

# Energy Tidbits

January 8, 2023

Produced by: Dan Tsubouchi

## 1<sup>st</sup> China Spring Festival Without Covid Restrictions is Set Up for Q1 Herd Immunity Then Sustained Demand Recovery in 2023

**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. Huge China travel rush started yesterday with start of 1<sup>st</sup> Spring Festival without Covid restrictions should be the set up for a sustained demand recovery in 2023 ([Click Here](#))
2. Should we expect Houthis drone attacks on Saudi given they warned on "*unprecedented military response*" and "*states of aggressions must bear the consequences*" ([Click Here](#))
3. Pioneer CEO Sheffield lowers his Permian oil growth potential to 2030 by 1 mmb/d ([Click Here](#))
4. Forecasts are for continued well above normal temperatures for Continental Europe for balance of Jan ([Click Here](#))
5. Expect tougher emissions actions on Cdn oil and gas sector as Liberals make a decision on how they will cap emissions in 2023 ([Click Here](#))
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

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**Natural Gas – Natural gas draw of -221 bcf, storage now -308 bcf YoY deficit**

The YoY deficit widened from -133 bcf YoY for Dec 23 to -308 bcf YoY as of Dec 30. This widening was expected given Dec 2021 was the #1 hottest Dec in the last 127 years. The EIA reported a -221 bcf draw (-240 bcf expectations) for the Dec 30 week, which was a larger draw vs the 5-yr average of a -98 bcf draw, and last year’s draw of -31 bcf. Storage is 2.891 tcf as of Dec 30, with a now YoY deficit of -308 bcf YoY vs -133 bcf YoY deficit last week and is -208 bcf below the 5-year average vs -85 bcf below last week. Below is the EIA’s storage table from its Weekly Natural Gas Storage Report [\[LINK\]](#).

**YoY storage at -308 bcf YoY deficit**

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	12/30/22	12/23/22	net change	implied flow	Year ago (12/30/21)		5-year average (2017-21)	
					Bcf	% change	Bcf	% change
East	691	747	-56	-56	768	-10.0	740	-6.6
Midwest	839	899	-60	-60	897	-6.5	876	-4.2
Mountain	157	166	-9	-9	173	-9.2	173	-9.2
Pacific	165	165	0	0	221	-25.3	247	-33.2
South Central	1,040	1,136	-96	-96	1,139	-8.7	1,063	-2.2
Salt	270	323	-53	-53	344	-21.5	317	-14.8
Nonsalt	770	813	-43	-43	795	-3.1	747	3.1
<b>Total</b>	<b>2,891</b>	<b>3,112</b>	<b>-221</b>	<b>-221</b>	<b>3,199</b>	<b>-9.6</b>	<b>3,099</b>	<b>-6.7</b>

Source: EIA

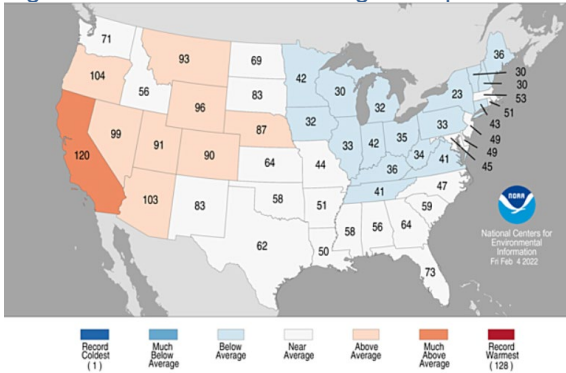
**Natural Gas – Jan 2022 saw normal temperatures on average**

It’s been warmer than normal in the US to start Jan, which means there should be a narrowing of the YoY storage deficit because the comparison will be to a relatively normal temperature Jan 2022. Jan 2022 was a fairly normal temperature month. NOAA’s recap of Jan 2022 [\[LINK\]](#) was the 58<sup>th</sup> warmest in the last 127 years ie. More or less normal. The NE US saw slightly below average temperatures in January while the western states were warmer. The average temperatures across all lower 48 states was 31.0 degrees F, 0.9 degrees F above the 20<sup>th</sup> century average for January. Below is a graphic depicting the state average temperature ranks.

**Jan 2022 was normal temperatures**

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Figure 2: US Statewide Average Temperature Ranks January 2022



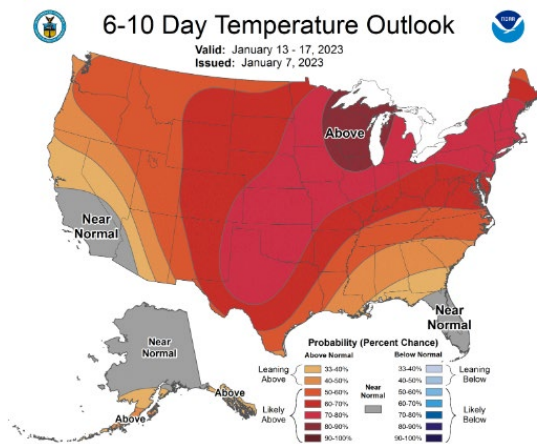
Source: NOAA

**Natural Gas – NOAA expects warm temps across almost all the US thru mid-Jan**

Yesterday, we tweeted [LINK](#) “HH #NatGas continues weak at ~\$3.75. negative tone to continue with @NOAA Jan 7 update still calling for warmer than normal temps across all the US until AT LEAST thru Jan 21. A warm Jan is never a positive as Jan is normally peak month for winter driven demand. #OOTT.” Our tweet included NOAA’s Jan 7 updated 6-10 day and 8-14 day outlook that run up thru Jan 21. NOAA’s forecast calls for warmer than normal temperatures across almost all of the US, and Jan is typically peak weather driven natural gas demand period. Below are NOAA’s 6-10 day and 8-14 day temperature outlooks as of yesterday afternoon.

**NOAA 6-10 & 8-14 day temp outlook**

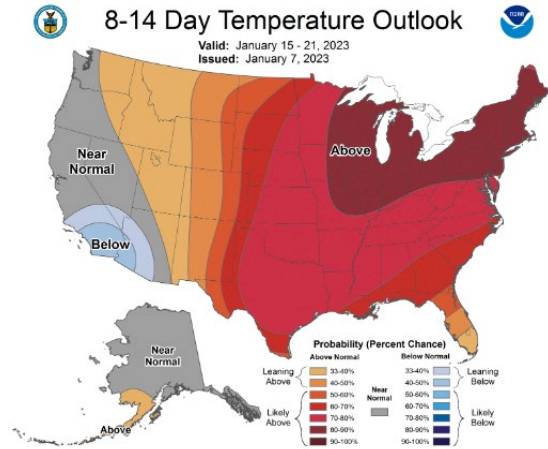
Figure 3: NOAA 6-10 day temperature outlook as of Dec 31



Source: NOAA

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Figure 4: NOAA 8-14 day temperature outlook as of Dec 31



Source: NOAA

**Natural Gas – A hot vs cold month can be a swing of ~500 bcf of consumption**

Yesterday, we tweeted [LINK](#) on the below data on why temperature is key for winter natural gas demand and prices. The reason why HH natural gas prices have crashed with the very warm end to Dec and start to Jan is that Jan is the normally the winter month with the highest natural gas consumption for homes. It's why warm weather in the winter, especially in Jan, is never a positive for natural gas prices. There can be huge swings in residential/commercial natural gas demand depending if it's hot, normal, or cold. The different between a hot and cold month can be almost 500 bcf in a month. Below is a table we have previously posted that shows these swings. It shows AGA heating degree days vs US total natural gas consumption and US residential/commercial natural gas consumption. (i) Residential/commercial demand is normally >40% of total US natural gas consumption in DJF. (ii) For the last 10 year average, Jan was 46.7 bcf/d, Feb 43.4 bcf/d, and Dec 38.0 bcf/d. (iii) The high to low swings for Dec can be up to 12.6 bcf/d, Jan can be up to 9.8 bcf/d, and Feb can be up to 17.2 bcf/d. (iv) The biggest months over the past 10 winters were Jan 2014 at 51.9 bcf/d, Feb 2015 at 50.9 bcf/d, and then Dec 2017 at 49.5 bcf/d.

**Jan is the big month for natural gas demand**

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Figure 5: US Winter Natural Gas Consumption vs Heating Degree Days

US Winter Natural Gas Consumption vs Heating Degree Days													
Heating Degree Days By Month													
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	10 Year Average	
	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	HDDs	%	
Oct	308	303	265	257	200	218	306	307	308	205	332	280	7%
Nov	572	623	658	484	459	542	650	636	469	539	597	569	14%
Dec	763	920	763	649	856	873	789	778	804	696	876	807	20%
Jan	918	1,019	967	935	843	963	941	808	899	1005		921	23%
Feb	795	903	955	718	597	699	810	760	896	790		793	20%
Mar	827	831	738	511	618	680	804	555	572	638		680	17%
Oct 1 - Mar 31	4,183	4,599	4,346	3,554	3,573	3,955	4,300	3,844	3,948	3,873	1,805	4,050	100%
Note: Oct includes Sept if applicable. March includes Apr if applicable.													
Source: AGA, SAF													
Total US Consumption													
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	10 Year Average	
	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	%
Oct	61.3	60.2	61.7	64.3	62.1	65.5	73.7	75.1	74.9	73.0	76.4	67.2	13%
Nov	72.3	77.2	78.6	75.2	72.1	78.6	90.5	92.6	81.3	89.8		80.8	15%
Dec	80.8	94.0	86.4	83.6	92.5	99.5	96.8	101.6	101.9	97.0		93.4	18%
Jan	92.8	103.4	100.5	100.0	93.3	107.8	110.0	106.3	106.0	115.9		103.6	20%
Feb	91.6	97.9	104.5	91.8	82.9	96.8	107.5	109.3	108.5	109.3		99.9	19%
Mar	81.3	82.5	83.6	78.3	81.1	90.2	83.8	87.4	84.1	88.8		85.0	16%
Average	80.0	85.9	85.9	81.9	80.7	89.7	95.4	95.2	92.8	95.8	76.4	88.3	100%
Source: EIA, SAF													
US Residential & Commercial Demand													
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	10 Year Average	
	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	bcf/d	%
Oct	14.6	13.9	13.4	12.8	12.2	13.1	15.9	14.4	14.4	12.6	15.1	13.7	7%
Nov	26.3	28.8	30.2	23.0	22.0	26.3	32.8	32.6	24.4	27.3		27.4	14%
Dec	34.2	43.0	36.9	30.4	40.5	42.2	39.5	39.0	40.1	34.5		38.0	19%
Jan	47.0	51.9	47.4	45.0	42.4	49.5	48.6	42.2	44.1	48.8		46.7	23%
Feb	42.3	48.0	50.9	38.4	33.7	39.8	45.7	42.0	48.2	45.1		43.4	22%
Mar	34.3	36.2	33.1	24.4	30.8	34.8	35.9	27.8	29.7	31.5		31.8	16%
Average	33.1	37.0	35.3	29.0	30.3	34.3	36.4	33.0	33.5	33.3	15.1	33.5	100%
Source: EIA, SAF													
Data source EIA Natural Gas Monthly													
Source: EIA, AGA, SAF													

**Natural Gas – Will Freeport LNG restart be delayed again? If so, for how long?**

On Thurs, there were reports of delays to the Freeport LNG restart in second half of Jan. Given it's Jan 8, we would have expected the company's response to be something like they are still on track for their restart in 2<sup>nd</sup> half of Jan. Rather, the company's response was that their "goal" of reopening in the second half of January "still stands". That sounds like a non-denial denial. The question is how long of a delay? Freeport LNG capacity is 2.2 bcf/d and has been done since June. (i) Rapidan Energy thinks could be months away. On Thurs, Bloomberg reported "The restart of Freeport LNG, a key US liquefied natural gas export terminal that has been shuttered since an explosion last summer, will likely be off line "for several more months," a Washington consulting firm said in a note to clients that conflicts with the company's stated goal of restarting in January. The estimate from Rapidan Energy Group cited "extensive personnel training" requirements being implemented by federal regulators overseeing the facilities restart following a fire that led to its closure in June." "Training is a time-intensive process, and regulators will demand a high standard before allowing Freeport to resume operations, suggesting a restart authorization will not come before" the second quarter of this year, Rapidan wrote in its note. "With more submissions to be made, documentation to be reviewed, and training to be completed, a January restart at Freeport LNG is highly unlikely." (ii) The company's response to the Rapidan view was general. Given its Jan 8, we would have thought they might have said they are on track to restart in the second half of Jan and not just that their "goal" still stands. But they didn't say they were on track, Bloomberg wrote "Heather Browne, a spokeswoman for Houston-based Freeport LNG, said the company's goal of reopening in the second half of January still stands." (iii) Wood Mackenzie. Bloomberg wrote "Wood Mackenzie Ltd., which is also tracking the plant, said a restart in the second half of January was still possible. "Currently, we're anticipating a restart to operations at Freeport in the second half of January, with some

Sounds like another delay to Freeport LNG

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risk potentially pushing back restart into February,” Ian Heming, a research analyst at the firm, said in an email.” Our Supplemental Documents package includes the Bloomberg report.

