecast, but 10 years earlier than Shell. Below is Shell's LNG forecast.*

Figure 11: Shell LNG Outlook 2022 – Feb 21, 2022



Source: Shell

Natural Gas – Nigeria FLNG force majeure

Nigeria FLNG force majeure

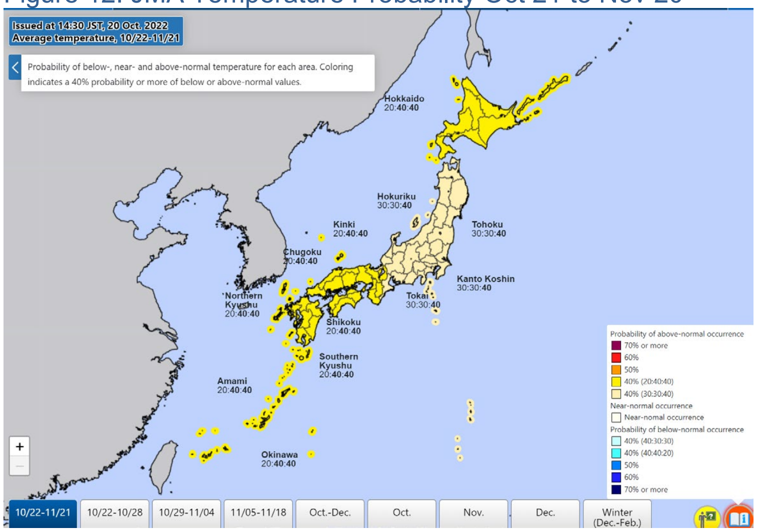
On Tuesday, we tweeted [LINK] *"#LNG supply surprises are almost always hits to LNG supply. @WTBClowes reported Nigeria LNG (NLNG) declared #ForceMajeure on shipments from its Bonny Island LNG facility after supplies were cut off by flooding. NLNG capacity is 2.89 bcfd but been producing below capacity. #OOTT."* Bloomberg reported "*Nigeria LNG Ltd. declared force majeure on shipments from its Bonny Island liquefied natural gas facility after supplies were cut off by flooding. "The notice by the gas suppliers was a result of high flood water levels in their operational areas, leading to a shut-in of gas production which has caused significant disruption of gas supply to NLNG," company spokesman Andy Odeh said by email Monday. The announcement comes as NLNG, which can produce 22 million tons of LNG a year, was already operating at reduced capacity due to difficulties securing adequate feedstock. The company is a joint venture between the state-owned Nigerian National Petroleum Co., Shell Plc, TotalEnergies SE and Eni SpA."* Europe is a big home for Nigerian

LNG. But we put in our tweet the reminder that LNG supply surprises are almost always to hits in LNG supply.

Natural Gas – Slightly colder than normal Nov in Japan

We are back to including Japan Meteorological Agency's every Thursday's near term 30-day temperature forecast with winter about to start. The JMA expects a colder than normal Oct 22-Nov 21 period. [LINK] But, because it's November, it's positive for electricity demand, but not huge. AccuWeather forecasts Tokyo daily highs around 15c and lows around 5c for the back half of November.

Figure 12: JMA Temperature Probability Oct 21 to Nov 20



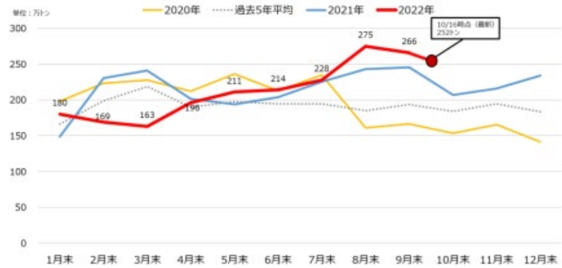
Source: Japan Meteorology Agency

Natural Gas – Japan's LNG stocks up +1.2% from last week

Japan LNG stocks +1.2% 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 Oct 16 were ~121 bcf, +1.2% WoW from 120 bcf but up from the 5-yr average of 99 bcf. Below is the LNG stocks graph from the METI weekly report.

Figure 13: Japan's LNG Stocks



Source: METI

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

Japan was early in working to reduce natural gas consumption and has been maximizing petroleum products and coal power generation to minimize sky-high LNG prices. It has been working. On Thursday, 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 -12.3% MoM. Normally, we have been seeing thermal coal imports outperform LNG imports but that wasn't the case in Sept, when thermal coal imports for Sept were -4.3% YoY. Below is our table that tracks Japan LNG import data.

Japan Sept LNG imports -1.6% YoY

Figure 14: 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 – Danish police still can't say who blew up Nord Stream

On Tuesday, the Copenhagen Police [LINK] posted their update on the Nord Stream explosions. We tweeted [LINK] "*Just the facts, ma'am. See 👇, No hints from Danish Police Intelligence on who might be responsible for the "powerful explosions" that hit #NordStream 1 & 2 in Denmark exclusive economic zone. #NatGas #LNG #OOTT*" The headline from the police report was that "*the damage has been caused by powerful explosions".* But there were no conclusions or fingers pointed in any direction. And the police also said they don't know when they will be able to complete their investigation.

Nord Stream

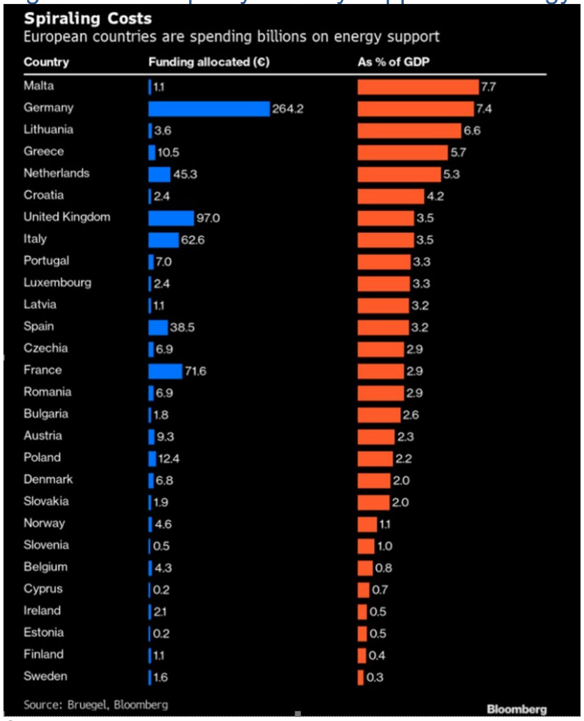
Natural Gas – EU govts pledged $536b so far to protect from soaring energy costs

The costs for EU governments to shelter their citizens/businesses from soaring energy costs continue to climb with no end in sight. And we fear it will have to continue in 2023. On Friday, we tweeted [LINK] "*EU govts have pledged 550 billion euros ($536b) to protect citizens/businesses from soaring energy costs over past yr. Unlike Covid that was temporary*

Europe energy protection costs now $536b

impact, banning RUS #NatGas #Oil #PetroleumProducts = higher energy costs to Europeans for a long time. Thx @johnainger. #OOTT". Our concern for governments is that this isn't like Covid relief that was temporary, it will be hard to stop support for citizens and small businesses on natural gas and electricity prices. Bloomberg wrote "*European Union governments have pledged more than 550 billion euros ($536 billion) to protect citizens and businesses from soaring energy costs over the past year, highlighting the enormous fiscal burden the bloc's leaders face as they jostle over how to pay for it. That figure climbs to 710 billion euros when support for utilities via loans, bailouts and nationalizations are taken into account, according to the think tank Bruegel. That's just 90 billion euros shy of the EU's landmark borrowing program to help the region recover from the two-year Covid pandemic."* Below is Bloomberg's graphic on the by-country support.

Figure 15: Europe by-country support for energy costs



Source: Bloomberg

Natural Gas – Macron says US and Norway need to lower LNG & natural gas prices

US/Norway need to lower prices to EU

Yesterday morning, we tweeted [LINK] on the headlines out of Macron's press conference on Friday following the two-day EU leaders summit was on how US and Norway need to lower their natural gas prices to the EU. We created a transcript of the France24 translation of the Macron press conference. In the Q&A, Macron said "*Our economies need energy and the problem of depending on gas is much stronger for some countries than for others. So we have to discuss this. We have to have the debate. It's fair and that's what we've been doing. I really approached the Norwegian Prime Minister and the United States in a very open way so* *that they can understand out point of view. And yes, they have oil and that's great for them, but it wouldn't be fair if they kept all the benefit for themselves. It's a debate we have to have. There can't be a two tier Europe. Moreover, there are choices which we made in conjunction with the US regarding attractiveness, but with double standards because their cost of energy are so much lower as they are producers. They sell the gas for 3 or 4 times less than we have to pay. And they have also great subsidies from the states, the state in some area, up to 90%. That is unfair, it means it's double standard for the goods that are produced. And we need to create some more sincere conditions of trade. It's something I've been talking about with them and when I have my state visit in the states at the beginning of December, I will be discussing it again. And we have to act very quickly on prices, bring them down.*"

Natural Gas – Macron's warns on EU unity and financial instability risk in EU

Macron warning to Europe

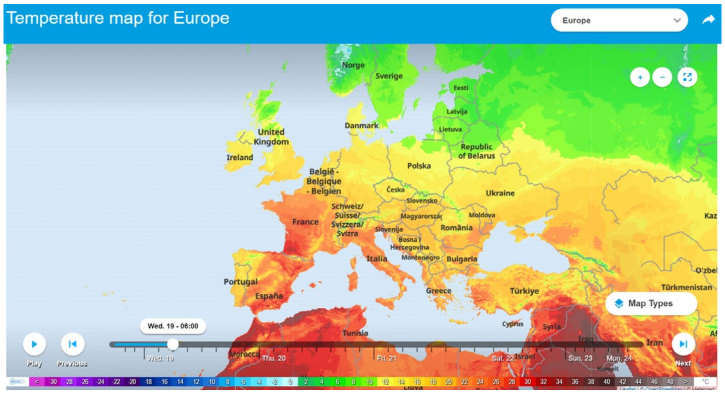
We think the bigger underlying message from the Macron press conference is that the EU leaders know that if they don't get sky-high natural gas prices down, there is the risk for financial instability. We know it's not always possible, but, where possible, we try to review any press conference and not just rely on other's reporting. We were reminded to try to do this when seeing the Macon press conference. As noted above, the headlines from his press conference were on US and Norway needing to reduce prices. Macron may not have said it directly, but we thought his warnings on risk to EU unity and financial instability were more significant. Our Macron tweet [LINK] included the headline but said *"#Macron headline is US & NO need to reduce #NatGas #LNG price. More in 👇transcript. not united in consequences of sanctions, "have to maintain solidarity & not let financial instability start in EU", industrial activity being hit hard. A normal winter likely tipping point? #OOTT."* Macron warns they need to get natural gas prices down quickly and then followed saying "*we have to maintain solidarity and not let financial instability start in Europe*." And "*we want to be good at selling various industrial goods*", which we saw as a message that industrial activity is getting hammered. One other political speak that was interesting was Macron saying "*Moreover, there are choices which we made in conjunction with the US regarding attractiveness, but with double standards because their cost of energy are so much lower as they are producers*". This looks like political speak for trying to blame the US or to say to the US you owe us as EU followed the Biden push to sanction Russia. Our Supplemental Documents package includes the SAF Group created transcript.

Natural Gas – A warm week in Europe was a big help to natural gas storage

A warm week in Europe

A big plus to Europe natural gas storage is that it was warm in Europe this week. We tweeted a couple of times this week on the warm Europe weather as it was going to be a key factor this week on softer Europe natural gas prices, which means softer LNG prices. On Wednesday morning, we tweeted [LINK] "*No wonder #NatGas #LNG has softened this week, it's warm in Europe so no weather related #NatGas demand, it's leave the windows open weather. Times are ET so noon BST. Good Europe temp map courtesy of @MeteoredUK. #OOTT."* We included the below yourweather.co.uk temperature map as of noon BST on Wed. It was warm for the rest of the week, but not as hot, yet still it looked like they were warm enough to not need much, if any, home heating and just leave the windows open.

Figure 16: Temperature map for Europe Wed Oct 19 at noon BST



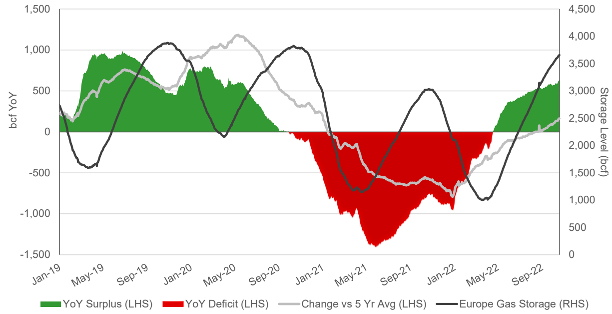
Source: yourweather.co.uk

Natural Gas – Europe storage is now +15.77% YoY ie. 92.92% full vs 77.15%

Europe storage now 92.92% full

It was a successful natural gas storage refill season in Europe with the continued strong LNG imports and massive industrial demand response to sky-high natural gas prices. And October, especially this week, has been warmer than normal so there hasn't been any real home heating demand. 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 down 18.52% YoY and is now a YoY surplus of 15.77%. 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. This 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. Thanks to the warm weather and US LNG, storage as of Oct 19 is at 92.92%, which is +15.77% greater than last year levels of 77.15% and are +4.27% above the 5-year average of 88.65%. Below is our graph of Europe Gas Storage Level.

Figure 17: Europe Gas Storage Level



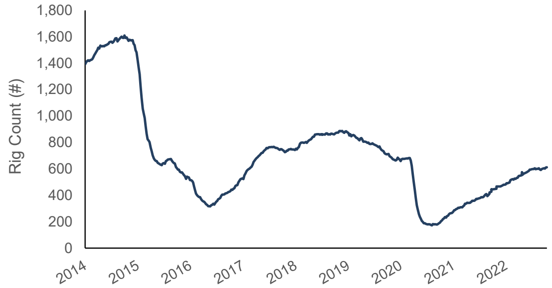
Source: Bloomberg

Oil – US oil rigs up +2 to 612 oil rigs at Oct 21

Baker Hughes released its weekly North American drilling activity data this morning. This week US oil rigs were +2 to 612 oil rigs. It looks like some Permian rigs shifted from New Mexico to Texas as there is zero change for Permian, but New Mexico is -4 rigs. US oil rigs hit a 14-week low of 591 six weeks ago. US oil rigs are now +433 oil rigs since the Covid Sept 17, 2020 oil rigs of 179 oil rigs. And US oil rigs are +169 oil rigs YoY. US gas rigs were flat WoW at 157 gas rigs.

US oil rigs +2 WoW

Figure 18: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

Oil – US frac spreads +3 to 298 spreads for the week ending Oct 21

Mark Rossano (C6 Capital Holdings) held his weekly US frac spread recap for the week ending Oct 21 on the Primary Vision network. YouTube video is at [LINK]. For the week ending Oct 21, US frac spreads at the high point in the week were +3 to 298 spreads. Here are some of his comments on the week. Spreads are now approaching that 300 that is the right number, its the level where expect to see some flatlining of activity. He didn't note it this week, but has reminded how frac spreads go into a normal seasonal decline before US Thanksgiving thru Christmas. Will see some frac spread fluctuation within areas, but overall should see a pretty consistent move as go thru the remainder of Oct and also the beginning of Nov. The big piece he wants to look at is the Haynesville as you get Freeport LNG back on line. He noted China has said won't be reselling LNG cargos for now, but seeing some LNG concerns given where diesel is around the world especially as you look at Europe and US East Coast. But even with this backdrop, he doesn't expect a move to take spreads above 300 but notes could go up to something like 305

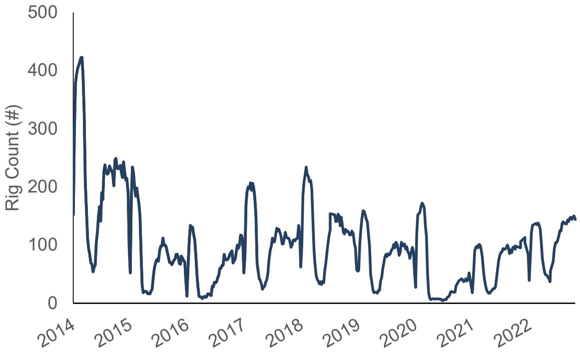
Frac spreads +3 to 298

Oil – Total Cdn rigs down -6 WoW to 210 total rigs, +46 rigs YoY

Total Cdn rigs were -6 to 210 rigs as of Oct 21, 2022. Cdn oil rigs were -6 to 144 oil rigs. Cdn gas rigs were flat at 66 rigs. We still expect rigs to remain fairly flat ahead of winter drilling season even though it is not usual to see a down week in late October. Total rigs are now +127 vs the comparable Covid period of 83 rigs on Oct 23, 2020. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 93 and Cdn gas rigs were 71 for a total Cdn rigs of 164, meaning total Cdn oil rigs are +51 YoY to 144 oil rigs and Cdn gas rigs are -5 to 66 gas rigs.

Cdn rigs down WoW

Figure 19: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

Oil – Baker Hughes warns North America activity beginning to level off

North American activity levelling off

We have been highlighting how US oil production growth has been less than expected in 2022. We still think there is some growth ahead, but it is limited. Baker Hughes reported Q3 on Wednesday. We tweeted [LINK] "*#OPEC will like this, #Biden won't. Support for #Oil prices in 2023/24 if there is lesser US #Oil shale growth ahead. $BKR Q3 call, @simonelli_l NAM "drilling & completion activity are beginning to level off after significant growth over the last 2 years". #OOTT.*" Baker Hughes said "*In North America pricing across our portfolio remains firm while drilling and completion activity are beginning to level-off after significant growth over the last two years. Although the US market will be more dynamic and dependent on oil prices we generally expect solid activity levels through the end of this year with an opportunity for modest growth in 2023 driven by public operators.*"

Oil – US weekly oil production up to 12.0 mmb/d

US oil production up WoW

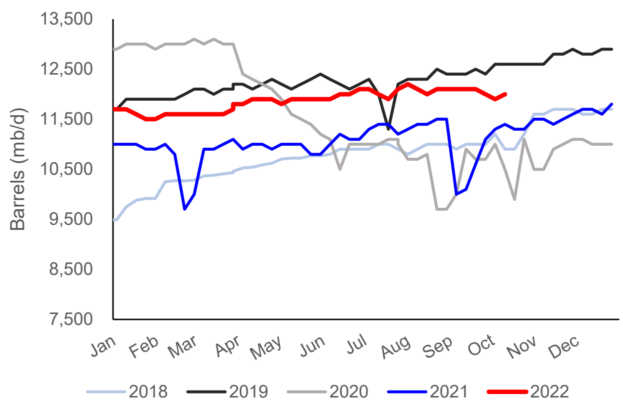
Our Oct 2, 2022 Energy Tidbits highlighted EIA Form 914 actuals for oil production in July, and how US oil production growth has been below expectations and was only +166,000 b/d from Dec 2021 thru July 2021. The EIA provides weekly estimates of US oil production, which was up to 12.0 mmb/d from 11.9 mmb/d for the week ended Oct 14. US oil production has been range bound between 11.9 to 12.1 mmb/d for the past 20 weeks. Lower 48 production was up WoW at 11.6 mmb/d this week and Alaska was flat WoW at 0.4 mmb/d. US oil production is up YoY at +0.7 mmb/d but is still down significantly at -1.2 mmb/d since the 2020 peak of 13.1 mmb/d on March 13.

Figure 20: EIA's Estimated Weekly US Oil Production

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
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						

Source: EIA

Figure 21: US Weekly Oil Production



Source: EIA, SAF

Oil – EIA shale/tight oil forecast revised down for Oct

US shale/tight oil production

The EIA Drilling Productivity Report Oct 2022 [LINK] forecast for US shale/tight oil saw a downward revision to Oct, with resumed growth in Nov. The DPR is the EIA's forecast for production for the major shale/tight oil and gas basins for the current month (in this case Oct) and the next month (in this case Nov). (i) Shale/tight oil was fairly flat from July thru Oct with some modest growth forecast for Nov. The EIA now forecasts total US shale/tight oil in Oct at 9.002 mmb/d and Nov at 9.104 mmb/d. (ii) The growth is somewhat distributed across all basins, but the Permian and Bakken have the most significant increases of +50,000 b/d and +22,000 b/d, respectively. The Permian Nov is 5.453 mmb/d, vs 5.134 mmb/d in Feb. Eagle

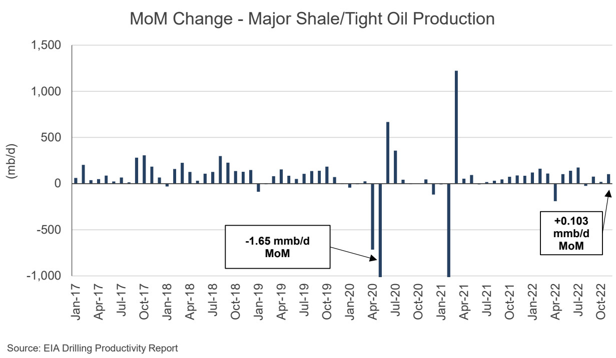
Ford is also up +18,000 b/d, benefitting from its higher natural gas ratio and the pull for natural gas for US LNG exports. (iii) Note that shale/tight oil is approx. ~75% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production. Our Supplemental Documents package includes the EIA DPR.

Figure 22: MoM Change – Major Shale/Tight Oil Production

Thousand b/d	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Nov YoY	Nov YoY %	Nov less Oct
Anadarko	366	378	389	393	399	398	391	406	413	425	424	425	431	65	18%	6
Appalachia	122	120	115	113	113	111	114	124	130	128	120	120	122	0	0%	2
Bakken	1,137	1,146	1,184	1,192	1,172	1,169	1,172	1,178	1,173	1,136	1,183	1,168	1,190	53	5%	22
Eagle Ford	1,078	1,090	1,104	1,122	1,123	1,140	1,149	1,152	1,180	1,204	1,224	1,208	1,226	148	14%	18
Haynesville	34	33	33	33	33	34	35	36	37	37	37	37	37	3	9%	0
Niobrara	608	615	615	611	613	610	627	630	632	649	648	640	646	38	6%	6
Permian	4,886	4,960	4,996	5,134	5,138	5,055	5,131	5,232	5,367	5,329	5,347	5,403	5,453	567	12%	50
Total	8,231	8,342	8,436	8,598	8,591	8,517	8,619	8,758	8,932	8,908	8,983	9,002	9,104	873	11%	103

Source: EIA Drilling Productivity Report

Figure 23: MoM Change – Major Shale/Tight Oil Production



Source: EIA Drilling Productivity Report

Oil – EIA DUC's worked down by 10 in September

DUCs continue to work down

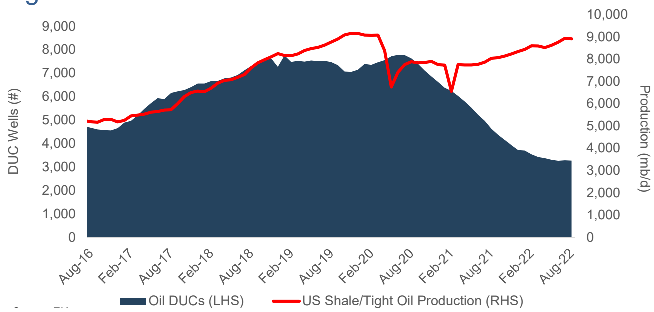
We remind of our previously noted caveat that DUCs do not take into account potential refracs. We still believe a key risk to how much US oil production can grow in 2022 and 2023 is the need to increase rig counts (not have less frac spreads) to replenish the inventory of Drilled UnCompleted wells at higher levels and the challenge for oilfield services to add capacity to increase frac spreads and completions. The biggest problem in the past with the EIA's Drilling Productivity Report [LINK] estimate of Drilled UnCompleted wells was that the data had been constantly revised and sometimes significantly. (i) However, the DUC estimates provide a clear picture of the trend that DUCs haven't really increased since Feb. It's why there is the need for drilling rigs to pick up to replenish the DUC inventory if the US is to have strong oil growth in 2023. (i) It is also important to remember that a portion of the DUCs will never be completed as there are drilled wells that don't look like they can justify the higher cost of completion. (ii) Drilled Uncompleted Wells are down another 10 MoM in September to 4,333 DUCs, which compares to 4,387 DUCs in Feb. (iii) But at 4,333 DUCs, it means that a total 4,541 DUCs were worked down since the Jun/20 peak of 8,874. The largest work downs are coming from the Permian (-709 YoY) and Eagle Ford (-243 YoY). With DUCs being worked down so significantly we will need to see rig counts go up to replenish DUCs in the near future. (iii) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are normally the trends for US oil in total. Below is our table of running DPR estimates of shale/tight oil production and our graph of MoM changes in major shale/tight oil production. Our Supplemental Documents package includes the EIA DPR.