### Freeport’s goal to restart in second half of Jan

Freeport LNG doesn’t anticipate restart until 2nd half of Jan. On Friday, we tweeted [\[LINK\]](#) “Count on Friday before Xmas press releases to be something negative. “#FreeportLNG now does not anticipate commencing the initial restart of its liquefaction facility until the second half of January 2023”. #OOTT #NatGas.” This looks to be over a month later than their previous formal statements for a mid-Dec restart. (ii) On Friday, Freeport LNG provided an update [\[LINK\]](#) on when they “anticipate” to restart. Freeport LNG said “As of December 23rd, the reconstruction work necessary to commence initial operations is substantially complete, and the company is submitting responses to the last remaining questions included in the Federal Energy Regulatory Commission’s December 12 data request. Given the time needed for the regulatory agencies to review the company’s responses and to seek any necessary clarification, Freeport LNG now does not anticipate commencing the initial restart of its liquefaction facility until the second half of January 2023.” (ii) Here is what we wrote in our Dec 4, 2022 Energy Tidbits. “A 2-week delay to Freeport LNG restart now end of Dec. On Thursday, we tweeted [\[LINK\]](#) “Another delay for #FreeportLNG restart. now end Dec instead of mid Dec. if they do a train by train restart, then hitting ~2 bcf/d is likely not until later Jan. thx @SStapczynski @David\_Stringer. #OOTT #NatGas.” (i) On Thursday, Bloomberg reported “Freeport LNG expects to restart its Texas plant around year-end and is continuing to work to obtain necessary clearances, co. spokesperson Heather Browne said in an emailed statement. \* “Based upon current progress, and subject to us continuing to meet necessary regulatory requirements, we now anticipate that the restart of our liquefaction facility to be achieved around year-end,” Browne said \* NOTE: The new timeline is as much as 2 weeks later than outlined in a statement last month, when co. said it was aiming to start “initial production” in mid-Dec. with full operations.” (ii) Our tweet noted that the expectation is that the restart is on a train by train basis, which is why we expect it will likely take most of the month to go from zero to ~2 bcf/d.”

### Natural Gas – What is going on with BC’s “very close” to Blueberry First Nations deal?

We continue the watch on this item as it is probably the item that can most impact the value of Cdn natural gas over the 2020s. If BC can’t get a deal done with the Blueberry First Nations, it could mean a massive uncertainty on a major part of NE BC natural gas drilling potential. It’s now been six weeks and we have not seen any announcement of a deal that BC said, on Nov 26, was very close to an agreement. Once it got before Xmas, we thought any deal would be after Jan 1. But the clock is ticking, the 1<sup>st</sup> week of Jan is over and something needs to happen soon. We are hopeful of a deal, but we were surprised by the BC Nov 26 press release. We recognize that most took the BC Government at their word, but it’s now been over a month since the BC press release on Nov 26 “Ministers’ joint statement on status of negotiations with Blueberry River First Nations” [\[LINK\]](#) that had a very clear message that a deal is coming. BC said ““We wish to affirm that we are very close to an agreement and are discussing final issues. As such, we have initiated early engagement with

Where is BC/Blueberry First Nations deal?

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*select industry groups and other Treaty 8 Nations on a proposed agreement to hear their feedback and consider adjustments.”* At that time, we noted in our Dec 4, 2022 Energy Tidbits that we were surprised by the bullish statements in the BC release, primarily because we had been hearing that the Blueberry First Nations ask was too big for even BC to accept. But clearly the BC release seemed to put to bed the chatter we had been hearing that the Blueberry First Nation had asked way too much to get a deal. But, it's now been six weeks and no word that a deal is coming and coming soon. We continue to check with our key industry contacts and, at least from our contacts, they still hear the likelihood of a deal in the near term is close to zero. We hope, like we put in our prior memos, that our contacts are all wrong and BC is getting a deal done any day now with the Blueberry First Nations. But the silence is deafening. Our Supplemental Documents package includes the BC Nov 26 press release.

### **It's too late to save most of winter drilling season**

Our Dec 18, 2022 Energy Tidbits memo warned it was too late to save most of the winter drilling season. When BC Nov 26 release came out, it looked like a big operational positive for BC's winter drilling season. There would be time to get cranked up in the short winter drilling season. But, now that it's Jan 8, it really puts a big problem for winter drilling season. Producers are down to about seven weeks of peak winter drilling conditions. Normally, winter drilling tends to start to decline around the end of Feb although a warm Feb could see drilling decline in mid Feb. But even if there is a deal done in the next week or two, BC producers won't be able to get most of their winter drilling done that they had hoped to do going back to the summer when the first hints of a deal were hoped. Until there is a Blueberry deal, producers will basically be stuck with the well licenses in hand unless there is some sort of agreement to let additional wells be licensed ahead of a BC/Blueberry deal.

### **Without a BC/Blueberry deal, it's hard to see a LNG Canada Phase 2 FID**

We have been tracking all the indications from Shell, LNG Canada and TC Energy that were pointing to why a FID on LNG Canada 1.8 bcf/d Phase 2 should have come in Q4/22. But we also realize that, without a BC/Blueberry First Nations deal, it will be highly unlikely to see that FID. Because without a deal, the LNG Canada joint venturers would be questioning their ability to drill to fill its under-construction Phase 1, let alone FID Phase 2. It's why, in our Dec 4, 2022 Energy Tidbits, we wrote *“We wonder if the lack of a BC deal with Blueberry First Nations is why BC hasn't either signed off or rejected LNG Canada's request for BC's views on a potential LNG Canada Phase 2 FID. It makes sense. If Blueberry First Nations had negotiating leverage given the need to crank up drilling to supply natural gas for LNG Canada's 1.8 bcf/d Phase 1, the need for another 1.8 bcf/d of natural gas supply for a LNG Canada 1.8 bcf/d Phase 2 would give even more leverage to Blueberry First Nations. Our Oct 23, 2022 Energy Tidbits noted the first BC confirmation that they were looking at LNG Canada Phase 2. We then wrote “Natural Gas – BC says it is in discussions with LNG Canada on potential Phase 2. 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*

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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 bcf/d 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."

### Natural Gas – New Long-term LNG deals for a total of 0.24 bcf/d

There was a significant slowdown in long term LNG deals in H2/2022 compared to the July 1, 2021 to June 30, 2022 period. Because most, if not all the available long term LNG supply available before 2026 was locked up in the July 1, 2021 to June 30, 2022 rush. Rather, the long-term deals now being done are for long term supply starting in 2026 or later. There were two long term LNG deals announced last week. (i) On Dec 26, Venture Global LNG announced a 0.13 bcf/d supply deal with INPEX (Japan) for 20 years. [\[LINK\]](#). The LNG will be supplied "from CP2 LNG, Venture Global's third project which is expected to commence construction in 2023. INPEX joins other CP2 LNG customers including ExxonMobil, Chevron, EnBW and New Fortress Energy." (ii) On Dec 27, JERA announced [\[LINK\]](#) signed a "key term sheet for the sale and purchase of LNG with Oman Liquefied Natural Gas LLC ("Oman LNG") . Based on the key term sheet, JERA will purchase up to 12 cargoes (Approx. 0.8 million tons) per year of LNG produced from the Oman LNG project from 2025 for 10 years." This is 0.11 bcf/d. Our Supplemental Documents package includes both news releases.

More long term  
LNG deals

### Asia was early to secure long term LNG supply

Our March 13, 2022 Energy Tidbits memo noted that Europe LNG buyers were starting 9 months behind the wave of Asian LNG buyers who started to lock up long term LNG supply starting in July 2021. The LNG supply crunch is not a 2022 development. Rather, it was clear in H1/21 that there was a major sea change in LNG outlook. We turned very bullish on LNG outlook for the 2020s once TotalEnergies went force majeure on its Mozambique LNG in April 2021. We posted our April 28, 2021 blog "Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?" as we thought the market had overlooked that this force majeure backed up 5.0 bcf/d of

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Mozambique LNG that was originally planned to start in phases in 2024. And that this would create an earlier and larger LNG supply gap in the mid 2020s. Then we started to see validation of this view when Asian LNG buyers in July made an abrupt change to their LNG contracting and pivoted to trying to lock in long term LNG supply. On July 14, 2021 we posted our 8-pg “*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs*”. Here is an excerpt from the blog “*The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog “Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?” and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum’s massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.*” Our Supplemental Documents package includes our April and July blogs.

### **There have been 12.77 bcf/d of long-term LNG supply deals since July 1, 2021**

We first highlighted this abrupt shift to long term LNG supply deals in our July 14, 2021 8-pg “*Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs*”. We included a table of the deals done in that short two week period. We continue to update that table, which now shows 12.77 bcf/d of long term LNG deals since July 1, 2021. 66% of the deals have been by Asian LNG buyers, but we are now seeing rest of world locking up long term supply deals post Russia/Ukraine. Note in our non-Asian LNG deals will major LNG players (ie. Chevron, Shell, etc) buying for their LNG portfolio supply. China has been particularly active in this space, accounting for 75% of all Asian LNG buyers in long term contracts since July 1, 2021. Below is our updated table of Asian and Europe LNG buyers new long term supply deals since July 1, 2021.

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Figure 6: Long Term LNG Supply Deals since July 1, 2021