Figure 24: EIA - Estimated Drilled UnCompleted Wells

Drilled UnCompleted	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Sep YoY	Sep YoY %
Anadarko	824	812	799	787	773	758	753	740	724	727	723	716	722	714	-98	-12%
Appalachia	588	557	537	513	565	457	473	471	497	526	524	529	562	552	-5	-4%
Bakken	566	541	516	485	464	436	426	426	429	425	427	426	474	473	-68	-16%
Eagle Ford	869	833	796	760	685	683	653	642	612	598	611	620	593	590	-243	-32%
Haynesville	406	396	392	386	372	369	371	395	419	441	466	483	513	524	128	26%
Niobrara	379	375	372	362	354	343	331	317	320	310	328	345	362	377	2	-4%
Permian	1,994	1,812	1,669	1,537	1,444	1,482	1,380	1,302	1,294	1,244	1,218	1,180	1,117	1,103	-709	-44%
Total	5,626	5,326	5,081	4,830	4,657	4,528	4,387	4,293	4,295	4,271	4,297	4,299	4,343	4,333	-993	-23%

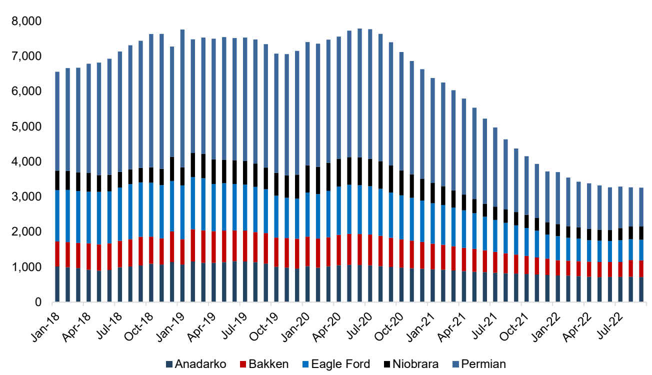
Source: EIA, SAF

Figure 25: Shale Oil Production vs Oil DUC Wells



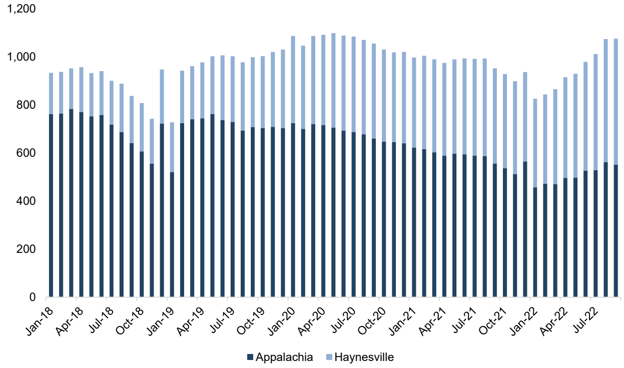
Source: EIA, SAF

Figure 26: EIA – Oil DUCs by Region



Source: EIA, SAF

Figure 27: EIA – Gas DUCs by Region



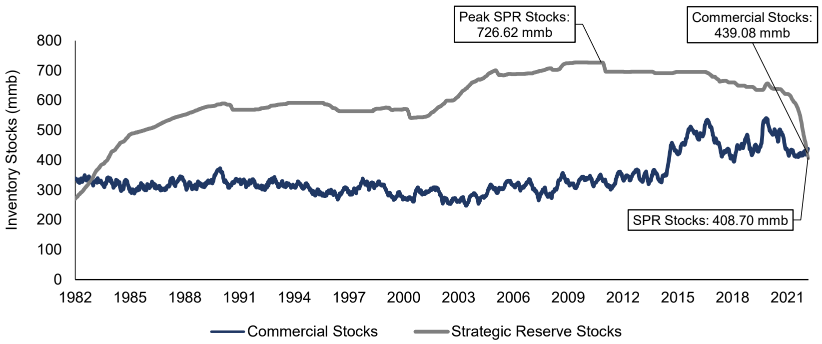
Source: EIA, SAF

Oil – US SPR reserves continue to go lower than commercial crude oil reserves

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 and the deficit continues to widen each week. The EIA's new weekly oil data for Oct 14 has SPR reserves at 405.14 mmb vs commercial crude oil reserves at 437.36 mmb. The below graph highlights the difference between commercial and SPR stockpiles.

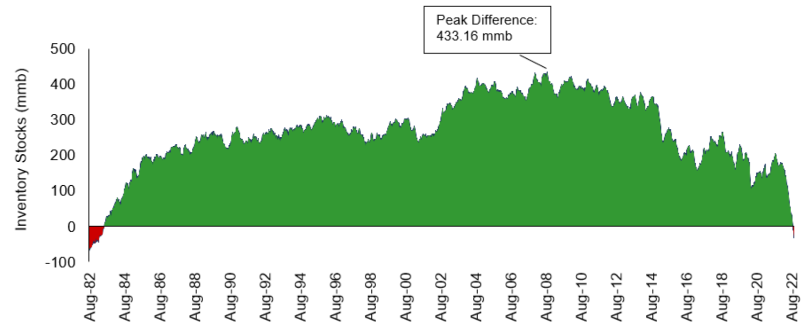
SPR reserves continue to decline

Figure 28: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 29: US Oil Inventories: SPR less Commercial



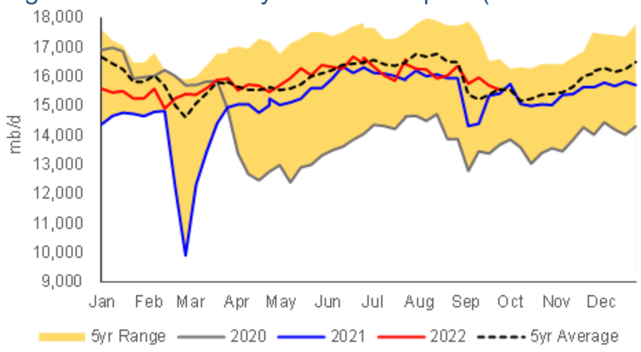
Source: EIA

Oil – Refinery inputs -0.132 mmb/d WoW to 15.550 mmb/d

Refinery inputs down WoW

Sept and Oct are normally seasonal periods that see the trend to lower crude oil inputs to refineries as they do turnarounds to produce more winter blends. There can be up weeks, but the general trend is down as we saw this week. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended Oct 14. The EIA reported crude oil inputs to refineries down -0.132 mmb/d WoW to 15.550 mm/d, which is +0.560 mmb/d YoY from 14.990 mmb/d for the week ended Oct 15, 2021. Note last year's week ended Oct 15, refineries continued to recover from the impacts of Covid, Hurricane Ida, and maintenance season. Total products supplied (i.e., demand) increased WoW, up 1.490 mmb/d to 20.761 mmb/d, and Motor gasoline was up 0.401 mmb/d at 8.678 mmb/d from 8.276 mmb/d last week. The 4-week average for Motor Gasoline was down -0.600 mmb/d YoY to 8.811 mmb/d.

Figure 30: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

Oil – US "net" oil imports down -1.422 mmb/d WoW at 1.770 mmb/d

US "net" oil imports down WoW

US "NET" imports were down -1.422 mmb/d to 1.770 mmb/d for the Oct 14 week. US imports were down -0.155 mmb/d to 5.908 mmb/d. US exports were up 1.266 mmb/d to 4.138 mmb/d. The WoW decrease in US oil imports was driven by the "other" countries with a decrease of 0.095 mmb/d. Some items to note on the by country data. (i) Canada was up this week by 0.072 mmb/d to 3.372 mmb/d. (ii) Saudi Arabia was down -0.140 mmb/d to

0.230 mmb/d this week. (iii) Colombia was down -0.028 at 0.214 mmb/d. (iv) Ecuador was down -0.002 mmb/d at 0.134 mmb/d. (v) Iraq was up 0.021 mmb/d to 0.130 mmb/d. (vi) Mexico was down -0.012 mmb/d to 0.747 mmb/d.

Figure 31: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Aug 12/22	Aug 19/22	Aug 26/22	Sep 2/22	Sep 9/22	Sep 16/22	Sep 23/22	Sep 30/22	Oct 7/22	Oct 14/22	WoW
Canada	3,455	3,834	3,093	3,538	2,937	3,868	3,775	3,298	3,300	3,372	72
Saudi Arabia	244	247	330	423	425	489	422	398	370	230	-140
Venezuela	0	0	0	0	0	0	0	0	0	0	0
Mexico	661	503	440	965	484	855	598	539	759	747	-12
Colombia	214	143	289	261	288	212	72	360	242	214	-28
Iraq	163	225	401	222	343	120	202	275	109	130	21
Ecuador	36	278	231	144	199	319	191	203	136	134	-2
Nigeria	253	72	137	2	232	0	0	0	0	29	29
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	5,026	5,302	4,921	5,555	4,908	5,863	5,260	5,073	4,916	4,856	-60
Others	1,106	869	1,035	1,224	884	1,084	1,189	874	1,147	1,052	-95
Total US	6,132	6,171	5,956	6,779	5,792	6,947	6,449	5,947	6,063	5,908	-155

Source: EIA

Oil – Mexico confirms 2023 hedging program at $68.70 per barrel

Pemex 2023 hedging program

On Tuesday, Bloomberg reported that Mexico confirmed its hedging program for 2023 at $68.70 per barrel. Deputy Finance Minister Gabriel Yorio stated that *"for 2023, there is an oil hedge program that can be used if we observe a fall in oil prices below our budgeted price of $68.70 per barrel"*. Historically, Mexico has used large banks such as Goldman Sachs Group to execute its hedging program. In contrast, Mexico is largely utilizing oil majors to run the program for 2023. The program is the largest sovereign oil hedge in the world, typically costing $1b and serving as insurance for the country whose economy continues to rely on oil income. Our Supplemental Documents package includes the Bloomberg Report.

Oil – Colombia oil production still below pre-Covid, August was 0.749 mmb/d

Colombia August oil & gas production

The concern remains that the recent election of Colombia President Petro means that Colombia oil production isn't likely to grow on a sustained basis. Colombia oil production remains stuck and really hasn't moved in the last two years and is still below pre-Covid levels despite stronger oil prices. Colombia oil production in August was basically flat MoM, only up 874 b/d to 0.749 mmb/d vs 0.748 mmb/d in July. Last Thursday, Colombia Ministry of Mines and Energy released its August oil and gas production data [LINK]. The Columbian Ministry of Mines and Energy reported *"oil production during August of this year was 749,022 average barrels per day (bopd), 0.12% higher than that registered in July 2022 when it was 748,148."* The increase in crude oil production was attributed to the reestablishment of production and entry of new wells mainly in the Rubiales and Indian fields. Note that Colombia wants to attract more capital to its oil sector. Our Jan 23, 2022 Energy Tidbits highlighted that week's Argus report [LINK], that Colombia's Mines and Energy Ministry expects to increase the oil production to 0.800 mmb/d in 2022, which were the same production goals the nation had entering 2021. The ministry hopes that 60 exploration wells will be drilled in 2022, up from the 34 wells drilled from Jan-Nov. A total of 112 upstream contracts will be in the exploration phase with agreed investments close to $4.11bn in 2022. Our Supplemental Documents package includes the Google Translate version of the Colombia release.

Figure 32: Colombia Oil Production

mmb/d	2015	2016	2017	2018	2019	2020	2021	21/20	2022	22/21
Jan	1.036	0.986	0.860	0.860	0.899	0.884	0.745	-15.7%	0.740	-0.7%
Feb	1.030	0.955	0.864	0.823	0.893	0.878	0.746	-15.1%	0.740	-0.8%
Mar	1.023	0.917	0.804	0.856	0.885	0.857	0.745	-13.0%	0.751	0.8%
Apr	1.029	0.915	0.857	0.865	0.891	0.796	0.745	-6.4%	0.751	0.8%
May	1.027	0.904	0.851	0.866	0.895	0.732	0.703	-3.9%	0.746	6.1%
June	1.010	0.888	0.857	0.864	0.892	0.730	0.694	-4.9%	0.752	8.4%
July	0.947	0.843	0.856	0.860	0.869	0.735	0.731	-0.5%	0.748	2.3%
Aug	0.968	0.827	0.858	0.866	0.883	0.742	0.748	0.8%	0.749	0.1%
Sept	1.009	0.859	0.851	0.869	0.879	0.749	0.744	-0.7%		
Oct	1.005	0.846	0.864	0.879	0.883	0.751	0.740	-1.5%		
Nov	0.990	0.855	0.851	0.883	0.880	0.761	0.747	-1.9%		
Dec	0.999	0.837	0.870	0.889	0.882	0.759	0.745	-1.8%		

Source: Bloomberg, Colombia Ministry of Mines and Energy

Oil – Norway September oil production of 1.642 mmb/d, down -7.9% MoM

Norway oil production

The Norwegian Petroleum Directorate released its September production figures [LINK] of 1.642 mmb/d of oil, which is -7.7% YoY and down -7.9% MoM from August of 1.783 mmb/d. September production was down -9.6% (-0.174 mmb/d) from the forecast amount of 1.816 mmb/d. The NPD does not provide any explanations for the MoM changes. The theme for Norway through 2021 was that Norway oil production returned to growth because of the Johan Sverdrup oil field, and tax breaks from the government allowing increased capex in the energy sector. Norway oil production was still expected up modestly in 2022.