Long-Term LNG Buyer Deals Since July 1, 2021							
Date	Buyer	Seller	Country	Volume	Duration	Start	End
			Buyer / Seller	(bcf/d)	Years		
<b>Asian LNG Deals</b>							
Jul 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0	2022	2032
Jul 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0	2022	2037
Jul 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0	2022	2034
Jul 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0	2025	2045
Sep 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0	2022	2037
Oct 7, 2021	Shenzhen	BP	China / US	0.04	10.0	2023	2032
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0	2022	2035
Nov 4, 2021	Unipecc	Venture Global LNG	China / US	0.46	20.0	2023	2043
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0	2023	2043
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5	2022	2040
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0	2023	2043
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0	2024	2034
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0	2022	2037
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0	2023	2033
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0	2023	2043
Dec 29, 2021	Foran	BP	China / US	0.01	10.0	2023	2032
Jan 11, 2022	ENN	Novatek	China / Russia	0.08	11.0	2024	2035
Jan 11, 2022	Zhejiang Energy	Novatek	China / Russia	0.13	15.0	2024	2039
Feb 4, 2022	CNPC	Gazprom	China / Russia	0.98	30.0	2023	2053
Mar 24, 2022	Guangdong Energy	NextDecade	China / US	0.20	20.0	2026	2046
Mar 29, 2022	ENN	Energy Transfer	China / US	0.36	20.0	2026	2046
Apr 1, 2022	Guangzhou Gas	Mexico Pacific Ltd	China / Mexico	0.26	20.0	n.a.	n.a.
Apr 6, 2022	ENN	NextDecade	China / US	0.26	20.0	2026	2026
Apr 22, 2022	Kogas	BP	Korea / US	0.20	18.0	2025	2043
May 2, 2022	Gunvor Singapore Pte	Energy Transfer LNG	Singapore / US	0.26	20.0	2026	2046
May 3, 2022	SK Gas Trading LLC	Energy Transfer LNG	Korea / US	0.05	18.0	2026	2042
May 10, 2022	Exxon Asia Pacific	Venture Global LNG	Singapore / US	0.26	n.a.	n.a.	n.a.
May 11, 2022	Petronas LNG	Venture Global LNG	Malaysia / US	0.13	20.0	n.a.	n.a.
May 24, 2022	Hanwha Energy	TotalEnergies	Korea / France	0.08	15.0	2024	2039
May 25, 2022	POSCO International	Cheniere	Korea / US	0.05	20.0	2026	2036
June 5, 2022	China Gas Holdings	Energy Transfer	China / US	0.09	25.0	2026	2051
Jul 5, 2022	China Gas Holdings	NextDecade	China / US	0.13	20.0	2027	2047
Jul 20, 2022	PetroChina	Cheniere	China / US	0.24	24.0	2026	2050
Jul 26, 2022	PTT Global	Cheniere	Thailand / US	0.13	20.0	2026	2046
Jul 27, 2022	Exxon Asia Pacific	NextDecade	Singapore / US	0.13	20.0	2026	2046
Sep 2, 2022	Woodside Singapore	Commonwealth	Singapore / US	0.33	20.0	2026	2046
Nov 21, 2022	Sinopec	QatarEnergy	China / Qatar	0.53	27.0	2026	2053
Dec 26, 2022	INPEX	Venture Global LNG	Japan/US	0.13	20.0	n.a.	n.a.
Dec 27, 2022	JERA	Oman LNG	Japan/Oman	0.11	10.0	2025	2035
<b>Total Asian LNG Buyers New Long Term Contracts Since Jul/21</b>				<b>8.46</b>			
<b>Non-Asian LNG Deals</b>							
Jul 28, 2021	PGNIG	Venture Global LNG	Poland / US	0.26	20.0	2023	2043
Nov 12, 2021	Engie	Cheniere	France / US	0.11	20.0	2021	2041
Mar 7, 2022	Shell	Venture Global LNG	US / US	0.26	20.0	2024	2044
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
Mar 16, 2022	NFE	Venture Global LNG	US / US	0.13	20.0	2023	2043
May 2, 2022	Engie	NextDecade	France / US	0.23	15.0	2026	2041
May 17, 2022	PGNIG	Sempra Infrastructure	Poland / US	0.40	20.0	n.a.	n.a.
May 25, 2022	RWE Supply & Trading	Sempra Infrastructure	Germany / US	0.30	15.0	n.a.	n.a.
Jun 9, 2022	Equinor	Cheniere	Norway / US	0.23	15.0	2026	2041
Jun 21, 2022	EnBW	Venture Global LNG	Germany / US	0.20	20.0	2026	2046
Jun 22, 2022	INEOS Energy	Sempra Infrastructure	UK / US	0.21	20.0	2027	2047
Jun 22, 2022	Chevron	Venture Global LNG	US / US	0.26	20.0	n.a.	n.a.
Jun 22, 2022	Chevron	Cheniere	US / US	0.26	15.0	2027	2042
Jul 12, 2022	Shell	Mexico Pacific Ltd	US / Mexico	0.34	20.0	2026	2046
Jul 13, 2022	Vitol	Delfin Midstream	US / US	0.07	15.0	n.a.	n.a.
Aug 9, 2022	Centrica	Delfin Midstream	UK / US	0.13	15.0	2026	2041
Aug 24, 2022	Shell	Energy Transfer	US / US	0.28	20.0	2026	2046
Oct 6, 2022	EnBW	Venture Global LNG	Germany / US	0.26	20.0	2022	2042
Dec 6, 2022	ENGIE	Sempra Infrastructure	France / US	0.12	15.0	n.a.	n.a.
Dec 20, 2022	Galp	NextDecade	Portugal / US	0.13	20.0	n.a.	n.a.
<b>Total Non-Asian LNG Buyers New Long Term Contracts Since Jul/21</b>				<b>4.31</b>			
<b>Total New Long Term LNG Contracts since Jul/21</b>				<b>12.77</b>			
*Excludes Asian short term/spot deals							
*on Dec 20, CNOOC also agreed to buy an additional 0.13 bcf/d from Venture Global for an undisclosed shorter period							
Source: Bloomberg, Company Reports							
Prepared by SAF Group - <a href="https://safgroup.ca/news-insights/">https://safgroup.ca/news-insights/</a>							

Source: Company reports, SAF Group

### Natural Gas – China domestic natural gas production +1.0 bcf.d to 21.0 bcf/d in 2022

One of the key reasons why Europe has been able to attract huge LNG needed to help offset Russian pipeline natural gas has been available cargos from Asia, in particular China. We have been warning that 2022 would be the year in which China LNG imports wouldn't be increasing due to increasing China pipeline natural gas imports from Russia, demand hits from the sky high cost of LNG and increasing Chinese domestic natural gas production.

**China natural gas production +1 bcf/d YoY**

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Earlier this morning, Xinhua's report "[Factbox: China's energy output in high gear in 2022](#)" provided a recap of China's 2022 domestic production, which is data we won't officially see for a few weeks. Xinhua reported "*Natural gas output topped 217 billion cubic meters, registering an annual increase of over 10 billion cubic meters for a sixth straight year.*" The Xinhua numbers are an increase of +1.0 bcf/d YoY to 21.0 bcf/d in 2022. Our Supplemental Documents package includes the Xinhua report

#### **Natural Gas – Japan PM meeting Trudeau on Wed, could highlight LNG needs**

Earlier in the memo, we highlighted our view that we can't see Shell FID LNG Canada 1.8 bcf/d Phase 2 as long as there isn't a BC/Blueberry First Nations deal. So we don't see how the Liberals could provide any confidence to Japan on when a LNG Canada Phase 2 FID might happen. Yesterday, The Canadian Press report "[Japan PM visit could highlight LNG needs, as Tokyo pushes away](#)" wrote "*The country is so reliant on Russian fuel that G7 countries gave Japan an exemption on a measure that caps the price of Russian oil below market rates, to avoid Japan facing the same scramble for energy that Europe undertook last year. Trevor Kennedy, the Business Council of Canada vice-president for international policy, said Kishida will likely seek a further commitment from Canada to sell liquefied natural gas, and mention an ongoing interest in hydrogen. "They're stuck in a situation where they're sourcing their LNG from Russia, and they don't have another option," said Kennedy, who has worked in Japan. Japan and South Korea have invested in Canada's first LNG export terminal in Kitimat, B.C., which is set to come online in 2025. Kennedy said both countries and Canadian firms are watching to see whether the terminal meets that timeline, given the delays other large energy projects in Canada have faced. He said the energy sector, Tokyo and Seoul also want Ottawa to boost the LNG sector by expanding the terminal or launching more of them. Otherwise, Japan and South Korea will have to rely on gas from Russia, or ask faraway countries to send supplies through waters China is trying to control.*" Our Supplemental Documents package includes The Canadian Press report.

**Japan PM meeting  
Trudeau**

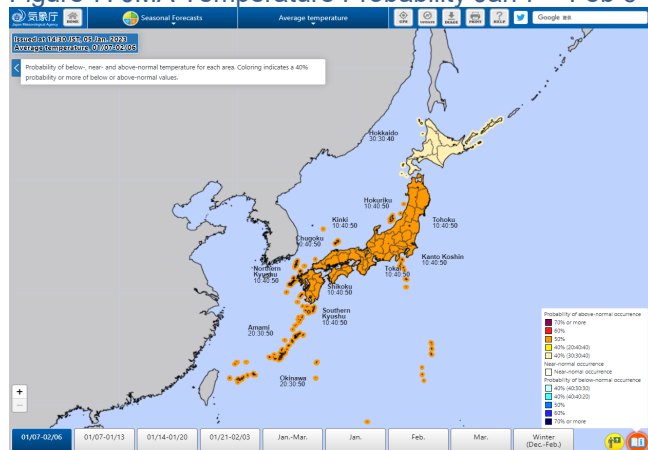
#### **Natural Gas – Japan flips to expecting warmer than normal temperatures in Jan**

We have been noting how Japan continually changes their weather forecasts. This week, the forecast flips again towards warmer than average temperatures for Japan in Jan and into Feb. Every Thursday, the Japan Meteorological Agency provides an updated 30-day temperature probability outlook. The new weekly JMA forecasts normal temps in Northern Japan and warmer than normal in Central and Southern Japan. It looks like a warmer than average Jan on an overall basis for Japan. Below is the JMA's updated 30-day outlook beginning Jan 7. [LINK](#)

**Japan  
temperature  
outlook**

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Figure 7: JMA Temperature Probability Jan 7 – Feb 6



Source: Japan Meteorology Agency

### Natural Gas – Norway rebuilding ships to add marine gas oil fuel to LNG fuel capacity

Even with the pull back in Europe TTF natural gas prices and LNG prices, we still see more examples of either natural gas demand destruction or natural gas to oil switching because of the still higher than normal natural gas prices. Normally, the news has been a temporary shut down of some sort fertilizer or other plant, or power companies cranking up more coal. We haven't seen many reports of rebuilding power generation. Yesterday, we tweeted [LINK](#) "Europe #NatGas to #Oil switching. @fjordline "LNG fuel costs has led to a non-sustainable financial situation", so will "rebuild" two ships from single-fuel #LNG to dual-fuel LNG/Marine Gas Oil. ~5 mths per ship rebuild time. #OOTT." Fjord Line's release said "Fjord Line has led the way in the green transition and is the only Norwegian shipping company that transports passengers as well as cargo, internationally, on two ships powered by LNG. This enables up to 25% CO2-savings and greatly reduced emissions of sulphur- and nitrogen oxides."

Fjord Line said they had their best-ever high season revenue wise in 2022, but "Unfortunately, increases in the LNG (Liquified Natural Gas) fuel costs has led to a non-sustainable financial situation for Fjord Line." Hence they are rebuilding the two ships from single-fuel LNG engines to dual-fuel LNG/Marine Gas Oil engines. Each rebuild will take approx. 5 months. Fjord Line said "The engine conversion enables the two LNG-ships to switch between LNG and MGO (Marine Gas Oil), which will ensure a financially sustainable operation until the LNG-price level is normalized." Our Supplemental Documents package includes the Fjord Line press release. [LINK](#)

Creating dual fuel  
LNG/marine gas  
oil ships

### Natural Gas – Still much warmer than normal temp forecast for Jan across Europe

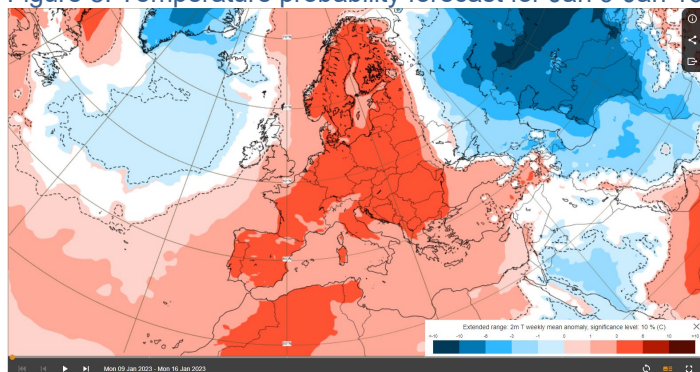
The big negative to Europe TTF natural gas prices and therefore flow thru the LNG prices is that temperatures have been well above normal in Europe and are expected to continue to be so thru January. Last week's (Jan 1, 2023) Energy Tidbits memo highlighted the extremely warm temperatures across Continental Europe on New Year's Eve that was called by some T-shirt weather in Berlin. It was another week of warm weather and this much warmer than normal temperatures are expected to continue thru Jan. Yesterday we tweeted [LINK](#) "Continued negative for Europe TTF #NatGas prices and therefore on #LNG, the much warmer than normal temperatures expected to continue across all of continental Europe for

Continued warm  
temps in Europe

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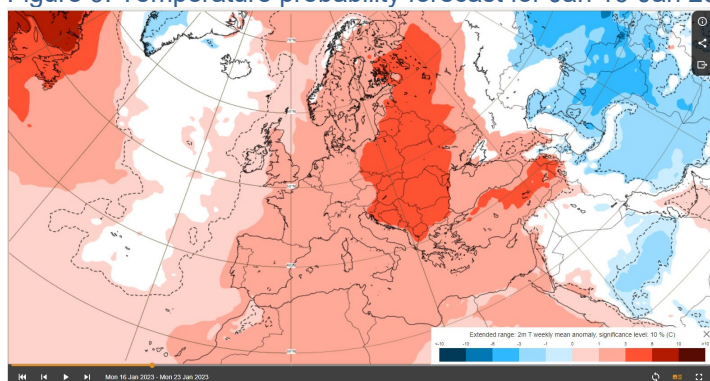
balance of Jan. Jan is normally the peak weather driven #NatGas demand period. Thx @ECMWF. #OOTT.” Our tweet included the below temperature probability maps from the European Centre for Medium-Range Weather Forecasts for the Jan 9-Jan 16 week, and Jan 16-Jan 23 week. Red is never good in a temperature forecast for winter.