Figure 33: Norway September 2022 production

		Oil mill bbl/day	Sum liquid mill bbl/day	Gas MSm³/day	Total MSm³ o.e/day
Production	**September 2022**	**1.642**	**1.836**	**303**	**0.595**
Forecast for	September 2022	1.816	2.049	323.9	0.650
Deviation from forecast		-0.174	-0.213	-21	-0.055
Deviation from forecaset in %		-9.6 %	-10.4 %	-6.5 %	-8.5 %
Production	August 2022	1.783	2.006	345	0.664
Deviation from	August 2022	-0.141	-0.170	-42	-0.069
Deviation in % from	August 2022	-7.9 %	-8.5 %	-12.2 %	-10.4 %
Production	September 2021	1.779	2.036	301.2	0.625
Deviation from	September 2021	-0.137	-0.200	1.8	-0.030
Deviation in % from	September 2021	-7.7 %	-9.8 %	0.6 %	-4.8 %

Source: Norwegian Petroleum Directorate

Oil – Delays in Kashagan getting back to full production

Kashagan oil field delays

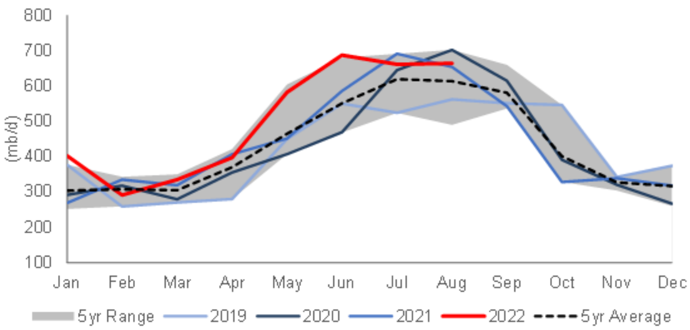
On Tuesday, Bloomberg reported [LINK] that Kashagan oil field repairs could take six weeks with success being uncertain. The restoration of full oil production at the Kashagan field in Kazakhstan is said to take between two and six weeks, a delay from the initial plan to complete repairs by Oct. 20 as the operator continues to work on a solution to a gas leak. The project, which is currently producing about 200,000 b/d, is expected to be able to double output after repairs are finished on a piece of equipment known as a slug catcher. The base case is for full output to resume around Nov. 10, but the works could last into early December. On Tuesday, we tweeted [LINK] *"#Oil supply suprises are almost always hits to Oil supply. @business delay to restoring full production at Kashagan back to ~400,000 b/d* *from current restricted ~200,000 b/d. Target was 10/20, but new base is 11/10, but could take into early Dec. Thx Nariman Gizitdinov. #OOTT".*

Oil – Saudi use of oil for electricity generation now declines ie. more oil for export

Saudi summer oil use for electricity

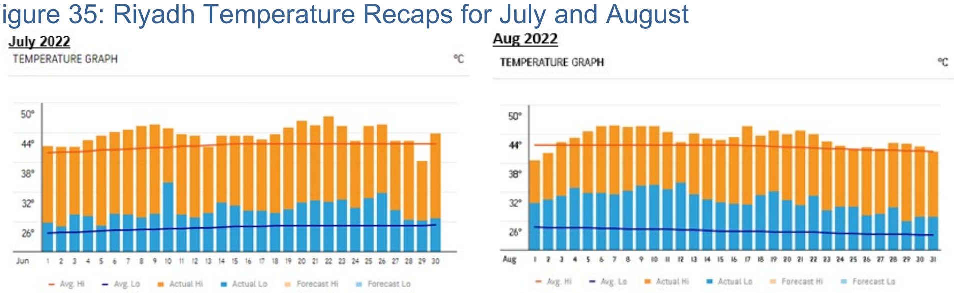
The key theme for the next six months is that Saudi will be able to export more oil as it uses less oil for electricity as the peak hot summer months are over. Oil used for electricity unchanged at 664,000 b/d in Aug, which is normally the last peak summer oil usage month. BUT reminder oil used for electricity normally declines seasonally every month from Sept with a normal peak to trough decline of ~400,000 b/d. If Saudi sees the normal seasonal decline of ~400,000 b/d, it should mean Saudi's oil exports shouldn't decline anywhere near as much as their new lower quotas. Saudi's OPEC quota are being reduced: Aug 11.004 mmb/d. Sept 11.030 mmb/d. Oct 11.004 mmb/d. Nov/Dec 10.478 mmb/d. There is one additional wildcard that isn't in the JODI data but could lead to more Saudi oil for export -the JODI data doesn't include how much fuel oil Saudi imports and we saw reports in Q2 that Saudi was importing some Russian fuel oil via Fujairah terminal. The JODI data for Saudi Arabia oil supply and demand for August was updated on Monday. Saudi used more oil for electricity in August vs July. This is attributed to the warmer temperatures experienced throughout August. August saw varying temperatures that were above average for most of the month. August was 664,000 b/d (vs August 2021 of 654,000 b/d) and July was 661,000 b/d (vs July 2021 of 691,000 b/d). August was above the latest 5 yr average of 613,000 b/d. Below are the AccuWeather Temp maps for Riyadh for July and August. Careful they are different scales but look for oil for electricity to decrease as we move out of peak season.

Figure 34: Saudi Arabia Direct Use of Crude Oil For Electric Generation



Source: JODI

Figure 35: Riyadh Temperature Recaps for July and August



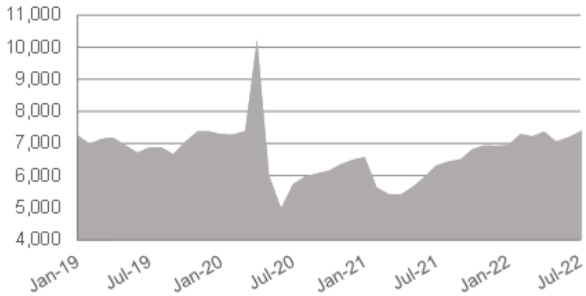
Source: AccuWeather

Oil – Saudi oil exports up 2.9% to 7.601 mmb/d in August

Saudi oil export data for Aug

The other key takeaway from the JODI data is that Saudi oil production was +236,000 b/d MoM and Saudi oil exports basically went up the same at +217,000 b/d MoM. Saudi oil production in Aug was 11.051 mmb/d, a little above quota of 11.004 mmb/d. Saudi oil exports in August were 7.601 mmb/d, up 2.9% and continuing to rebound from the low of 7.050 mmb/d in May.

Figure 36: Saudi Arabia oil exports (mb/d)



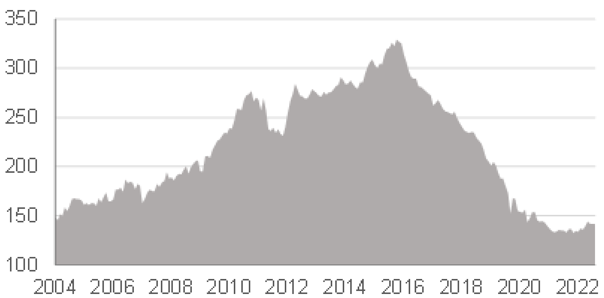
Source: JODI

Oil – Saudi oil inventories basically flat MoM, down 455,000 barrels MoM

Saudi oil inventory data

The JODI data also reported Saudi oil inventory was relatively flat MoM, which ties to the math given the flat oil used for electricity and production/exports both going up by about the same amount. Saudi crude oil inventory at Aug 31 was 141.603 mmb, -455,000 b/d MoM vs 142.058 mmb/d.

Figure 37: Saudi Arabia Crude Oil Inventories (mmb)



Source: JODI

Oil – Biden won't be taking any major actions against Saudi until after midterms

Biden waiting on major Saudi actions

It looks like potential US actions against Saudi Arabia will be a talking point thru the midterm election and Biden will not take any major actions until after congress has returned post the midterm election. Last Sunday night, we tweeted [LINK] "*Positive for #Oil, unless another month of US verbal attacks makes #MBS give in. @JakeSullivan46 says Biden wants to consult with Congress post midterm to work thru options so Saudi will be election talking point. Thx @DanaBashCNN. #OOTT."* After our 7am MT new cut off for last week's memo, US National Security Advisor Jake Sullivan was on CNN. He was asked why is the US not stopping arms sales to Saudi as desired by other Democrats. Sullivan replied '*You're right. The president did say that he is going to reevaluate our relationship with Saudi Arabia, because they did side with Russia, against the interests of the American people. This is a relationship that got built over decades on a bipartisan basis. And so the president isn't going to act precipitously. He's going to act methodically, strategically. And he's going to take his time to consult with members of both parties, and also to have an opportunity for Congress to return, so that he can sit with them in person and work through the options. Those options include*..' CNN interjected "*Is halting arms sales on the table*?" Sullivan replied '*As I was just saying, those options include changes to our approach to security assistance to Saudi Arabia. But I'm not going to get ahead of the president. What I will say is, there's nothing imminently moving now. So there is time for him to have those consultations to make decisions that are in the best interests of the American people. That's what he's going to do."*

Another few weeks makes it even harder to see an easy off ramp US/Saudi
When we hear Sullivan say that Biden is going to wait until he can consult with Congress after the midterms before he decides on what options to take vs Saudi Arabia, we can't help but think another 2 ½ weeks of Biden Administration verbal attacks against Saudi Arabia is only going to make it harder to find an easy off ramp for either side. Our concern is that it is becoming increasingly difficult to see an easy off ramp for either the US or Saudi Arabia that allows both sides to save face. Biden has spoken of trying to find a way out for Putin to end Ukraine and save face and power, but hasn't taken that view for Saudi Arabia. Everyone knows that this stance was part of the Midterms politics, but we have to wonder if Biden thought it would get to this level. Unfortunately, for Biden given his name calling of MBS during his election run, unless Biden assumes there will be an overthrow of MBS, we find it hard to believe MBS will cave in. We find it hard to see an easy off ramp in the run up to the midterms. And we are increasingly of the view that, combined with Biden's previous comments on MBS, it looks like the US/Saudi relationship has changed. If so, it is a positive to oil prices for the 2020s.

No one should be surprised MBS doesn't just give in to Biden
On Oct 11, we tweeted [LINK] "*save yourself time if you are wondering how Saudi will respond to #Biden reevaluating the US/KSA relationship. see 👇#MBS addressed this specific issue "Go for it!". positive for #Oil. OOTT*." Our tweet included a link to The Atlantic's March 3 interview with MBS. Here is what we wrote in our March 6, 2022 Energy Tidbits memo. "*The Atlantic's March 3 report "Absolute Power" [LINK] based on its interviews Saudi crown prince Mohammed bin Salman got some good headlines. MBS says their "aim is to keep it and strengthen it" talking about their long historical relationship with the US. The headlines were on his Biden comments and warning to not interfere in Saudi domestic issues. The Atlantic wrote "We asked whether Biden misunderstands something about him. "Simply, I do not care," he replied. Alienating the Saudi monarchy, he suggested, would harm Biden's position. "It's up to him to think about the interests of America." He gave a shrug. "Go for it." For now, MBS's main request to the outside world, and especially the United States, is the usual request of misbehaving autocrats—namely, to stay out of his internal affairs. "We don't have the right to lecture you in America," he said. "The same goes*

the other way." Saudi affairs are for Saudis. "You don't have the right to interfere in our interior issues." It reminds that no one should expect the Saudi's to bend over in anyway to the US on oil. The problem for Biden and the Democrats is that it's difficult to reverse their view on MBS. We look at it as another of the situations where Biden and the Democrats like to have a villain to make sure they can get people onside their views. But by doing so, it makes it difficult for Biden to back track in a public way. It's like now with the oil companies, they really can't say anything positive about them or ask them to help without looking very weak. They made the oil companies the villains to sell energy transition for so long. How can they go back and say something good. They made MBS out to be a huge villain, Biden's team making it clear that Biden wouldn't meet or talk with MBS, only the King, they pulled out a Patriot missile defense system from Saudi Arabia, and have supposedly not given in to Saudi's request for more Patriot missiles to replace the shot missiles. So no surprise by the MBS comments on US. And unfortunately for the US, it means that Saudi isn't likely to help the US unless it helps them. We will be watching to see if there are reports on restocking Patriot missiles and any potential MBS/Biden meeting."

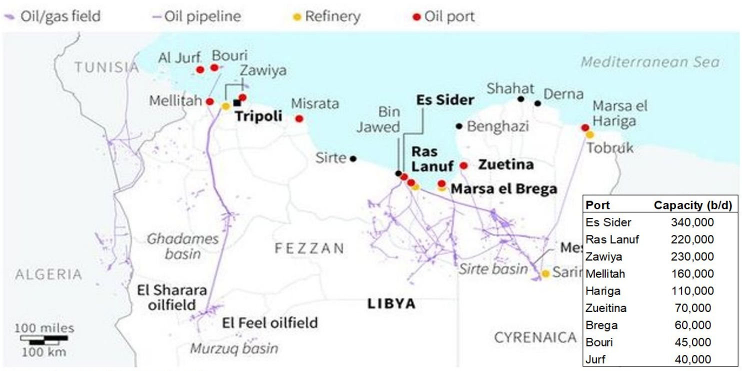
Oil – Libya's Haftar calls for protests across the country

Haftar calls for protests

Last week's (Oct 16, 2022) Energy Tidbits highlighted that there has been relative quiet over the past two weeks in terms of internal conflicts/skirmishes and that has meant Libya oil production has been stable at around 1.2 mmb/d. It looks like this will likely come to a end. As of our 7am MT news cut off, we haven't seen reports of any Libya production interruptions due to skirmishes or domestic unrest. This is somewhat surprising given Haftar's call to arms on Monday because the political solution has failed. We highlighted that it's soon approaching the one year anniversary of the last minute cancellation of the Dec 24, 2021 national elections that was supposed to bring the political solution. And there is still no indication when the cancelled locations will be held. We have to believe that the fact there are no idea when the election will be held is the key issue. On Monday, we tweeted [LINK] "*Haftar fan or not, his call for protests has to bring risk for interruptions to LIbya #Oil production that has been solid for the past couple months. Coming up on anniversary of last moment cancelled 12/24/21 election. #OOTT*." Our tweet forward the Libyya Observer (pro Tripoli and anti Haftar) tweeted [LINK] *"#Libya's renegade general Khalifa Haftar told his supporters in Sabha city that the political solution to the crisis has failed. He called "Libyan people" to stage protests across the country, promising that his so-called army will protect them."*

Figure 38: Libya Ports, Major oilfields and Terminals map

SAF Group Compiled Libya Ports & Terminals Status



Port	Capacity (b/d)
Es Sider	340,000
Ras Lanuf	220,000
Zawiya	230,000
Mellitah	160,000
Hariga	110,000
Zueitina	70,000
Brega	60,000
Bouri	45,000
Jurf	40,000

Source: Bloomberg, HFI Research, SAF

Source: SAF Group

Oil – Think India has been clear, they won't be agreeing to Russia oil price cap

India is a NO to the Russia price cap

We think India's oil minister, Hardeep Singh Puri has been clear that India won't be agreeing to the US/EU oil price cap on Russian oil. It's why, on Monday, we were surprised to see India media (Livemint) report [LINK] "*India may not join US-led push to cap prices of Russia oil. India is averse to joining a US-led global initiative to cap prices of Russian crude oil, two people aware of the matter said, as it gets a steep discount on oil cargoes from Russia.".* Upon seeing the LIvemint report, we tweeted [LINK] "*If anyone thinks India will agree to US/EU price cap on RUS #Oil, see 👇 10/08 thread on @HardeepSPuri clear NO post his @SecGranholm meeting would seem to clearer position vs reports today "India may not join US-led push to cap prices of Russia oil" #OOTT [LINK].*"

India will buy oil from anyone as its priority is energy security & affordability

We say India has been clear they won't be participating in the US/EU oil price cap on Russia oil because of what India oil minister Puri said two weeks ago in a Washington press conference that didn't get covered because it wasn't a joint Granholm/Puri conference. Here is what we wrote in last week's (October 16, 2022) Energy Tidbits memo. "*India will oil from anyone as its priority is energy security & affordability. 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 – Biden warns US will sell "significant" SPR sales if needed

Biden's SPR sales

We were a little surprised the White House posted on Tuesday night the details of what Biden would be announcing at his Wednesday press conference. The only answer we heard was from some conservative friends in the US who speculate Biden's staff wanted to have less people watch him live. For analysts, it was great. On Tuesday night, we tweeted [LINK] "*#Biden action: sell 15 mmb from SPR. "intends" to repurchase for SPR when oil at/below $67-72/b to encourage drilling to increase production. and a message to #OPEC, says he is "prepared to authorize significant additional sales in coming months if conditions require". #OOTT."* The selling another 15 mmb was expected and is the last barrels of his original 180 mmb sale program. Biden also wanted to do more to talk down the market warning he will sell more SPR. The White House wrote "*The President is prepared to authorize significant additional sales in coming months if conditions require. DOE will be prepared to act quickly to inject additional supply into the market if needed, and the Administration will not hesitate to use this tool, or the others at its disposal, to shore up the global supply of energy, support domestic inventory levels, and bring prices down for Americans."* There didn't seem to be many who believed his repurchase program would incentivize any US producers to drill more. The White House wrote "*Second, the President is announcing that the Administration intends to repurchase crude oil for the SPR when prices are at or below about $67-$72 per barrel, adding to global demand when prices are around that range. As part of its commitment to ensure replenishment of the SPR, the DOE is finalizing a rule that will allow it to enter fixed price contracts through a competitive bid process for product delivered at a future date. This repurchase approach will protect taxpayers and help create certainty around future demand for crude oil. That will encourage firms to invest in production right now, helping to improve U.S. energy security and bring down energy prices that have been driven up by Putin's war in Ukraine."* Our Supplemental Documents package includes the White House release. [LINK]

Biden to continue responsible us of that "national asset" referring to SPR

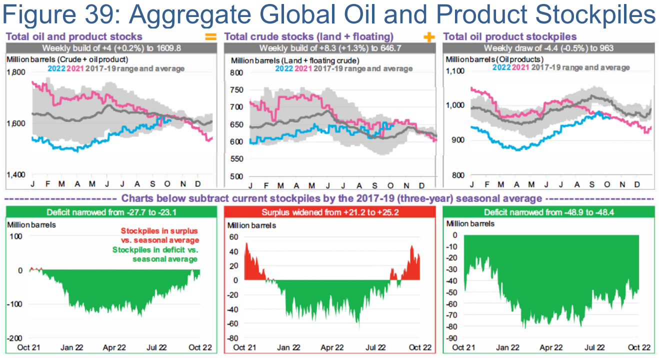
We recognize that it's the obvious and what is happening, but it is surprising to hear Biden say at his Wed press conference talk about the SPR, not as reserve but as an asset like a bank account to draw upon when money is needed or, in the SPR case, when they need to get lower gasoline prices. On Wednesday, we tweeted [LINK] "*#SPR. Biden "gonna continue the responsible use that national asset". Honest admission. even if not why EPCA created SPR "storage of up to 1 billion barrels of* *petroleum products to reduce the impact of disruptions in supplies of petroleum products" #OOTT."*

Oil – BNEF: global oil and product stocks deficit narrowed

BNEF's global oil inventories

For those with a Bloomberg terminal we recommend flipping thru BloombergNEF's "Oil Price Indicators" weekly that came out on Wednesday as it provides good charts depicting near-term global oil demand and supply indicators. The global oil and products stockpile deficit narrowed for crude and products from 27.7 mmb to 23.1 mmb. The stockpile deficit against the five-year average (2015-19) narrowed from 30.2 mmb to 23.9 mmb. Total crude inventories increased by 1.3% to 646.7 mmb, including global floating inventories. Product stocks were down 0.5% WoW with the stockpile deficit against the 3-year average widening from 48.9 to 48.4 mmb. Gas oil and middle distillate stocks have widened against their three-year average deficit (2017-2019) from 30.4 mmb to 35.7 mmb. Jet fuel consumption by international departures increased by 9,200 b/d WoW while consumption by domestic passenger departures decreased by 83,500 b/d. The global mobility index increased over the past week, up 1.5% in the week to Oct 14. Below is a snapshot of aggregate global stockpiles. Our Supplemental Documents package includes excerpts from the BloombergNEF report.

Figure 39: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF

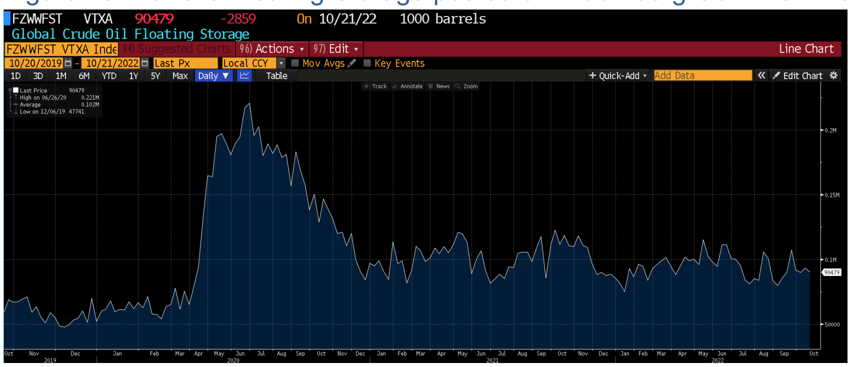
Oil – Vortexa crude oil floating storage 90.48 mmb as of Oct 21, -2.86 mmb WoW

Vortexa crude oil floating storage

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 Oct 15 at 9am MT. (i) As of 11am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Oct 21 at 90.48 mmb, which is -2.86 mmb WoW vs upwardly revised Oct 14 of 93.34 mmb, which is -2.86 mmb WoW vs upwardly revised Oct 14 of 93.34 mmb. Note Oct 14 of 93.34as revised +4.44 mmb vs 88.90 mmb posted on Bloomberg at 9am MT on Oct 15. (ii) Note the revisions for the last several weeks were all upward revisions. The revisions posted yesterday vs the estimates posted on Bloomberg at 9am MT on Oct 15 were: Oct 14 revised +4.44 mmb. Oct 7 revised +3.39 mmb. Sept 30 revised +3.77 mmb. Sept 23 revised +2.14 mmb. Sept 16 revised +2.67 mmb. Sept 9 revised +0.71 mmb. (iii) With the revisions, other than the Sept 23 week, the last several weeks are generally +/- 90 mmb, which is slightly more than last week's +/- 85 mmb.

(iv) Also remember Vortexa revises these weekly storage estimates on a regular basis and we do not track the revisions through the week. (v) Oct 21 estimate of 90.48 mmb is -130.26 mmb vs the post-Covid peak on June 26, 2020 of 220.74 mmb. (vi) 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. Oct 21 estimate of 90.48 mmb -28.06 mmb is +31.34 mmb vs pre-Covid Oct 21, 2019 of 59.14 mmb Oct 21 estimate of 90.48 mmb is -20/-05 mmb YoY vs Oct 22,, 2021 of $110.53 mmb. (vii) Below are the last several weeks of estimates made as of 11am MT yesterday, 9am MT on Oct 15, and noon MT on Oct 8.

Figure 40: Vortexa Floating Storage posted on Bloomberg Oct 22 at 11am MT



Source: Bloomberg, Vortexa

Figure 41: Vortexa Estimates Posted Oct 22 11am MT, Oct 15 9am MT, Oct 8 noon MT

Posted Oct 22 11am MT Date	Last Px	Oct 15 9am MT Date	Last Px	Oct 8, noon MT Date	Last Px
Fr 10/21/2022	90479	Fr 10/14/2022	88903	Fr 10/07/2022	80058
Fr 10/14/2022	93338	Fr 10/07/2022	86499	Fr 09/30/2022	91626
Fr 10/07/2022	89887	Fr 09/30/2022	88038	Fr 09/23/2022	108.283k
Fr 09/30/2022	91806	Fr 09/23/2022	105.145k	Fr 09/16/2022	88888
Fr 09/23/2022	107.292k	Fr 09/16/2022	87340	Fr 09/09/2022	86788
Fr 09/16/2022	90014	Fr 09/09/2022	84573	Fr 09/02/2022	81871
Fr 09/09/2022	85280	Fr 09/02/2022	78835	Fr 08/26/2022	84858
Fr 09/02/2022	79985	Fr 08/26/2022	82138	Fr 08/19/2022	101.811k
Fr 08/26/2022	83916	Fr 08/19/2022	99524	Fr 08/12/2022	106.383k
Fr 08/19/2022	100.486k	Fr 08/12/2022	105.208k	Fr 08/05/2022	85899
Fr 08/12/2022	105.794k	Fr 08/05/2022	84107	Fr 07/29/2022	87983

Source: Bloomberg, Vortexa

Oil – Bloomberg Oil Demand Monitor: India leads gasoline gain, U.S. lags

Bloomberg Oil Demand Monitor

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 U.S. gasoline usage (per EIA gasoline supplied data) is back within the five-year average after a drop last week and gasoline demand in European and North American markets has struggled to return to pre-pandemic levels, leaving emerging markets like India with the biggest consumption gains. An average of Monday morning congestion levels across five major European cities showed levels near the highest so far this year. The same is true of major cities in the Americas and Asia. Traffic in urban areas is typically lower during the summer vacations or around public holidays. Separate data for China also shows a recent gain, following the end of a weeklong holiday. A reminder that busy cities don't always mean higher national road fuel sales, as drivers scale back on longer trips or switch to electric vehicles. India is showing significant momentum in road fuel consumption with gasoline up 23% from 2019 levels and diesel 15% higher. The latest estimate of U.S. gasoline product supplied, a proxy for demand, shows the week ended Oct. 14, edged higher again after a volatile few weeks where it both jumped above and dipped below the five-year seasonal range. Compared to the same week of 2019, demand is down about 7%. The four-week average also shows U.S. gasoline demand just above the bottom of the seasonal range, at about 8.80 mmb/d, and still below the five-year seasonal average. U.S. demand for distillate fuel was also below average for most of the second and third quarter but recently surged higher during September and early October due to demand for U.S. exports as European buyers seek alternatives to Russian diesel. In the UK, gasoline and diesel sales were down 4.8% and 12%, respectively, from 2019 levels in the week ended Oct. 2. Asia will account for 96% of next year's expected 1.7 million barrels a day growth in global oil demand. In China, an aggregate measure of congestion across 15 cities with the most cars fell to 98 on Oct. 5, dropping below the baseline level of 100 for the first time since May 10. It remained low that week, during national holidays, then bounced back to 109 by Oct. 12. Global airline activity continues to hover roughly midway between the late-pandemic year of 2021 and pre-pandemic 2019. The latest data shows the global number currently trailing 2019 by 10%, compared to -14% in early September. Air travel across the whole of Europe is 12% below the same week in 2019, though this figure varies by country, with Spain reduced by only 3.1% and Germany down 21%. In the U.S., the number of passengers at the airport this week was about 7% less than the equivalent figure for 2019. An annual survey by Deloitte shows that fewer Americans are planning vacations over the winter holidays as stubborn inflation keeps travelers close to home. About 31% plan to travel between Thanksgiving and mid-January, down from 42% in 2021. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