Figure 8: Temperature probability forecast for Jan 9-Jan 16 week



Source: ECMWF

Figure 9: Temperature probability forecast for Jan 16-Jan 23 week



Source: ECMWF

### Natural Gas – Europe storage is now +30.26% YoY ie. 83.24% full vs 52.98%

It's been a great winter so far for Europe in that, other than for a short period, it has been well above normal for most continental Europe. Last week's (Jan 1, 2023) Energy Tidbits noted how it was going to in the 60's in parts of Europe on New Years Day. There has been negligible weather driven demand for natural gas, which along with the continued industrial demand destruction, means storage levels are at very high levels. Europe gas storage started the 2022/23 winter 17.86% YoY and is now a YoY surplus of 30.26%. Europe storage levels bottomed in late Apr/22 at 29%, which was the lowest level since Apr 2018. Last winter began (Nov 1/21) with gas storage at 77.14% capacity, down 18.52% YoY. The YoY deficit has turned to surplus after months of the deficit tightening. This winter (Nov 1/22) began with gas storage at 94.94% capacity, up 17.86% YoY. Thanks to the warm weather and US LNG, storage as of Jan 5 is at 83.24%, which is +30.26% greater than last year

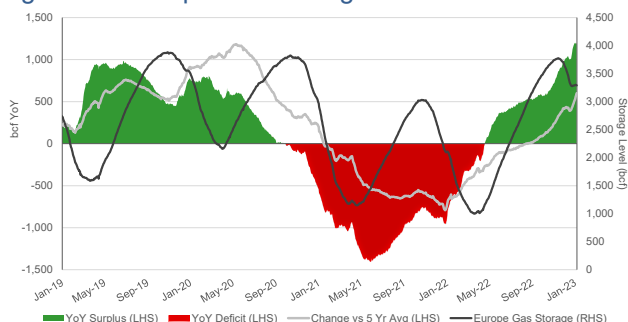
**Europe storage  
now 83.24% full**

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levels of 52.98% and is +15.01% above the 5-year average of 68.23%. Below is our graph of Europe Gas Storage Level.

Figure 10: Europe Gas Storage Level



Source: Bloomberg

**Oil – US oil rigs down -3 rigs to 618 oil rigs on Jan 6**

Baker Hughes released its weekly North American drilling activity data on Friday. We wonder if the extreme cold forecast in the Bakken and overnight freeze temperatures in Texas/Oklahoma might have caused some rig move delays since Oklahoma was down -3 rigs. This week US oil rigs were down -3 rigs to 618 oil rigs. It looks like softer oil prices and much weaker HH prices is the driving force for the big changes came from the smaller basins and Hanyesville which decreased -6 and -3 rigs WoW, respectively. Marcellus was also down -1 rig WoW. US oil rigs hit a 16-week low of 591 on September 9. US oil rigs are still +439 oil rigs since the Covid Sept 17, 2020 oil rigs of 179 oil rigs. And US oil rigs are +137 oil rigs YoY. US gas rigs were down -4 WoW at 152 gas rigs.

**US oil rigs down  
WoW**

Figure 11: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

**Oil – Total Cdn rigs up +105 WoW to 189 total rigs, +48 rigs YoY**

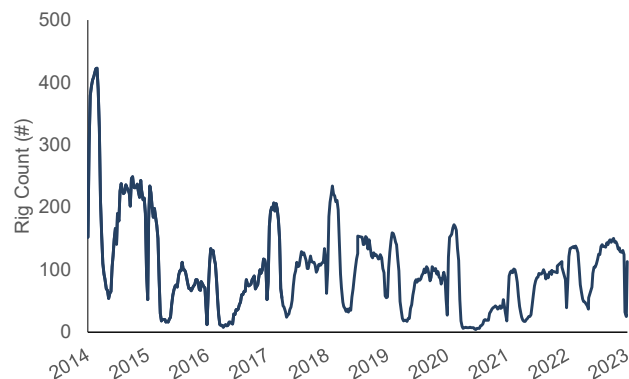
Cdn rig activity has moved out of its traditional Xmas big crash down thru New Year. As expected post Xmas and New Years, we see a big ramp up this week. Total Cdn rigs were +105 to 189 rigs as of Jan 6, 2023. As noted in last weeks memo Cdn rigs normally start to decline in the 3<sup>rd</sup> week of December and then more thru Xmas week and New Years week. The increase is no surprise following the holidays. Total rigs are now +28 vs the comparable

**Cdn rigs +105  
WoW**

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Covid period of 161 rigs on Jan 6, 2021. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 78 and Cdn gas rigs were 63 for a total Cdn rigs of 141, meaning total Cdn oil rigs are +48 YoY to 113 oil rigs and Cdn gas rigs are +13 to 76 gas rigs.

Figure 12: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

#### Oil – Precision sees this winter Cdn peak rigs at 80 vs 72 last winter

On Thursday, Precision Drilling posted its release “*Precision Drilling Exceeds 2022 Debt Repayment Guidance and Provides Capital Allocation and Operational Updates*”. [\[LINK\]](#). The market focus was on its debt repayment guidance. But the release also included an operational update. Precision said they expect to peak at 80 rigs in Canada within the next few weeks, which is up YoY vs peak of 72 rigs in Canada in Q1/22. Precision said “*All 28 of our Canadian Super Triple rigs are currently active, and later in the quarter the Company will activate an additional Super Triple rig that has been redeployed from the U.S. to work on a multi-year contract related to an LNG export project.*”

Precision sees higher YoY peak winter rigs

#### Oil – US weekly oil prod up 0.1 mmb/d to 12.1 mmb/d despite North Dakota outage

We had expected to see some North Dakota weather impact lead to lower EIA weekly oil production for the week ended Dec 30, but that wasn't the case. This means that the weekly increase of 0.1 mmb/d would have been more if North Dakota wasn't hit by weather outages. The EIA estimates US oil production was up 0.1 mmb/d WoW to 12.1 mmb/d for the week ended Dec 30. US oil production, based on the weekly estimates, has been mostly range bound between 11.9 to 12.1 mmb/d since the 2<sup>nd</sup> week of May. But broke above 12.1 mmb/d to 12.2 mmb/d four weeks ago for the first time since it touched 12.2 mmb/d in the 1<sup>st</sup> week of August. Lower 48 production was up 0.1 mmb/d WoW to 11.6 mmb/d this week and Alaska was flat at 0.4 mmb/d WoW. US oil production is up +0.300 mmb/d YoY at 12.1 mmb/d but is still down significantly at -1.0 mmb/d since the 2020 peak of 13.1 mmb/d on March 13.

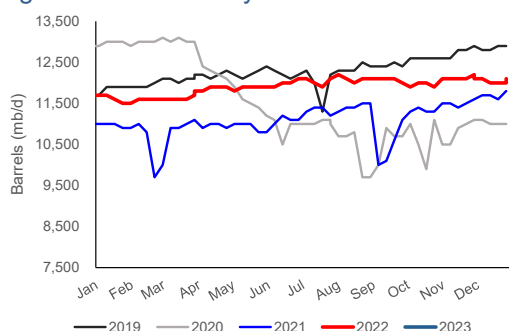
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Figure 13: EIA's Estimated Weekly US Oil Production

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
2021-Jan	01/01	11,000	01/08	11,000	01/15	11,000	01/22	10,900	01/29	10,900
2021-Feb	02/05	11,000	02/12	10,800	02/19	9,700	02/26	10,000		
2021-Mar	03/05	10,900	03/12	10,900	03/19	11,000	03/26	11,100		
2021-Apr	04/02	10,900	04/09	11,000	04/16	11,000	04/23	10,900	04/30	10,900
2021-May	05/07	11,000	05/14	11,000	05/21	11,000	05/28	10,800		
2021-Jun	06/04	11,000	06/11	11,200	06/18	11,100	06/25	11,100		
2021-Jul	07/02	11,300	07/09	11,400	07/16	11,400	07/23	11,200	07/30	11,200
2021-Aug	08/06	11,300	08/13	11,400	08/20	11,400	08/27	11,500		
2021-Sep	09/03	10,000	09/10	10,100	09/17	10,600	09/24	11,100		
2021-Oct	10/01	11,300	10/08	11,400	10/15	11,300	10/22	11,300	10/29	11,500
2021-Nov	11/05	11,500	11/12	11,400	11/19	11,500	11/26	11,600		
2021-Dec	12/03	11,700	12/10	11,700	12/17	11,600	12/24	11,800	12/31	11,800
2022-Jan	01/07	11,700	01/14	11,700	01/21	11,600	01/28	11,500		
2022-Feb	02/04	11,600	02/11	11,600	02/18	11,600	02/25	11,600		
2022-Mar	03/04	11,600	03/11	11,600	03/18	11,600	03/25	11,700		
2022-Apr	04/01	11,800	04/08	11,800	04/15	11,900	04/22	11,900	04/29	11,900
2022-May	05/06	11,800	05/13	11,900	05/20	11,900	05/27	11,900		
2022-Jun	06/03	11,900	06/10	12,000	06/17	12,000	06/24	12,100		
2022-Jul	07/01	12,100	07/08	12,000	07/15	11,900	07/22	12,100	07/29	12,100
2022-Aug	08/05	12,200	08/12	12,100	08/19	12,000	08/26	12,100		
2022-Sep	09/02	12,100	09/09	12,100	09/16	12,100	09/23	12,000	09/30	12,000
2022-Oct	10/07	11,900	10/14	12,000	10/21	12,000	10/28	11,900		
2022-Nov	11/04	12,100	11/11	12,100	11/18	12,100	11/25	12,100		
2022-Dec	12/02	12,200	12/09	12,100	12/16	12,100	12/23	12,000	12/30	12,100

Source: EIA

Figure 14: US Weekly Oil Production



Source: EIA, SAF

**Oil – North Dakota oil production still down ~100,000 b/d from freeze**

No surprise, North Dakota oil production is still down from the Dec blizzards and subsequent deep freeze. (i) On Wed, Bloomberg reported “North Dakota Oil Output Still About 10% Below Pre-Freeze Levels. North Dakota’s crude oil production returns to 90-95% of pre-winter levels after severe cold disrupted wells last month, Justin Kringstad, executive director for the state’s Pipeline Authority, says in an email. \* “The last 5%-10% is always the slowest” and it may be another 1-2 weeks for full recovery, assuming weather remains mild \* Freezing temperatures in the region halted 300k-350k b/d of the state’s oil supply at the end of December \*\* An earlier cold snap had suspended as much as 400k b/d \* In October, North Dakota produced 1.12m b/d of oil: state data.”

**North Dakota oil still down ~100,000 b/d**

**Dec blizzard knocked off >300,000 b/d of North Dakota oil production**

Here is what we wrote in our Dec 25, 2022 Energy Tidbits memo. “Last week’s (Dec 18, 2022) Energy Tidbits memo warned that the weather would cause production interruptions. North Dakota oil production will be hit in Dec and likely also Jan from the blizzard that hit last week and the cold weather. (i) On Monday we tweeted [\[LINK\]](#)

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*"North Dakota #Oil production down >300,000 b/d due to bizzard. Cold temps + Xmas break will keep some wells down to Jan. No frac/completions for ~10 days means Jan #Oil production also hit. Thx @KFYRTV. #OOTT". (ii) On Monday, KFYR TV (Bismarck) reported [LINK](#) "During his latest Director's Cut report, Department of Mineral Resources Director Lynn Helms estimated that the state is losing at least 300,000 barrels of oil produced a day due to several blizzards last week. The cold temperatures, combined with the upcoming holiday season, could keep some wells down until next year. "Once a well goes down in this weather, it can be extremely challenging to get that pumping unit running again and get all the equipment and pumps warm again so that you can maintain production," said Helms." (ii) One other factor that will impact Jan oil production is fracking/completion work is delayed. In the NDIC Monthly update, they wrote "The number of active completion crews increased to 20 before the blizzard, but there was no completion activity last week and very little is expected this week." No completions for call it 10 days or more means that Jan will be impacted. (iii) Later in the memo, we note how Cdn crude by rail will be impacted by the -25c temperatures. This will also apply to North Dakota crude-by-rail in Dec. Plus it takes time to catch up from any delays."*

### **Oil – North Dakota say Biden Admin overstepping its boundaries on oil and gas**

We always get good extra little Bakken tidbits from the local media, who meet/speak with the North Dakota officials. North Dakota says socio-political decisions are holding back oil investment and job creation. (i) On Tues, the Williston Herald reported [LINK](#) "Unfortunately, socio-political decisions make it more difficult for oil companies to take advantage of advancements in oil-drilling technologies, especially during the past decade, according to Helms. "At today's oil price, one would expect there to be 10 to 15 more rigs operating [in the Mondak] than there are," he said, emphasizing there should be a dozen more oil-rig crews in the region today. That represents at least 1,500 more well-paying jobs.". There were two areas of dispute North Dakota has with the Biden administration overstepping its boundaries. (i) Lack of quarterly land sales. Williston Herald reported "One avenue North Dakota is opting to take, in terms of mitigating federal laws that make it more difficult to drill for oil, entails filing lawsuits. "The state is going to litigate the lack of quarterly lease sales," Helms said, referring to the Biden Administration's decision to limit leasing federal lands for oil drilling. "It's costing [N.D.] millions of dollars a month." (ii) North Dakota has a similar concern as Alberta Premier Smith in that the federal govt is using regulatory actions to do things beyond their area. The Williston Herald wrote "According to Helms, the federal government has overstepped its boundary to regulate emissions standards through various U.S. agencies that are not legally authorized to enforce oil-leasing contracts. "There's so much market interference going on," he said. "You can see why the investment decisions are tough for oil and gas companies right now," Helms continued. "It's tending to hold up investment and activity." Our Supplemental Documents package includes the Williston Herald report.

**North Dakota to litigate Biden admin on oil**

### **Oil – Pioneer CEO sees 1 mmb/d less Permian oil growth to 2030**

Pioneer CEO Sheffield got some attention for lowering his expectations by 1 mmb/d for Permian oil growth potential to 2030 at a US sellside conference on Thurs. (i) Pioneer is one of the leading Permian oil players and that should give Sheffield a leading insight into the Permian potential. Sheffield said "Also, I'll make a point. Chevron made a point recently that they were going to 1.2 million to 1.5 million barrels of oil equivalent per day by

**Pioneer sees 1 mmb/d less Permian oil growth**

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2040. But the first time somebody put out a number that far, there's only three companies in my prediction that will be over 2030 in the Permian Basin, over 1 million barrels of oil equivalent per day; that's Chevron, Conoco and Pioneer. They're the only three that have an inventory that deep, can take it over 1 million barrels of oil equivalent per day. So his reducing the Permian oil growth by 1 mmb/d is a significant global oil factor for the 2020s and 2030s unless oil demand stops increasing as the Net Zero side assumes. But assuming oil demand grows, then it will place more control into OPEC and selected basins such as Guyana. (ii) Sheffield said a year ago, he expected Permian to be 8 mmb/d by 2030, but now he sees it at 7 mmb/d. "We have the Permian about a year or two ago. As stated, it was going to go to about 8 million barrels a day to 2030. The EIA has it at 5.5 million barrels of oil per day. We have lowered that to about 7 million by 2030." So growth, but less growth. (iii) Less growth, but Sheffield believes it can be held flat for 30 years. Sheffield said "So, we took the vertical Spraberry, the conventional from 160s to 80s to 40s to 20s. So, one of the long pluses of the Permian once it hits that peak at 8, 7 -- call it 7, whether it's 7.5 or 6.5, it's going to stay flat for about 30 years, in my opinion. So, people will continue to down space, oil price will be higher, they'll get more capital efficiency, so never expect the Permian to roll over in my opinion. It will be flat for a long time once it beeps" (iv) Sheffield highlights two reasons. "The reason we've lowered it is that people, obviously, the effects of moving to what I'll call stack development in both the Delaware and also in the Midland Basin and that's combining the -- either the Bone Springs or the Spraberry depending on which basin you are in, the shallower formation with the Wolfcamp zones. It's better to drill four wells or six wells up all at the same time to get the best performance,". "Yeah. I think, one of the words I wanted to focus on is as a reservoir engineer in my entire life, the grading is probably the wrong term to use that the market's using. So, when you combine the true degrading from a reservoir engineering standpoint is when you down space the well and you're robbing barrels from the other well that is what I call as degrading. So, you're taking -- you're drilling your wells too close. Instead of 800 to 1,000 feet, you're drilling at 600 feet. And then, you potentially could be, if you're not careful, you're going to be robbing oil from the other, it's going to affect the decline curve of the original offset well. That's true degrading. By combining Spraberry, Bone Springs with Wolfcamp and seeing lower productivity is not degrading in my view, but it's a combination of -- some companies are truly degrading and some companies are just it's the best way to develop the resource. So, it's a combination of both of those, Neil, with what's happening over the next several years and what's happening now." So there is degrading and drilling more lesser potential zones. (v) He didn't describe it the way we have but the having degrading and drilling lesser potential zone lead to the same place -- lesser production potential and faster overall decline rates. In his degrading example, the wells may come on fast, but they will drain lesser reserves faster. (vi) The other factor he highlights is the increasing gas/oil ratio. All oil plays that have associated NGLs and natural gas have a gas to oil ratio that increases over time. This is the way it is for all oil plays with associated natural gas and NGLs. This means that natural gas won't decline as much as oil in a declining Permian oil wells.

#### **Oil – Permian oil growth challenge – increasing decline rates in Permian oil wells**

Since the Permian oil growth potential was in the news, on Friday, we tweeted [LINK](#) "See 📌 overlooked fundamental on Permian oil wells. and why there is the challenge for sustained strong Permian #oil growth. Permian can certainly grow, but how much before they move to focus on keeping production flat? #OOTT." We linked to our Dec 13, 2022 tweet on the

**Increasing decline rates in Permian oil wells**

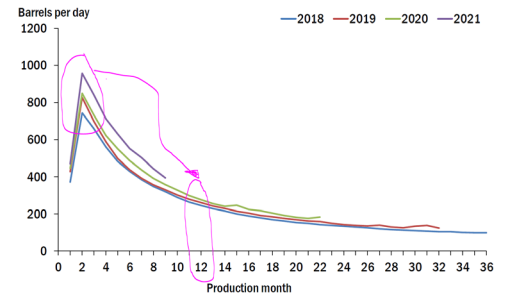
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Dallas Fed Permian Basin decline curves. Here is what we wrote in our Dec 18, 2022 Energy Tidbits memo. *“The Permian has been and is expected to be the major growth engine for US oil production for the coming years. Our concern is that there is a key overlooked factor as to why the math points to Permian oil growth rate will be slowing down and challenged for sustainable growth unless industry cranks up drilling. (i) On Tuesday, we tweeted [\[LINK\]](#) “Hmm! Overlooked @DallasFed new high IP #Permian wells are down to same prod 12 mths out as lower IP wells ie. steeper decline/faster treadmill. How can #Permian sustainably grow unless rigs crank up big as DUCs/rigs are ~5 yrs ago levels when oil prod was ~1/2 today. #OOTT.” (ii) The Dallas Fed regularly posts a slide deck recap of energy data/indicators. [\[LINK\]](#) that doesn’t drive many comments. But there were a few slides that jumped out at us and suggest that, unless the oil sector changes and starts cranking up drilling and completions big time, it’s hard to see why Permian oil growth won’t be slowing down and soon be challenged for any sustainable growth. (iii) Please remember if the Permian oil growth rate is less than expected, it also means Permian associated natural gas and NGLs will be less than expected. (iv) It’s math. There is one big overlooked data point by almost everyone. Most people don’t realize that Permian wells, no matter how high the initial production rate is will basically normalize to around the same level in 12 months or within a small difference. This means that newer vintage wells have higher IP but also much higher decline rates so the treadmill is running faster such that 12 months out, their oil production isn’t much different than older vintage wells. This is not what most people expect. (v) Please note we are saying about half. We don’t have the data to the graphs to know if it’s 50% or 55% or 48%, but the graphs show it about half. (vi) Permian oil production has basically doubled in the past five years in a significant part by the drawdown of DUCs. Drilling rigs are basically around the same level as five years ago, which production was about half today’s levels. The work down of DUCs means DUCs are about the same level as five years ago when DUCs only had to support a production level about half today’s levels. (vii) Then the overlooked factor – the Dallas Fed data shows that no matter how high the initial production, the production rate falls to close to the same level 12 months out. Maybe 50 b/d a month variance. So drilling rigs and DUCs are about the same level as five years ago, when production was about half of the Permian’s 5.2 mmmb/d. And the new wells have higher IP rates to support the recent growth, but also decline more so the treadmill is running faster. That makes the challenge to replace and grow even tougher. Again, unless oil industry cranks up and starts drilling more. (viii) Note for the below Dallas Fed graph says oil production. We are assuming that there is no real change in gas/oil ratio in the first 12 months. Remember that in any oil plays that produce associated natural gas & NGLs (ie. Permian, Bakken) see the gas/oil ratio increase overtime. (ix) This overlooked factor is the Catch 22 of drilling bigger wells, they tend to normalize to the same production level after 12 months so the higher rate newer wells must decline faster and the treadmill runs faster. So unless industry drills and completes more and more wells every year, the math says it’s hard to see how the Permian sustainably grows as what many expects. Below are the three key Dallas Fed slides.*

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Figure 15: Permian Basin Crude Oil Decline Curve by well vintage

**Permian Basin Crude Oil Decline Curve**

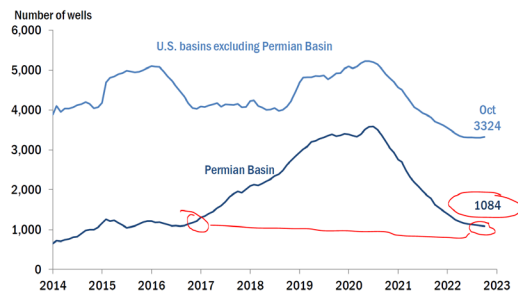


Federal Reserve Bank of Dallas  
 NOTES: Depicts average crude oil production per well and is based off first production date. Last updated 7/1/22; chart is updated semi-annually.  
 SOURCE: WellDatabase.

Source: Dallas Fed

Figure 16: Permian Basin DUCs

**Drilled but Uncompleted Wells**

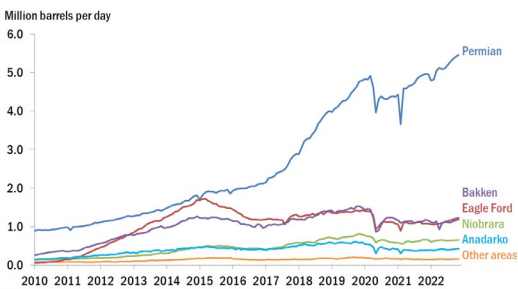


Federal Reserve Bank of Dallas  
 SOURCE: Energy Information Administration.

Source: Dallas Fed

Figure 17 Texas Crude Oil Production by Region

**Crude Oil Production by Region**



Federal Reserve Bank of Dallas  
 NOTE: "Other areas" include Haynesville and Marcellus.  
 SOURCE: Energy Information Administration.

Source: Dallas Fed

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**Exxon sees lower Permian oil growth with DUCs caught up**

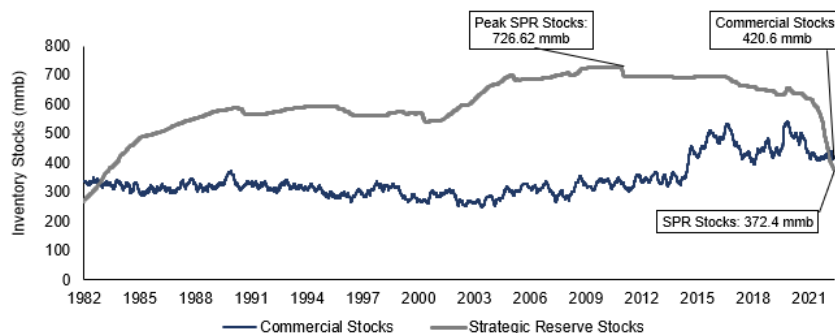
Our Dec 11, 2022 Energy Tidbits memo featured comments from Exxon CEO Woods at Exxon's Dec 8, 2022 investor webcast. Here is what we wrote "There was a good reminder of why the math supports lower US oil growth rates post 2022 from the Exxon webcast on Thursday – the build up of DUCs in 2020 have been worked down in 2021 and 2022 and that has led to stronger YoY growth rates in 2021 and 2022. As the Q&A was going on, we tweeted [\[LINK\]](#) on the first question in the Q&A on Permian growth. We tweeted [\[LINK\]](#) "Lower Permian #Oil growth rate as DUCs worked thru in 21/21. 7:40am MT, #Exxon Q&A. CEO Woods expect ~20% Permian growth this year, but "going forward, i would say a more ratable growth of 10% per year roughly". DUCs down = less US growth is for US in total, not just XOM. #OOTT" CEO Woods said "And thank you for the question. I mean, just maybe give some context, you know, we've increased our Permian production into 21 at 25% this year, we expect to finish at around 20%. As we go forward, I would expect that to come down as we work through the DUC inventory that we generated during the pandemic and have been working off in '21 and 2022. And so, going forward I'd say more ratable growth of about 10% per year roughly."