Figure 42: U.S. Gasoline Demand Weekly Data

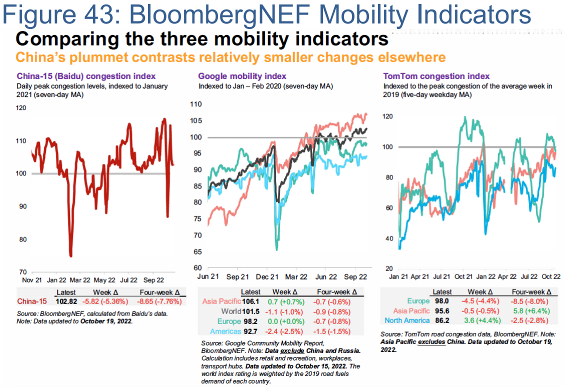
Source: BNEF, EIA

Oil – BNEF, Mobility down WoW, while North America ticks up

Mobility down globally, North America jumps

We are big fans of the BloombergNEF weekly indicators reports as they provide updates on WoW changes, but also provide some good graphs that show trends. Inflation and cost of living challenges are the big news story everywhere in the world and people having less cash in their pockets has to impact spending, including on driving. On Thursday, BloomergNEF posted its Global Road Traffic Indicators which highlighted that China's mobility fell, North America's jumped, and other relatively smaller changes across the globe WoW. The softness in the TomTom indicators we highlighted in last weeks memo continued this week. Over the last couple weeks TomTom trends are moving lower relative to 2019 as two of the three regions dropped 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 down 4.4%, Asia Pacific down 0.5%, China down 5.4%, and North America up 4.4% from last week. Europe and North America are bearish and subject to drivers responding to rising cost, including high gasoline prices. China's mobility data highlights the pullback from the increase in congestion seen during the period after the National Day ended on October 7.

Figure 43: BloombergNEF Mobility Indicators



Source: BloombergNEF

Oil – US airlines Q3 results common theme – demand is strong, business is great

US airlines are doing great

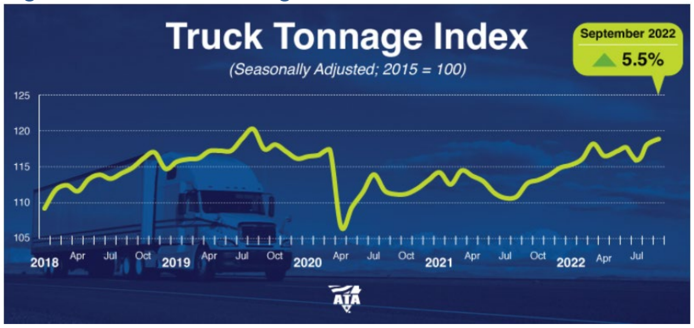
We have now seen four of the US airlines report in the last 10 days and the common theme is that demand is strong and the results are excellent. (a) Alaskan Airlines CEO Ben Manicucci opened his remarks on the Q3 call "*Today, we released our third-quarter results, closing out the busiest travel period since the pandemic began. Demand was resilient, planes were full, our people were busy and our results were strong".* (b) American Airlines. On Thursday morning, we were watching CNBC and tweeted [LINK] "D*emand is strong" first words out of American Airlines CEO Isom's mouth to @Lebeaucarnews on @SquawkCNBC right now. #OOTT."* (c) Delta Airlines CFO Daniel Janki opened the call saying "*The demand for air travel remains very strong and that is reflected in today's results and outlook. We generated earnings of $1.51 per share in the September quarter, our results mark clear financial progress as we report the highest quarterly revenue in Delta's history percent above the thrd quarter of 2019 and $1.5 billion of operating income-generating a 12% margin."* (d) United Airlines CEO Scott Kirby's opening remarks said "*Our operations is firing on all cylinders, in fact, based on most metrics, it's running better than ever." "We recognize that* *the near-term geopolitical and macroeconomic risks and overall pessimism facing the global economy including Airlines are unusually high right now. However, there are three industry tailwinds prevailing the COVID recovery for aviation and United that are currently overcoming those macro headwinds, and we believe we'll continue to do so in 2023 in increasing order of importance."*

Oil – September truck tonnage up 0.5% MoM, up 5.6% YoY

Truck tonnage index +0.5% YoY in September

Demand for truck haulage continued to build on the strong August numbers, but supply shortages are still an obstacle for the industry. Truck tonnage was up 0.5%, but it is worth noting that the index fell by 4.6% from April to July so still not quite back to the levels observed in 2020. The American Trucking Association released its seasonally adjusted Truck Tonnage Index for September on Tuesday [LINK]. September observed a 0.5% increase MoM from August, after increasing 2.8% last month. Chief Economist Bob Costello noted, *"This is another example of how the contract freight market remains strong despite weakness in the spot market this year. During the third quarter, tonnage increased 0.5% over the second quarter while increasing 5.6% over the same period in 2021. That was the largest quarterly year-over-year increase since the second quarter of 2018"*. The index is up 5.6% YoY from September 2021, with a thirteenth consecutive YoY gain. Trucking serves as a barometer of the U.S. economy, representing 72.2% of tonnage carried by all modes of domestic freight transportation, including manufactured and retail goods. Trucks hauled 10.93 billion tons of freight in 2021. Motor carriers collected $875.5 billion, or 80.8% of total revenue earned by all transport modes. Our Supplemental Documents package includes the ATA release.

Figure 44: Truck Tonnage Index



Source: ATA

Oil & Natural Gas – Baker Hughes/Schlumberger CEOs a little less bullish on oil/gas?

Baker Hughes & Schlumberger CEO messages

Q3 reporting season started this week and, as usual, the big oilfield service companies are the first to report. When possible, we like to do a FED type statement check to see what is different from one quarter to the next. One takeaway from the Baker Hughes and Schlumberger CEO messages is that both were positive on the long term oil and gas outlook but both also seems a little less bullish. Our Supplemental Documents package includes excerpts of the Baker Hughes and Schlumberger's Q2 and Q3 CEO messages.

Baker Hughes – monitoring their 2030 LNG demand target
Baker Hughes reported Wednesday morning. When compared the Q3 CEO message to his Q2 message, we tweeted [LINK] *"Like checking CEO messaging QoQ. $BKR Q3 simonelli_l still positive for #Oil #NatGas #LNG outlook ie. supportive a multi-year upturn in global upstream spending, but just not as bullish vs Q2 oil still supportive of strong activity, benefit from a strong LNG cycle. #OOTT".* Earlier in the memo, we noted how we thought Baker Hughes CEO comment was pointing to lowering their 2030 target for LNG demand.

Schlumberger sees "constructive" energy fundamentals
We had a similar tweet on Friday morning after comparing the Schlumberger CEO message in the Q3 vs his message in the Q2. On Friday, we tweeted [LINK] *"Like checking CEO messaging QoQ. See ⤵Looks like $SLB CEO Q3 vs Q2 messaging is similar as $BKR CEO. Still strong but using "constructive" in Q3 normally infers little less bullish long term #Oil #NatGas outlook vs Q2 message. #OOTT."* A good example is the CEO now talking about "*constructive energy fundamentals*". And in the Q2, he used the word resilient to describe oil and gas. In the Q2, the CEO wrote "*Consequently, we are witnessing a decoupling of upstream spending from near-term demand volatility, resulting in resilient global oil and gas activity growth in 2022 and beyond*." But in the Q3, the CEO doesn't use resilient about oil and gas but about a balanced energy system. In the Q3, the CEO says "*I am truly excited about our future as we continue to drive innovation for a resilient and balanced energy system. I look forward to sharing at our upcoming Investor Conference, our views of the industry, revenue growth ambitions, earnings, and returns potential*."

Oil & Natural Gas – TIPRO Texas oil natural and gas jobs up small MoM in Sept
Employment continues to increase in the Texas oil and gas sector. But based on the comments in the TIPRO release, we suspect that the increases in hiring have been held back by the labor shortage. The Texas Independent Producers and Royalty Owners Association (TIPRO) updated their employment figures for the Texas upstream sector for September [LINK]. The release noted that employment for September totalled 202,900 marking an increase of 900 jobs from the August numbers. The release stated, *"Texas upstream employment in September 2022 represented the addition of 34,900 positions compared to September 2021, including an increase of 8,800 in oil and natural gas extraction and 26,100 jobs in the services sector."* There has been strong job posting data for September in upstream, midstream, and downstream sectors, showing a continued demand for talent in the Texas oil and natural gas industry. From the release *"TIPRO once again noted strong job posting data for upstream, midstream and downstream sectors for the month of September. According to the association, there were 11,382 active unique jobs postings for the Texas oil and natural gas industry in September, including 3,600 new job postings added in the month."* Our Supplemental Documents package includes the TIPRO release.

TIPRO September jobs update

Oil & Natural Gas – Trudeau, democracies rely on cheap energy & raw materials
It was interesting to watch the Trudeau interview on Wed on what he probably thought would be a bunch of layup questions in front of a friendly climate audience. He looked surprised by the questions and said so in a joking manner in the interview. But, he also has a good reality check comment on how the west has built it economies relying on cheap energy, in this case

TIPRO August jobs update

relying on cheap Russian natural gas.. It reminded us of some of the warnings from the recent Deutsche Bank CEO speech. On Friday, we tweeted [LINK] "*High #NatGas #Oil prices is THE 2020s issue for the west. @JustinTrudeau ".. EXCEPT we're sort of avoiding the fact that underpinning those democracies is a reliance on cheap energy and cheap raw material inputs from countries that do not share our values or our approach". #OOTT.*" We created a transcript of his comments and he said "*Yes, you should all become democracies, except we're sort of avoiding the fact that underpinning those democracies is a reliance on cheap energy and cheap raw material inputs from countries that do not share our values or our approach.*"

Trudeau warning reminds of the recent Deutsche Bank CEO keynote speech

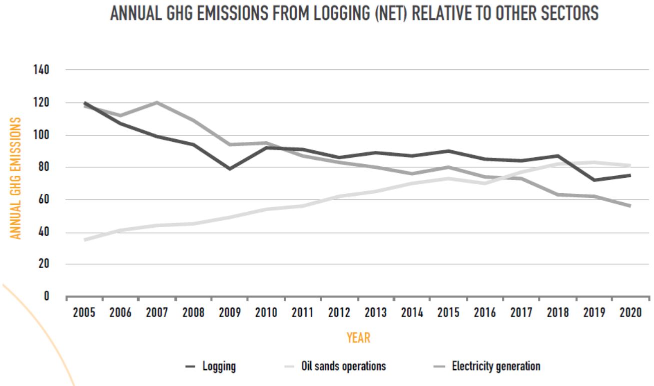
We believe an overlooked critical theme for the 2020s is how the world has moved from decades of relative calmness for global economies to a world of massive uncertainty, risk and conflict. Trudeau's warning about cheap energy reminded of the recent Deutsche Bank CEO similar concerns. Here is what we wrote in our Sept 11, 2022 Energy Tidbits "*We weren't certain where to put this item, but we believe the Deutsche Bank CEO Christian Sewing views of the world, if correct, will be positive for oil and natural gas thru the 2020s. The headlines on his Wednesday comments were all about his warning a recession is coming for Germany. (i) We tweeted [LINK] "1/2. Must Read @DeutscheBank CEO. RUS/UKR "destroyed a number of certainties on which we build our economic system over the past decades". NEXT UP, "awkward question on how to deal with China" in light of increasing CN/US isolation/tension, reducing China dependency will .. #OOTT", and [LINK] "2/2.."require a change no less fundamental than decoupling from RUS energy". Globalization gone, labor a global bottleneck. Extremely expensive #Electricity #NatGas s a threat to economy. the longer inflation remains high the higher the potential for social unrest, etc. #OOTT.". (ii) As you can see from our tweets, there are many thoughts. We tend to agree with a lot of what he is saying unless there is a social revolt to say enough is enough. (iii) The real theme of his theme of his speech is excellent – the world has changed for the foreseeable future. The norms of the past decades are gone. Globalization gone. China dependency must be reduced. Global value and supply chains disrupted. Workforce a worldwide bottleneck. Electricity/natural gas will be expensive in EU for a long time.. The truth is that 30 years of presumed calm will now be followed by a period of heightened volatility with economic uncertainty, regular crises and geopolitical conflicts that are also likely to drag on for decades. Trouble spots are not cut off from the rest of the world; they impact other regions in a number of ways. (iv) And he doesn't say much about it, but says "But the longer inflation remains high, the greater the strain and the higher the potential for social conflict." We still wonder about social conflict and if there will be Arab Spring type revolt within Germany and other European countries to how people feel they are getting hit by the Russian sanctions. (v) His views are relevant to longer term capital allocation. It's not just Germany has a terrible economic outlook. He raises issues like we have noted about China is the next Russia type target even if they don't invade Taiwan. Germany affects more than itself. And think about it, if Germany can hold the line on Russian sanctions on energy, then it probably says most of Europe can hold the line other than a handful like Hungary, etc. (vi) There is* *much more in this short viewpoint. Our Supplemental Documents package includes the CEO viewpoint."*