**Oil – US SPR reserves now -48.3 mmb 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, with the deficit widening this week. The EIA's new weekly oil data for Dec 30 has SPR reserves at 372.4 mmb vs commercial crude oil reserves at 420.6 mmb. The below graphs highlight the difference between commercial and SPR stockpiles.

**SPR reserves remain lower**

Figure 18: US Oil Inventories: Commercial & SPR

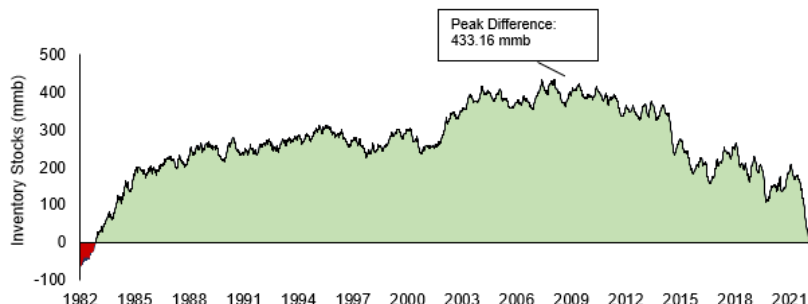


Source: EIA

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Figure 19: US Oil Inventories: SPR less commercial



Source: EIA

**Oil – Cdn oil differentials narrowed \$1.15 WoW at \$26.60**

It's been a rocky month for Cdn oil differentials with the Keystone shut-in, expectations for less of an impact, then moving to uncertainty for a return, then some narrowing two weeks ago with the partial restart with the UnAffected Portion and then last week with the restart of the Affected Portion. Last week, the WCS-WTI differential was \$27.75 on Dec 30, and narrowed this week by \$1.15 to \$26.60 o close on Jan 6. For perspective, a year ago, the WCS-WTI differential was \$12.40 on Jan 6, 2022. Below is Bloomberg's current WCS-WTI differential as of Friday Dec 30 close.

**WCS less WTI differentials**

Figure 20: WCS less WTI oil differentials including Jan 6 close



Source: Bloomberg

**Oil – Refinery inputs -2.330 mmb/d WoW to 13.820 mmb/d due to cold weather**

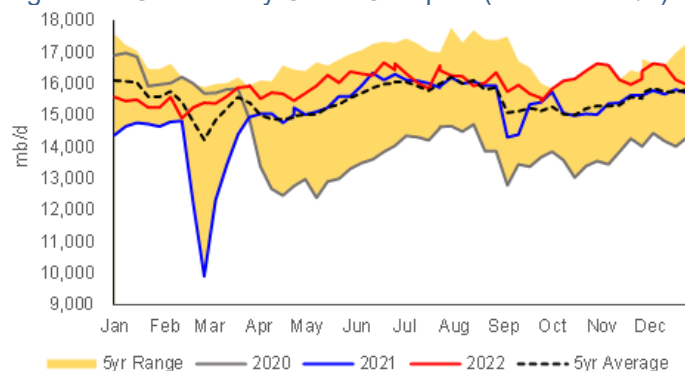
There was a big reduction in refinery crude oil inputs driven by a number of temporary outages in the Gulf Coast with the cold weather. On Thursday, the EIA released its estimated crude oil input to refinery data for the week ended Dec 30. The EIA reported crude oil inputs to refineries were down -2.330 mmb/d WoW to 13.820 mm/d, which is -2.047 mmb/d YoY from 15.867 mmb/d for the week ended Dec 31, 2021. Note last year's week ended Dec 31, refineries saw a ramp up to produce winter fuels before refineries go into the turnaround in Q1 to switch to more summer fuels. Last year also saw a surprising refinery utilization of 89.8%, which is high for the holiday season. This weeks refinery utilization was 79.6%. Total

**Refinery inputs down WoW**

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products supplied (i.e., demand) decreased WoW, down -4.631 mmb/d to 18.190 mmb/d, and Motor gasoline was down -1.813 mmb/d at 7.514 mmb/d from 9.327 mmb/d last week. The 4-week average for Motor Gasoline was down -0.636 mmb/d YoY to 8.452 mmb/d.

Figure 21: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

**Oil – US “net” oil imports down -1.282 mmb/d WoW to 1.505 mmb/d**

US “NET” imports were down -1.282 mmb/d to 1.505 mmb/d for the Dec 30 week. US imports were down -0.540 mmb/d to 5.712 mmb/d. US exports were up +0.742 mmb/d to 4.207 mmb/d. The WoW decrease in US oil imports was driven mostly by Top 10, specifically Canada and Mexico, with an overall decrease of -0.745 mmb/d. Some items to note on the by country data. (i) Canada was down this week -0.555 mmb/d to 2.949 mmb/d. (ii) Saudi Arabia was relatively flat at 0.479 mmb/d. (iii) Colombia was flat at 0.357 mmb/d. (iv) Ecuador was down this week -0.187 mmb/d to 0.087 mmb/d. (v) Iraq was up 0.065 mmb/d to 0.354 mmb/d. (vi) Mexico was down -0.153 mmb/d to 0.428 mmb/d.

**US “net” oil imports down WoW**

Figure 22: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Oct 21/22	Oct 28/22	Nov 4/22	Nov 11/22	Nov 18/22	Nov 25/22	Dec 2/22	Dec 9/22	Dec 16/22	Dec 23/22	Dec 30/22	WoW
Canada	3,483	3,410	3,235	3,076	3,844	3,354	3,423	3,795	3,066	3,504	2,949	-555
Saudi Arabia	325	533	519	211	685	338	274	317	513	473	479	6
Venezuela		0	0	0	0	0	0	0	0	0	0	0
Mexico	509	748	503	528	495	300	585	602	632	581	428	-153
Colombia	215	218	341	143	170	290	292	248	71	353	357	4
Iraq	220	134	503	141	385	363	252	282	227	289	354	65
Ecuador	201	0	102	101	42	242	159	157	70	274	87	-187
Nigeria	42	81	119	181	43	50	159	171	136	66	141	75
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0
Top 10	4,995	5,124	5,322	4,381	5,664	4,937	5,144	5,572	4,715	5,540	4,795	-745
Others	1,185	1,081	1,132	1,178	1,399	1,100	868	1,295	1,104	712	917	205
Total US	6,180	6,205	6,454	5,559	7,063	6,037	6,012	6,867	5,819	6,252	5,712	-540

Source: EIA

**Oil – Baker Hughes International rigs -10 MoM to 900 rigs in December**

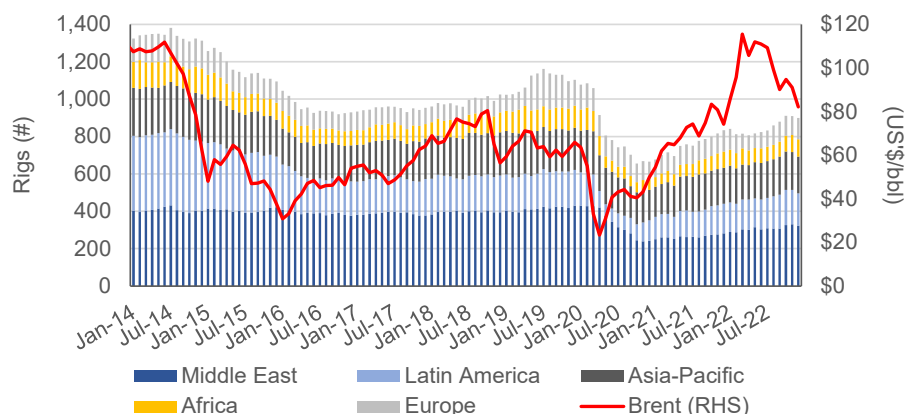
Baker Hughes posted its monthly update to international rigs on Friday, which showed a another small decline in rig counts. December marked the second consecutive month of declining rig counts following six consecutive months of increasing rig counts. Note International rigs don’t normally see a dip during the holiday season like Canada does. (i)

**International rigs -10 MoM**

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Total international rigs were -10 rigs MoM to 900 rigs in December likely due to softening oil prices, but is still up from the recent bottom of 806 in April. Dec 2022 rigs are +66 rigs YoY from 834 in Dec 2021. (ii) Ukraine had the largest MoM increase of +6 rigs at 33 active rigs in December and is up from bottom of 5 at time of Russian invasion and only down 6 YoY from 39 pre Russian invasion. (iii) Other Mom changes to note. Nigeria was +1 rigs MoM to 12 rigs, the highest level since April 2020 of 16 rigs. Libya’s rig activity has been hit by internal conflict and uncertainty recently, but added +1 rigs totaling 9 in December, from a low of 2 in August. Russia has been hit in the major project area, Sakhalin, with rigs dropping to zero in May and June after maintaining a steady 5 rigs for 17 months. (iv) December of 900 rigs were +8% YoY from 834 in December 2021, but still down 15% vs pre-Covid March 2020 of 1,059 rigs. The YoY rig count is as follows: Asia-Pacific +4, Africa +5, Europe +1, Latin America +15, and the Middle East +41. North Sea rigs were up +1 rigs MoM with the UK flat at 10 rigs and Norway up +1 rigs respectively. Latin America continues to be strong with Columbia and Argentina both up YoY at +9 and +8 respectively. (v) Rig counts continue to be solid in the major Persian Gulf countries, but still below pre-Covid levels. Since December 2019, Saudi Arabia is -35 rigs, Iraq -22 rigs, UAE -13 rigs, and Kuwait is -14 rigs. Below is our graph of international rigs by region and avg monthly Brent price.

Figure 23: Baker Hughes International Rig Count and Brent Price



Source: Baker Hughes, Bloomberg

**Oil – Increasing Colombia oil coming into US Gulf Coast PADD 3**

As noted above, US imports of Colombia oil have increased in the past few weeks from 71,000 b/d for the Dec 16 week, to 353,000 b/d for the Dec 23 week, and to 357,000 b/d for the Dec 30 week. The EIA doesn’t provide imports by country for each PADD until a couple months later so we do not have the splits of the last two weeks of US oil imports from Colombia by PADD. However, looking back at the US oil imports from Colombia, the past year has been around 50,000 b/d into the West Coast PADD 5 and the swing tends to be how much goes into the Gulf Coast PADD 3. If that approximate 50,000 b/d holds, that would mean there is around 300,000 b/d of Colombia oil into the Gulf Coast PADD 3 over the past two weeks. The more Colombia oil into the Gulf Coast has a negative impact on Cdn oil differentials.

**Colombia oil into Gulf Coast**

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### Oil – Chevron expected to import 800,000 bbl from Venezuela in Jan

It may not be huge, but the reports are consistent that Chevron will be starting imports of Venezuela oil in January to its Pascagoula (Mississippi) Refinery that processes 350,000 b/d of crude oil. Last week's (Jan 1, 2023) Energy Tidbits noted the first reports that Chevron was about to commence imports of Venezuelan oil into the Gulf Coast and was also sending diluent to Venezuela for blending. (i) Last week, we only noted the reports confirming a 500,000 bbls tanker from Venezuela. The confirmation of a 500,000 bbls tanker from Venezuela. On Thurs, Bloomberg reported that Chevron will be importing 800,000 bbls (the previously noted tanker plus an additional 300,000 bbls tanker) in Jan. (ii) Bloomberg also confirmed the 600,000 bbls tanker carrying naphtha for blending being sent to Venezuela. (iii) Bloomberg also noted "On Dec. 21 the explorer resumed drilling at the Boscan oil field, where it first struck oil more than a hundred years ago. Initial production at the oil field is seen at 11,000 barrels a day, according to PDVSA internal documents seen by Bloomberg." This was interesting as most have been assuming, based on Chevron CEO Wirth public comments, that Chevron wouldn't be doing any drilling for at least six months. Our Supplemental Documents package includes the Bloomberg report.