Energy Transition – NRDC: Trudeau effectively exempts logging industry from climate

Cdn logging industry emissions are high

It will be interesting to see what, if anything, Trudeau does vs the logging industry on emissions. When was the last time you heard Trudeau or his cabinet get on the Canadian logging industry to reduce emissions? If you are like us, it's never! It feels like it's the relative no one wants to talk about in hopes that no one knows you are related. On Friday, we tweeted [LINK] "*WOW! @NRDC @NatureCanada "Canadian Logging Industry Carbon Emissions On Par With Tar Sands Operations" [LINK]. At 35:30 min [LINK], @JustinTrudeau asked on it, didn't address it, just gave general response on tree planting, etc. #OOTT."* We were surprised at the lack of media coverage of the NRDC/Nature Canada Oct 18 report "*Lost in the Woods: Canada's Hidden Logging Emissions Are Equivalent to Those from Oil Sands Operations."* [LINK]. The report is an interesting read and its title is clear. The NRDC writes "*A new analysis of government data conducted by Nature Canada and the Natural Resources Defense Council (NDRC)1 shows that the logging industry is one of Canada's major GHG emitters, with a footprint that's equal to more than 10 percent of Canada's overall emissions. This figure, which is a conservative estimate, places the logging sector's GHG emissions on par with oil sands production2 and higher than emissions from electricity generation.3 However, Canada does not clearly report the logging sector's emisions. Instead, logging emissions can only be calculated through a complex process of piecing together official data dispersed across various government sources (some of which are available only upon request). In addition, unlike its approach to all other high-emitting sectors, the Government of Canada has not articulated a clear strategy to reduce this sector's emissions, effectively exempting the logging industry from its keystone climate policies."* And we weren't aware of it until we saw Trudeau being asked specifically about the NRDC report. No surprise, he didn't address it given the NRDC highlighting his government has "effectively" exempted the logging industry from his climate policies. We tweeted [LINK] "Ouch" and included most of the NRDC quote "*In addition, unlike its approach to all other high-emitting sectors, the Government of Canada has not articulated a clear strategy to reduce this sector's emissions, effectively exempting the logging industry from its keystone climate policies."* Our Supplemental Documents package includes excerpts from the NRDC report.

Figure 45: Annual GHG Emissions from Logging (Net) Relative to Other Sectors



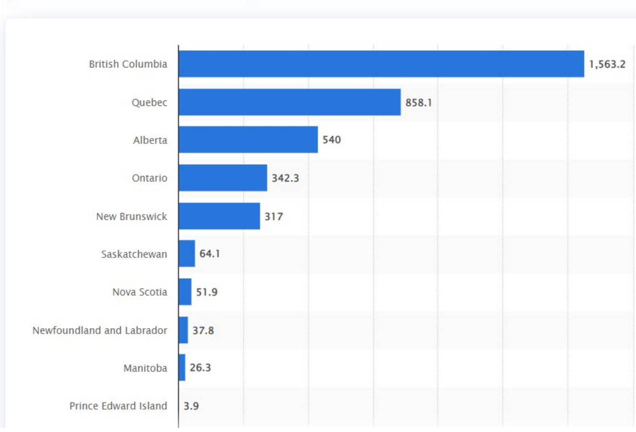
Source: NRDC, Nature Canada

Cdn logging/forest industry biggest in BC and Quebec

Everyone will know that BC dominates the other provinces in the logging and forestry industry, which is why we are a little surprised that there hasn't been any focus on this issue by the Liberals. Probably the two most pro-climate provinces, BC and Quebec, dominate Canada's logging and forestry industry with approx. 2/3 of Canada's logging/forestry industry. At his interview this week, Trudeau opens up with "*the environment is federal responsibility, particularly these days in Canada*" and they have been the driver to focus on the oil sands for emissions. But for obvious reasons, has swept this under the rug.

Figure 46: GDP for the forestry and logging industry in Canada in 2021 by province

(in million Canadian dollars)



Source: Statista

Cdn forest cutting got negative press by BBC two weeks ago

We are still surprised that the recent BBC expose on cutting Canadian primary foress to make wood pellets for UK power hasn't received very much, if any, climate outrage. Here is what we wrote in our Oct 9, 2022 Energy Tidbits.

"On Monday, we tweeted [LINK] "*Inconvenient Truth! Burning wood pellets fits into a clean energy plan, gets UK green subsidies to add higher emissions power. No wonder companies don't want to talk about it, especially if wood pellets come from clearing Cdn forest. Thx @joe_crowley @TimRobinsonTV #OOTT,"* We are surprised that the BBC's Oct 3 report didn't raise outrage from the Liberals in Canada. We didn't see any coverage of the Liberals saying they would get to the bottom of this BBC expose. BBC Panorama posted a video report [LINK] "*Drax is chopping down trees and taking logs from some of the world's most precious forests to burn at its Yorkshire power station, which provides 12% of the UK's renewable energy The Green Energy Scandal Exposed is on @BBCOne at 8pm and on @BBCiPlayer [LINK]"* Perhaps the tweet headline didn't say Canada, but the BBC's posted report [LNK] "*Drax: UK power station owner cuts down primary forests in Canada. Drax, Britain's biggest power station, generates electricity by burning millions of tonnes of imported wood pellets. A company that has received billions of pounds in green energy subsidies from UK taxpayers is cutting down environmentally-important forests, a BBC Panorama investigation has found. Drax runs Britain's biggest power station, which burns millions of tonnes of imported wood pellets - which is classed as renewable energy. The BBC has discovered some of the wood comes from primary forests in Canada. The company says it only uses sawdust and waste wood."* Our Supplemental Documents includes the BBC report.

Figure 47: BBC The Green Energy Scandal Exposed

Source: BBC

BBC reminds cutting primary forests is not good

Here is another excerpt from the Oct 9, 2022 Energy Tidbits. "*The BBC investigation said this was a primary forest. The BBC report also noted why primary forests shouldn't be cut. The BBC wrote "How green is burning wood? Burning wood produces more greenhouse gases than burning coal. The electricity is classed as renewable because new trees are planted to replace the old ones and these new trees should recapture the carbon emitted by burning wood pellets. But recapturing the carbon takes decades and the off-setting can only work if the pellets are made with wood from sustainable sources. Primary forests, which have never been logged* *before and store vast quantities of carbon, are not considered a sustainable source. It is highly unlikely that replanted trees will ever hold as much carbon as the old forest."*

Energy Transition – Germany moves to tie up 5-yr supply of critical metals

Germany Trafigura deal

This is not a Russia risk, but it looks like Germany is going to do what it can so it doesn't get caught in another squeezed on other commodities, in this case non-ferrous metals like copper, nickel, zinc. Or what are now called critical metals for industry. On Friday, we tweeted [LINK] "*Germany $0.8b loan guarantee to @Trafigura to long-term 5-yr supply commitment of strategic commodities (#Copper, #Nickel, #Zinc, etc). Looks like an overall supply risk worry and NOT a Russia supply risk. Bet Germany would do this for #LNG if only had to do 5-yr deals. #OOTT."* Trafigura announced that Germany provided a $0.8b loan guarantee "*support the commitment by Trafigura to deliver, under a five-year supply agreement, up to 500,000 tonnes of non-ferrous metals into Germany*" [LINK]. We said this is not Russia risk. Our tweet included World Bank data for Germany imports by country for copper, nickel and zinc, and Russia is not a major supplier. Lastly, we said Germany would love to do this for LNG. We have been reporting that the big holdup for Germany doing LNG deals with Qatar is that Germany hasn't yet been prepared to do 15 year LNG deals. Our Supplemental Documents package includes the Trafigura release and the World Bank data of Germany imports of copper, nickel, zinc by country.

EU just can't say need affordable, available energy & raw materials

The Germany deal looks to be an admission that they can't afford to be short critical metals like copper, nickel and zinc. And most of all, Germany is taking action. Last week's (Oct 16, 2022) Energy Tidbits highlighted a must read EU high representative Josep Borrell speech. Last week, we wrote "*It is a stark warning to Europe and a must read. But, in his speech, is also something that annoys us – western leaders just can't come out and say they need fossil fuels to provide affordable, available, reliable energy to power their worlds. Rather, Borrell says "We have to be a little bit out of the crisis mode. This will require thinking more about how technology is reshaping the world and the nexus between energy, climate and raw materials." We think this is western leader code for they have to realize that they need some sort of available, affordable energy and raw materials."*

Energy Transition – bp's $4.1b deal, renewable natural gas gets $33 premium to HH

Renewable natural gas gets $33 premium to HH

There were some good renewable natural gas tidbits coming out of bp's $4.1 billion acquisition of Archaea, a major renewable natural gas player. Note, Archaea produces RNG from waste and not cows. The big one is that RNG works economically because, as reported by Platts, it currently receives a price that is ~$33/mmbtu higher than Henry Hub. That is a WOW!. On Wednesday, we tweeted [LINK] "*How math works for @bp_plc $4.1b Renewable #NatGas Archaea. @RobPana @DylanChase_ report bp expects RNG prices close to Henry Hub PLUS the value of federal renewable fuel blending credits that have recently averaged ~$33/MMBtu for RNG delivered to transportation markets. #OOTT."* Then on Thursday morning, we tweeted [LINK] "*Also why energy will cost more $$$ under energy transition. #RenewableNaturalGas is interchangeable with #NatGas produced from natural gas wells, but @bp_plc indicating will cost about 6x current HH price. #OOTT."* One of the advantages of RNG is that it interchangeable with natural gas. But that also means it's a direct comparable for cost vs usage. And RNG at a $33 premium is much more expensive than most realize. Someone has to be paying for that $33 premium is its economic for bp to pay $4.1b for a RNG player that is currently producing about 6,000 boe/d. Our Supplemental Documents package includes the Platts report and excerpts from the bp Archaea release and excerpts from its slide deck.

bp's trading optimisation gets RNG to its base returns, just like for wind power
It is important to remember that bp assumes a trading value uplift in how it gets to its base case for returns from the Archaea renewable natural gas acquisition. This trading uplift is exactly what they assume in how they get offshore wind power returns to reach their targeted returns. bp CEO Looney first outlined this trading uplift in Sept 2020. At that time we tweeted [LINK] "*Many good #Oil #NatGas #EnergyTransition insights $BP Day 1 ie. can get 8-10% #Renewable returns by adding value thru applying our processes, integrate with rest of BP like trading. 8-10% is good, but thought these would be upside items and not part of how to get to base return*". Looney step thru how they start with a 5-6% return and add value with their project management, trading value, and using leverage to get to the 8-10% return. On the Archaea deal, Looney said the base case "*assumes the benefit of trading optimisation, something we are already doing through our Mavrix joint venture with Archaea and we intend to scale up. For example, we expect to be able to direct more of the RNG into road transportation use, optimising value from the higher RIN credits, while using the scope and scale of our trading and supply portfolio to satisfy the fixed price contracts – value creation through integration*". Our comment is the same we said in Sept 2020, the value uplift makes sense, but we would have thought they would save that for upside and not to get to their base returns. Note this trading uplift concept is used by the other big players like TotalEnergies to get to their targeted returns. Looney was the first we saw to step thru this concept in Sept 2020. Our Supplemental Documents package includes Looney's Sept 2020 comments.

Energy Transition – COP27 President "transition will take longer than anticipated"
No surprise, the lack of western leader's statements/pronouncements on the upcoming COP27 in Cairo is an indicator that the expectations are extremely low and the unsaid objective will be to try to not backtrack on climate commitments. Last year, we were inundated with pronouncements for the months leading up to COP26. But this year, the silence is deafening. Earlier this morning, we tweeted [LINK] "*1/2. #NatGas #LNG #Oil #Coal will be needed for longer. #COP27 President Egypt Foreign Affairs Minister Sameh Shoukry "COP27 is to be convened while the international community is facing a financial and debt crisis, an energy-prices crisis, a food crisis, and ..." #OOTT*" and [LINK] "2/2. ".. *on top of them the climate crisis .... "In light of the current geopolitical situation, it seems that transition will take longer than anticipated." #EnergyTransition will take longer, be bumpy road & cost more $$$. Thx @MarcChampion1 @business Salma El Wardany. #OOTT".* It sounds like Shoukry is well aware that it will be a tough conference for him to hold the line and not backtrack.

COP27 President

Reminder, Kerry said 50% of emissions cuts to come from future technology
No question Europe's move to rid itself of Russian oil, petroleum products and natural gas is a big hit to energy transition aspirations and timetable. However, we

remind that they energy transition was already behind in 2021, long before Russia invaded Ukraine. Plus the other reason why the energy transition stood to take longer is that forecasts were optimistic and included plugs to make the math work. We highlighted this 17 months ago in our May 16, 2021 Energy Tidbits, when we wrote "*We recognize that the Energy Transition is going to happen, but we just wish that the politicians would at least warn people that its going to take longer, be bumpy and be more expensive for energy. People have to understand the Energy Transition is not a plan, its an aspiration and governments do not know how it will be accomplished. No one expects them to have a 100% plan, but the reality is that, at best, they have a 50% plan. Could you imagine committing to any project delivery not know how 50% of the project will be accomplished? We say 50% at best because the reality is that politicians tend to overestimate the positive. This is what US Special Presidential Envoy for Climate said a month ago at the Biden global leaders climate summit – 50% of the planned emissions cuts will have to come from technologies not yet developed. Earlier this morning the Guardian reported [LINK] on Kerry's comments in the UK. After seeing the Guardian report, we tweeted [LINK] "#JohnKerry "I am told by scientists that 50% of the reductions we have to make to get to net zero are going to come from technologies that we don't yet have. That's just a reality". This means other reality is will need #NatGas #Oil for longer. #OTTT" His comments on the reality check and that governments are setting real targets without knowing how it will accomplish is a reality check that the demise of natural gas and oil won't be as fast as the Energy Transition aspirations.*"

Energy Transition – Multiple solar insights from BNEF analyst solar thread

BNEF analyst solar thread

Earlier this morning, we tweeted [LINK] "*Great #Solar thread with many insights. ie #20, highest could get BNEF regional analysts to agree to, while allocating most capacity to actual countries, not buffer – is only 4.2TW by 2030, vs 5.3TW BNEF models for NetZero high renewables path. Thx @solar_chase #EnergyTransition.*" Jenny Chase is a BloombergNEF solar analyst and posted a 31-tweet thread yesterday on her updated solar thoughts. What we thought was good is that her insights go across the solar spectrum. Our tweet highlighted #20 and how she went to all the regional BNEF solar analysts, asked them for their highest case estimates for solar power but being allocated to specific countries. She could only get them to about 80% of the target solar power needed to hit the BNEF high renewables path. In other words, there is a big unknown. Our Supplemental Documents package includes her 31-tweet thread.

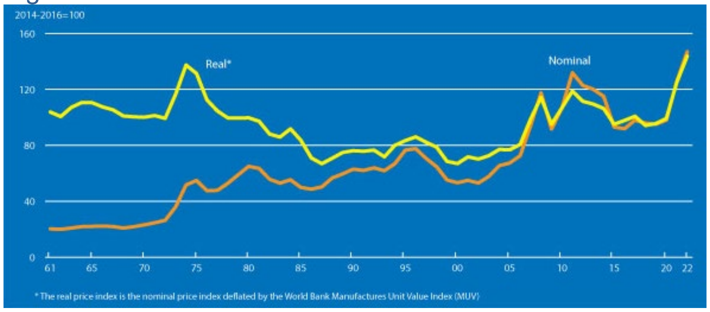
Capital Markets – UN FAO Food Price Index registered another decline in September

UN food price index +5.5% YoY

There was another decline in the UN global food price index for September 2022. The UN wrote, *"The FFPI's decline in September was driven by a sharp fall in the international prices of vegetable oils and moderate decreases in those of sugar, meat and dairy products, more than offsetting a rebound in the cereal price sub-index"*. It was +5.5% YoY, but that is down huge from the all-time record YoY highs of +33.6% YoY seen in March 2022. On Oct 7, the UN posted its monthly update of its FAO Food Price Index [LINK] titled "*FAO Food Price Index drops for the sixth consecutive month in September".* Note this is on a Real price basis. The FFPI averaged 136.3 points for September 2022, which was -1.1% MoM and up 5.5% YoY. The drop in the FFPI in September was spaced out across all price indexes. The Vegetable oil index was down -6.6% MoM, marking another retreat from April's all time high.

The Sugar Price Index was down -0.7% MoM and the Dairy Price Index was down -0.6% MoM though still +20.7% YoY. The Meat Price Index was down 0.5% MoM, driven by poultry meat prices amidst tight global supplies. Below is the all time FFPI graph. Our Supplemental Documents package includes the UN FAO Food Price Index update.

Figure 48: UN FAO Food Price Index



Source: UN

Capital Markets – Food inflation drives Brits to spam, fish heads & eating at home

Major UK food changes

This week, Waitrose & Partners posted their "*Food & Drink Report 2022-23*" [LINK], they looked "*into the top food and drink trends. We conducted OnePoll consumer research on a wide range of topics in early September 2022 with 2000 people across the UK of all ages – not exclusively Waitrose shoppers. The research is backed up with sales data from millions of purchases throughout the year. All sales figures are compared with the same period as the previous year, unless otherwise stated.*" W&P highlighted "*Most markedly, anxiety over rising inflation has increased, with 72% of our survey respondents telling us they are now more mindful' about their grocery budget. After the toll of the pandemic, consumers will have likely started the year tired and pessimistic. Now adding to this stress were rising food, fuel, energy, rent and mortgage costs. According to one report*, in the 12 weeks to 2 October, grocery price inflation leapt to a record high, with the average household facing a £643 jump in their annual bill to £5,265 if they continued to buy the same items.*" Here are a few of the changed food habits: "*23% switching to supermarket-own brands*", "*Sales of fish heads increased by an incredible 34%*", "*it's Spam that has been the comeback king of 2022. Sales of the canned pork and ham are up by 36% and searches for waitrose.com's recipe for 'Spam' fritters with crushed peas have risen by 82%. Love it or loathe it, it's clear this wartime favourite is back to stay.*", and "*nearly half (46%) of our respondents now eat at home more*".

Capital Markets – Harvard's lack of oil and gas hurt its results.

Harvard endowment fund returns

Last week, Harvard Management Company posted the 2-pg release on its year ended June 30, 2022 results for the Harvard Endowment Fund. [LINK] "*For the most recent fiscal year, which ended on June 30, 2022, the return on the Harvard endowment was -1.8% and the value stood at $50.9 billion…..The disparity between fiscal year 2021 (FY21) and fiscal year 2022 (FY22) returns was stark and reinforces the necessity of focusing on long-term, risk adjusted returns.*" It makes us wonder what were they focusing on? (i) No oil and gas stocks was a key reason for the performance. One of the reasons for the underperformance was "*A number of institutional investors leaned into the conventional energy sector, through either equities or commodity futures, adding materially to their total return. HMC did not participate* *in these returns given the University's commitment to tackling the impacts of climate change, supporting sustainable solutions, and achieving our stated net zero goals."* (ii) The lack of oil and gas hurting performance was known. Our July 24, 2022 Energy Tidbits noted our July 19 tweet [LINK] ""*Ivy League Endowments Brace for Losses With PE Values Tumbling" reports @JanetLorin. The other challenge for these big college endowment funds as hey try to recover form these losses is that most can't/don't invest in #Oil #NatGas for #ESG reasons. Thx @JanetLorin. #OOTT.* Bloomberg highlighted the % of endowment in private equity was Notre Dame 46%, Michigan 42%, Princeton 42%, Penn 36%, Northwestern 36% and Harvard 34%. Our tweet noted that one of the reasons for the weak performance is that most of these endowments don't/can't invest in oil and gas, which has been the best performing sector. Bloomberg wrote "*Princeton, Harvard and Yale generated robust returns for their endowments in recent years, fueled in part by billions of dollars of investments in private equity and venture capital. That golden era appears to be over, at least for now. College endowments across the US are likely to report losses for the fiscal year ended June 30 as valuations for startups and other closely held companies deflate, following a sharp decline in public markets and the end of cheap leverage."* (iii) HMC warns negative revisions should be coming on their venture capital, buyout and real estate investments. HMC wrote "*Notably, the highest risk asset classes — i.e., the private portfolios of venture capital, buyout, and real estate — were the strongest performers. In fact, the more private assets an investor had in its portfolio in FY22, the stronger their performance. This is somewhat counterintuitive and may indicate that private managers have not yet marked their portfolios to reflect general market conditions. This phenomenon does make us cautious about forward-looking returns in private portfolios. For example, the venture capital portion of HMC's private equity portfolio returned high single digits despite the deeply negative performance of relevant public equity indices ….. We expect that the end of the current calendar year might present meaningful adjustments to these valuations, as investment managers audit their portfolios."* Our Supplemental Documents package includes the HMC release.

Capital Markets – COLA for US Civil servants pension ties all time high of 8.7%

US civil servants COLA increase 8.7% for 2023

There was a good example disclosed of a big cost-of-living adjustment for a pension obligation, when, last week, the Congressional Research Service posted the "Cost-of-living adjustments for Federal Civil Service Annuities". This only applied to federal employees hired before 1984. The CRS writes "*Cost-of-living adjustments (COLAs) for CSRS annuities are based on the average monthly percentage change in the CPI-W in the third quarter (July to September) of the current calendar year compared with the third quarter of the base year, which is the year in which the last COLA was applied.1 The base year for determining the COLA effective in December 2022 (paid out in 2023) is 2021.2 Adjustments are effective on the first day of the month preceding the month in which they are first paid."* The CRS noted the CSRS benefit increase in Dec 2022 will be 8.7%, which compares to 5.9% in Dec 2021, and 1.3% in Dec 2020. Dec 2022 of 8.7% ties the all-time max increase of 8.7% in March 1982. Our Supplemental Documents package includes the CRS report

COLA 8.7% adj = additional cash cost of $122.6b for US Social Security

The point we make above is that these COLA adjustments result in higher cash costs in 2023. That same day, the US Social Security Administration announced [LINK] "*Social Security Benefits Increase in 2023. Approximately 70 million Americans will see a 8.7% increase in their Social Security benefits and Supplemental Security*

Income (SSI) payments in 2023. On average, Social Security benefits will increase by more than $140 per month starting in January." This means that the average Social Security retiree benefit will increase from $1,681/month in 2022 to $1,827/month in 2023. So the increased cash cost assuming 70 million Americans is $122.6 billion a year. Our Supplemental Documents package includes the Social Security Administration release.

Max COLA adjustments will impact almost all pension plans
We aren't aware of big pension plans that don't have some sort of COLA adjustment, but we put "almost all" just in case there are pension plans that don't have COLA adjustments. The US civil servants pension COLA adjustment is a reminder that there will be big increase in pension plans cash 2023 payouts due to Cost-of-living adjustments. There should be more disclosure of Cost of Living Adjustments for pension plans. Normally, pension plans use a cutoff at the end of Sept or end of Oct to do their COLA adjustments for the upcoming year pension payouts for the next year, in this case for 2023. Most have a max COLA adjustment in any particular year. Some will smooth out over a couple years. But this is a real cost increase for pension plans in 2023.

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

@Energy_Tidbits on Twitter

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

Look for energy items on LinkedIn

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

Oct 23, 1993, Blue Jays win World Series on Joe Carter walk off home run
A walk-off home run to win the World Series is a rare event. Oct 23, 1993 was a huge day for Toronto Blue Jays fans as Joe Carter hit a bottom of the ninth World Series winning walk off home run at home in the SkyDome. The Philadelphia Phillies were ahead 6-5, brought in one of the top relieves that year, Mitch "Wild Thing" Williams who had 45 saves that year. Williams is a southpaw facing right handed Carter. Rickey Henderson on second, Paul Molitor on first, and Carter hits a 2 and 2 pitch over the left field wall. What made it rare was that was the first walk-off World Series

winning home run since Pittsburgh Pirates Bill Mazeroski's walk-off to beat the New York Yankees in game 7 of the 1960 World Series.

Figure 49: Joe Carter's World Series Winner Home Run Oct 23, 1993

Source: SportsNet

Unfortunately, there are wienies in the investment business

We suspect that the investment business is like any business – there are poor performers, there are great performers/leaders and vast majority are just solid team players. But, unfortunately, in a business where people can make lots of money with high differences between top and bottom performers, it also brings some wienies such as those who like to keep something from others to make sure the next level of people don't outshine the wienie. We were reminded this week of this watching a guest on CNBC, who was talking about one of his former team who is at a different firm. The wienie says "*I taught him everything he knows, just not very much of what I know*." The wienie may very well be a really good guy and very good at his expertise, but he's just not the type you would look to as a leader. How would anyone working for him today not see this and wonder, what isn't he telling me?

Local business are very busy, so need to book travel if going to Los Cabos

It's only one area, but local business people feedback in San Jose del Cabo (the quiet city in Los Cabos to Cabo San Lucas) would seem to support the bullish travel comments from the US airlines Q3 calls this week. Just spent a week in San Jose del Cabo and asked small business people how is business? The answer was consistent - It's way busier than normal, that is expected to continue and this is despite the peso/USD exchange really hasn't changed at ~20 to 1. Golf courses are busier than normal. Local real estate agencies are seeing lots of traffic and sales. Art galleries are seeing more sales than normal in off-season. Leading restaurants are saying they are already fully booked for Thursday nights Nov thru Jan. Prices at tourist areas are up significantly. It all seems to fit the US airlines commentary about leisure travel.