### US oil imports from Venezuela

### Nov 26, Chevron got US license to restart Venezuela production & import to US

Here is what we wrote in our Nov 27, 2022 Energy Tidbits. "Yesterday, we tweeted a few times on the big breaking oil news that the Office of Foreign Assets (Treasury Department) issued General License No. 41 that authorizes Chevron to restart its operations with PDVSA in Venezuela. [\[LINK\]](#). It is very important to read the license because it allows Chevron to basically do what it needs to do to ramp up its production and import Venezuela oil to Chevron refineries in the Gulf Coast. This includes items like bringing in the necessary goods and services, including needed diluent and condensate, to increase its production and oil to the Gulf Coast. Politics aside, this is a significant negative to Cdn oil differentials as Chevron ramps up production and brings Venezuela oil to its Gulf Coast refinery. More Venezuela oil to the Gulf Coast is expected to hurt Cdn oil differentials. (i) Our first tweet was [\[LINK\]](#) "Negative to Cdn #Oil differentials, puts at risk Cdn oil to PADD 3. #Chevron can export needed diluent to blend w/ VEN heavy & import oil to CVX refineries, 350 kb/d Pascagoula. Automatically renews on 1st day of mth & valid for 6 mths therefrom. #OOTT [\[LINK\]](#)." (ii) Our second tweet was [\[LINK\]](#) "Here's why letting #Chevron restart in Ven puts Cdn #Oil differentials at risk in 2023. See linked 📌 03/22/22 tweet. CVX reportedly told Biden Admin could double VEN 800,000 b/d production "within months". Thx @cmatthews9 @Jose\_deCordoba. #OOTT." Note that we would expect the limited conditions of General License 41 do not allow for a near term doubling of Venezuela oil production, but an increase of even 100,000 or 200,000 b/d would be significant to Cdn oil as these incremental barrels will come into PADD 3. Certain things will happen quickly such as what will Chevron being able to bring stable diluent/condensate for immediate blending opportunities, and bring diesel for providing needed power to drive operations. Diluent and diesel can have a quick impact. We were linking to the below item on Chevron's reportedly saying they could double production. (iii) Our third tweet [\[LINK\]](#) was a reply to a tweet that said "this is a real problem for WCS". Our reply was "key is US allows CVX to buy & import into VEN goods or inputs needed to produce, repair, service, export crude, health/safety of operations incl diluents, condensates, petroleum or natural gas

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*products. ie. spend/do what they need to do. #OOTT". The license is basically saying o Chevron do what you have to do and get what you have to get to increase production and exports. This will not be like Venezuela trying to increase production without diluent, without equipment, without people, etc. This is why we believe it is important to read the license."*

### **Chevron bringing diluent and diesel should have a quick impact**

Chevron is sending naphtha to Venezuela, which will have an immediate impact and is in need in Venezuela. Here is another item from our Nov 27, 2022 Energy Tidbits. *"We recognize that the vast majority of the quick views on Chevron's return are to not expect any response for a long time. We reiterate its worth reading the details of the license. There are items that should have a quick impact on production and exports, in particular diluent for blending and diesel to provide power. Our view is unchanged from what we wrote in our March 27, 2022 Energy Tidbits – we believe Venezuela could double its production in a matter of a year or two with access to equipment, people, diluent, diesel, etc. As noted above, we expect there will very quick production gains from items such as the ability for Chevron to bring stable flows of diluent, condensate and diesel to Venezuela. We have seen over the past year how Venezuela production increased in great part to getting diluent from Iran. Diluent is needed to blend with the Venezuela extra heavy oil to make it moveable via pipeline. A steady access to diluent would be a key factor to increasing Venezuela oil production. Diesel will also be a quick impact. Plus reliable power, oil and gas operations need power and Venezuela has been hit for several years with power outages and unreliable power. Bringing in diesel and generators to provide power can have a very quick impact Plus recall the reports from a couple years ago on how some PDVSA oil workers were selling their tools so they could put food on the table. We suspect there are hundreds of wells that are shut-in because of a pump jack went down and there are no replacement parts. We suspect there are hundreds of wells that could use workovers, they need equipment parts, tools to service and people. These are a just a few of the likely reasons why it's likely that Venezuela could double its oil production within a reasonably short period. Venezuela was double current production 4 years ago."*

### **Chevron reportedly said could double Venezuela's 800,000 b/d within months**

Our Nov 26, 2022 tweet referenced Chevron's comments from March. Here is what we wrote in our March 27, 2022 Energy Tidbits memo. "On Tuesday, we tweeted [\[LINK\]](#) on the WSJ report "Chevron, Waiting It Out in Venezuela, Tells U.S. Now Is the Time to Pump Oil Company pledges to make up for fall in Russian exports". [\[LINK\]](#). Chevron reportedly is telling the administration they can double Venezuela's oil production within months. The WSJ wrote "For months, Biden administration officials snubbed top executives and lobbyists for Chevron Corp. who had pressed officials in Washington to ease sanctions so the company could boost production in Venezuela, where the U.S. has banned such activities since 2019. Then Vladimir Putin invaded Ukraine. Now the Biden administration is listening closely to Chevron, say people familiar with the conversations, which says it can help double Venezuela's 800,000 barrels-a-day production within months. That could replace the loss of roughly 700,000 barrels a day the U.S. was importing from Russia before it attacked Ukraine. And it could help lower gasoline prices—a major concern for the Biden administration in a tough election year." Our Supplemental Documents package includes the WSJ report.

### **Huge Chevron Venezuela oil production capacity without drilling a single well**

The Bloomberg report this week noted Chevron has started drilling. Last week's (Jan 1, 2023) Energy Tidbits wrote "Chevron CEO has said they aren't planning to drill in the first six months, which is why we think most didn't see any Venezuela oil barrels into the Gulf Coast. We have had a different view from the start – we believe there are multiple items Chevron can do to increase oil production and supply for export without drilling a well Here is what we wrote in last week's (Dec 25, 2022) Energy Tidbits memo. "There was an overlooked Argus report on Wed [\[LINK\]](#) "High hurdles to grow Chevron's Venezuela oil output." It was likely overlooked for the title of the report. (i) But, yesterday, we tweeted [\[LINK\]](#) "Tip of the Iceberg! Chevron VEN Nov production is ~90,000 b/d, 1,400 wells, ~65 b/d ave well. Note 📌 category 2: ~8,700 wells need ~\$0.5 mm/well to become operational. At 65 b/d ave = ~550,000 b/d capacity add without drilling one well. Thx @ArgusMedia Carlos Camacho! #OOTT." Note there were comment on how many of these 1,400 wells were shut-in because they were marginal wells. We disagree with that view. This wasn't the number of wells that were uneconomic, rather this the number of wells being classified as worthy of spending approx. \$0.5mm to restore. And we tweeted [\[LINK\]](#) "should have added. doubt Chevron would put non-producing wells that had been producing at low rates into Category 2 wells that are worthy of spending ~\$500k per well remedial work if it was to only get the well back to low stripper well type production rates. #OOTT." (ii) The Argus report reminds of the huge near term upside For Chevron to add production in Venezuela without drilling one well. (iii) Recall that the US only gave a waiver for six months. It s a rolling six-month waiver as the current month ends so it's basically saying to Chevron you have six months from today, but no guarantee for longer. This lack of visibility beyond the six-month window is why Chevron CEO said they aren't planning to do any drilling within six months. Rather working to move the existing oil in inventory and do some well reworking. (iv) Chevron's go-slow plan looks to add >110,000 b/d in the next six months in the Occiente basin. I think most refer to it as the Oriente Basin. Production was 150,000

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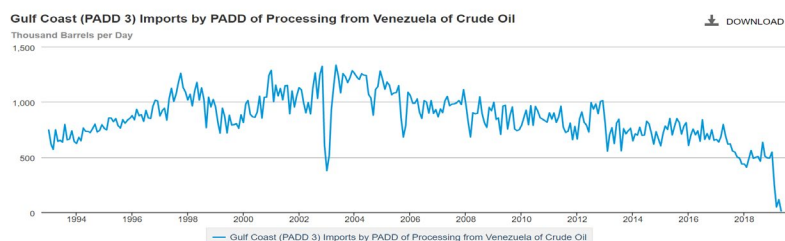
*b/d early this year and is down to 90,000 b/d in Nov. Argus reports “An internal Chevron plan to increase Venezuelan oil production to 200,000 b/d by mid-2023 relies on efforts to rehabilitate some 18,000 wells in various states of disrepair in the country's once-prolific Occidente region”. This addition makes sense given the rolling six-month term and what we call the go-slow plan. (v) Adding >110,000 b/d by mid-2023 is the Tip of the Iceberg. (vi) We believe Chevron could crank up to add another 200,000 b/d by end of 2023, and a further 200,000 b/d or likely a lot more in 2024. We don't think it's unreasonable to see this up at 500,000 b/d to 1,000,000 b/d in two years if Chevron moves from a go-slow to a get-at-it plan. And this is without drilling one new well. This Argus report shows these elements. (vii) There is so much low-hanging fruit to Chevron to grow Venezuela oil production without drilling any wells. It's all existing wells that need some sort of work or power. (viii) Remember, this is apart from the previously reported 1.79 mmb of oil in storage ready for export. (ix) Argus reporting on an internal Chevron plan. Says “Occidente” region was 150,000 b/d earlier in 2022, but is now down to 90,000 b/d in Nov. Says there are 18,000 wells in total. But only 1,400 producing wells, that is ~65 bpd per well on average. Remember, this is in an industry starved for capital, equipment and basic operating efforts. The question is how much would these 1,400 producing wells be producing with proper maintenance, etc? we suspect a lot more than 65 bpd, would guess something over 100 bpd on average. Category 1 is producing wells. ~7% or 1,400 wells producing oil “but many at decline rates”. As noted, these are on average producing 65 bpd. They don't say it, but these heavy oil wells are all likely now or soon to be candidates to reworking so we would expect also some upside here to effectively hold production if not increase. Category 2 is the huge low hanging fruit with “About 8,700 wells fall into Category 2, which includes non-operating wells that may just need minor work to become operational. These wells may need around \$500,000 each in new investment to be viable, according to sources familiar with the field.” If we use the current producing average of 65 bpd, that is ~550,000 b/d of incremental production capacity for \$4.35 billion. That assumes the 65 b/d average. Is it reasonable to assume the average as these are wells that down for some reason? If Chevron is prepared to spend \$500,000 per well, it's safe to say these aren't stripper wells that produce a very low amount of production. Rather, we can't believe Chevron would put in this category any wells that aren't capable of a decent level of production and we suspect much more than the average well of 65 b/d. Again, this is not drilling, rather we expect well cleanouts, reworking, etc. If use 100 bpd, that is 870,000 bpd of incremental production capacity. Category 3 “are more than 7,900 wells that need between \$5mn-\$6mn of investment each to be commercially viable”. We are not clear what is required here. Plus upside from wells that don't fit in to category, 1, 2 or 3. Argus notes ‘Hundreds of wells in the PdV report are reportedly shut down just for a lack of reliable electricity, which plagues many parts of the country’. This is where something like diesel power generation comes into play. The reality is that reliable power is something that is also involved in the above categories. Our Supplemental Documents package includes the Argus report.”*

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### A return of Venezuela is negative for Cdn differentials

Our Nov 26, 2022 tweet reminded that more Venezuela oil to the Gulf Coast is a negative to Cdn oil differentials. Our tweet included the below EIA crude oil imports in PADD 3 (Gulf Coast) graphs, which remind how Cdn heavy/medium crude was able to penetrate PADD 3 (Gulf Coast) because there was a need with declining Mexico and Venezuela crude oil. Conversely, if Venezuela increases, it will mean more Venezuela crude to the Gulf Coast and less need/increased pressure on Cdn differentials.

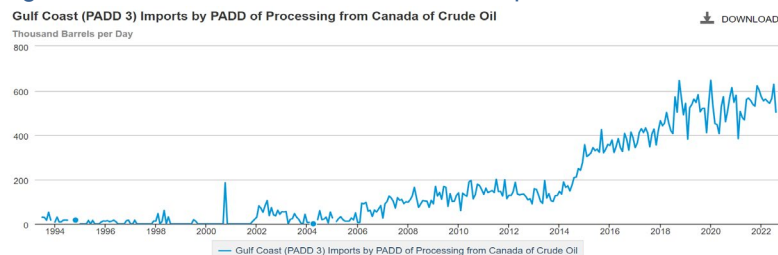
Figure 24: Gulf Coast PADD 3 Crude Oil Imports From Venezuela



eia Source: U.S. Energy Information Administration

Source: EIA

Figure 25: Gulf Coast PADD 3 Crude Oil Imports From Canada



eia Source: U.S. Energy Information Administration

Source: EIA

### Especially since Chevron has 460,000 b/d of refining capacity in Gulf Coast

Our Nov 26, 2022 tweets also reminded that Chevron has its 350,000 Pascagoula refinery that could take Venezuelan crude oil. The General License 41 says “Sale to, exportation to, or importation into the United States of petroleum or petroleum products produced by the Chevron JVs, provided that the petroleum and petroleum products produced by the Chevron JVs are first sold to Chevron;” Chevron has two refineries in the Gulf Coast, one of which would take Venezuelan crude. (i) Pascagoula (Mississippi) refinery. [LINK](#) “Chevron’s Pascagoula Refinery processes 350,000 barrels (14.742 million gallons) of crude oil a day - an amount equivalent to the size of a football field covered to a depth of 41 feet. Chevron Pascagoula Refinery is primarily a fuels refinery, in that we mainly manufacture motor gasoline, about 130,000 barrels per day (BPD); jet fuel, 50,000 BPD; and diesel fuel, 68,000 BPD. Our other products include fuel oils such as Liquefied Petroleum Gas (LPG),

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aviation gasoline, petroleum coke and sulfur.” (ii) Pasadena Refinery (Texas) processes light sweet crude so would not process Venezuelan crude. [\[LINK\]](#) “From gasoline, gasoline components, and distillate oils, to fuel gas and liquefied petroleum gas, the Chevron Pasadena Refinery manufactures products people use every day. Capable of processing up to 110,000 barrels of crude oil per day, we refine 100 percent Texas light, sweet crude, including Chevron-produced oil from the Permian Basin.”

### Oil – Should we expect a return to Houthi drone attacks on Saudi oil infra?

The temporary truce ended in October, but there wasn't a big escalation in Saudi coalition or Houthi fighting. But that seems to have shifted over the past two days. The Houthis said enough is enough yesterday and that it was time for an unprecedented military response and the States of aggression of must bear the consequence. Then today, it looks like Saudi Arabia took notice of the Houthis warning yesterday and so decided to launch their own drone attack on the Houthis earlier today. (i) Earlier this morning, Bloomberg reported “Houthi-run al-Masirah TV reported on Sunday that the Saudi-led coalition launched 12 drone strikes on the Houthi positions in Yemen's Red Sea port city of Hodeidah in the past 24 hours. The attacks were among “164 breaches of the truce in the city committed by the coalition forces, including an attempted advance by the ground forces on Hays district in the southern part of the city,” it said. The Saudi-led coalition and the Yemeni government have not commented yet on the allegation.” As of our 7am MT news cut off, our review of Saudi media sites had no mention of the drone attacks. (ii) Yesterday, the Houthis warned they have had enough of the repeated infractions, and that it was time for an unprecedented military response and that “the States of aggression must bear the consequences”. That sounds like a warning on drone attacks on Saudi oil infrastructure. SABA (Yemen News Agency) reported [\[LINK\]](#) “Sana'a has repeatedly warned through its officials about the gravity of this issue and the consequent suffering of the population, The United Nations called for intervention and action to resolve the issue of the embargo as a war against humanity, for its direct impact on the daily lives of millions of Yemenis and the departure of economic sectors from work. However, as is known, the United Nations, which has failed to resolve any issue at the international level, as an organization by colonial Powers, conducts its work in accordance with the interests and aspirations of those States, how else do we understand this suspicious silence by the officials of this international Organization in addressing and resolving an issue affecting the lives of an entire people? And where is humanity from that? Are human rights principles only for media consumption? A million marches have warned yesterday in the capital Sana'a and Yemen's governorates, one of the consequences of the continued blockade, which must be met with an unprecedented military response. Yemenis affirmed that the unconditional opening of Yemen's ports and airports is a legitimate and bargain-free demands, Yemen's citizens in the north, south, east and west of the country are agreed-upon and the States of aggression must bear the consequences.” Our Supplemental Documents package includes the Bloomberg and SABA reports.

**Saudi drone  
attack on  
Houthis**

### Oil – Libya NOC says oil production continues to be stable at ~1.2 mmb/d

We have to give the Libya National Oil Corporation credit that it's been able to keep oil production pretty stable right around 1.2 mmb/d for the past couple months. Yesterday, the Libya National Corporation posted on its Facebook [\[LINK\]](#) a short update on oil production.

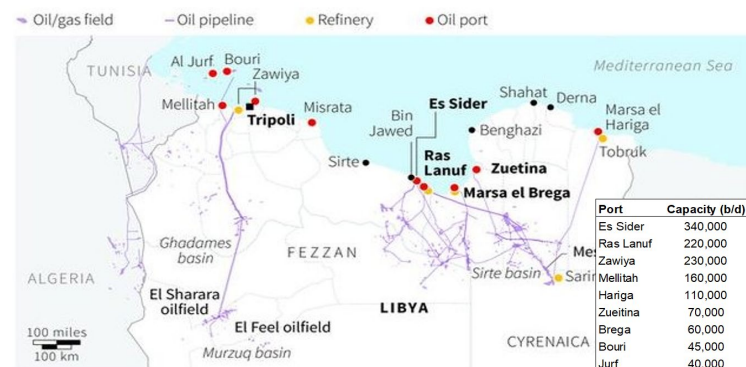
**Libya oil  
production  
stable at ~1.2  
mmb/d**

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The Google Translate was “Crude oil production reached 1,209,000 barrels and condensate production reached 47,000 barrels during the past 24 hours.”

Figure 26: Libya Ports, Major oilfields and Terminals map

SAF Group Compiled Libya Ports & Terminals Status



Source: Bloomberg, HFI Research, SAF

Source: SAF Group

### Oil – Covid spreading event, China Spring Festival travel rush started yesterday

Yesterday, we tweeted [LINK](#) “Biggest spreader event possible, Spring Festival travel rush kicked off today. China will be speeding towards herd immunity. May be bumpy over next month or so, but would seem to set up more sustained #Oil fuels demand recovery in Q2. #OOTT.” No one knows the Covid count but everyone believes Covid has raced through the Chinese cities and is about to charge thru rural areas as people go home for Spring Festival. It will inevitably be the Covid spreading event. (i) Travel for Spring Festival started yesterday ahead of Jan 22 Chinese New Year. Our Friday tweet [LINK](#) “China moving to herd immunity with surge of Covid infections. Spring Festival travel will make sure it gets there. Passenger trips +99.5% YoY, back to 70.3% of pre-Covid. Daily civil flights back to 73% of pre-Covid. Sets up 2023 demand recovery. #OOTT.” Our tweet linked to the WSJ report [LINK](#) ““Passenger trips in China over the coming Lunar New Year holidays are expected to jump 99.5% compared with last year’s holidays, after Beijing’s abrupt reversal of its zero-Covid strategy last month removed most of the country’s travel restrictions. The travel rush over the period, which runs from Jan. 7 to Feb. 15 this year, is expected to see around 2.1 billion trips, which would be 70.3% of the number seen in 2019, Xu Chengguang, deputy head of the Ministry of Transportation, said in a press conference Friday. Visits to family and friends are expected to account for 55% of the traffic while job hunters will be about 24% and the rest equally split between tourism and business travel, according to Mr. Xu.” (ii) Earlier this morning, we tweeted [LINK](#) on the biggest spreader event possible, the 1<sup>st</sup> Spring Festival without Covid restrictions started yesterday. We referenced the Global Times Saturday night report [LINK](#) “China ramps up efforts to ensure safe travel amid surging passenger numbers on first day of Chunyun” that noted “Some 6.3 million trips are expected to be made using China’s railways on Saturday, according to China Railway. More than 10,000 domestic flights are scheduled on Saturday, a year-on-year increase of 13 percent, while the daily passenger volume is forecasted to exceed one million, reaching a peak unseen in several months, Caacnews.com reported, citing data from Umetrip.” Our Supplemental Documents package includes the Global Times report from last night.

Spring Festive  
travel started

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**Pfizer's "What is herd immunity?"**

Here is Pfizer's explanation. [\[LINK\]](#) **"What is herd immunity?"** *Herd immunity occurs when the majority of a population is immune to a disease or virus. Otherwise known as community immunity, it helps to slow the spread of infectious diseases in two ways: People contract the disease and develop an immune response. People are vaccinated. When enough people are vaccinated, everyone—including those who are too young or too sick to be immunized—receives some protection from the spread of diseases. An infectious disease is less likely to spread from person to person because there are fewer germs around to infect others. And if a person does get sick, the likelihood of an outbreak is low because more people are immune.*

**When is herd immunity most effective?** *Scientists estimate that in order for herd immunity to be effective, about 70 - 90 percent of a population need to be immune to a disease, either by contracting the disease and recovering or getting a protective vaccine. This reaches what the World Health Organization (WHO) calls the herd immunity threshold. Although, there are factors to consider. For instance, if a disease is considered highly contagious, a higher percentage of immunity is needed. Measles, an extremely contagious disease that is preventable through vaccination, needs 93-95 percent of a population to be immune in order to reach herd immunity threshold and for measles to be eliminated. Herd immunity works best when there is a vaccine to provide protection. For example, diseases like polio and smallpox were once very common in the United States, however due to widespread vaccination, these diseases have become extremely rare. In fact, the United States has been polio-free since 1979. The vaccines for these diseases have helped establish herd immunity.*

**Oil – Key oil call for 2023, is China moving to herd immunity in Q1?**

There is no change to our view that we believe the key oil call for 2023 is China and is China moving to herd immunity in Q1? Based on the continuing reports, it looks like China is speeding towards herd immunity. Because we would expect that China will be like all other countries on how they will reopen once there is herd immunity. And if China reopens, then we believe there will be a big quick jump up in China activity and therefore oil fuels demand. No two countries were likely identical on exactly the impact on people and economy once their economies reopened after reaching herd immunity, but we aren't aware of any country that didn't see a big quick jump in mobility, industry and activity post herd immunity. Everyone in western countries remembers what they did once there was a reopening. Why would China be different? This is why we consider China hitting herd immunity to be the key oil call item for 2023 because we believe a China reopening will be a big boost to China oil demand. That is why, on Dec 23, we tweeted [\[LINK\]](#) "Key #Oil call for 2023 - When will China reach herd immunity? @Pfizer notes herd immunity at 70%-90%. Makes Q1 look likely, @business ~18% in 1st 20 days of Dec & 1st real new year gatherings since Covid. Sets up @michaelwmuller rebound in CN fuels demand as early as Q2. #OOTT." And that is why we have continued to track what is going on with respect to China herd immunity and China fuel demand indicators.

**Key oil call for 2023**

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**Vitol: J curve recovery in China demand in Q2 if herd immunity in Q1**

The reason why we have been highlighting the herd immunity focus is because of the Dec 15 comments from Vitol. Here is what we wrote in our Dec 18, 2022 Energy Tidbits memo. *“Great food for thought on China’s Covid relaxation from Mike Muller (Head, Vitol Asia) in his monthly appearance on the Gulf Intelligence Daily Energy Markets podcast on Thursday. [\[LINK\]](#). (i) China is clearly relaxing its Covid restrictions with the key assumption that Omicron version of Covid is not anymore deadly than the flu. And Muller notes that Covid is spreading quickly. So is China effectively moving to herd immunity strategy near term by letting the less deadly Covid version spread quickly? If so, it means that the next few months should see choppy, up and down non-broad recovery, But if China gets to herd immunity, does it set up “J” shaped recovery in Q2/23? (ii) Early Thursday morning, we tweeted [\[LINK\]](#) “Nike swoosh or J shaped recovery in China demand transportation fuels.*

See 📌 Vitol @michaelwmuller inbound international air travel to China as soon as Q2. Freedom of travel + population less scared of Virus = China move faster to herd immunity. @sean\_evers @CrysolEnergy. #OOTT.” (iii) Our tweet included the transcript we made of Muller’s comments. Items in “italics” are SAF Group created transcript. 14:40 min mark. *“Covid headlines out of China have all been rather constructive of late. There are clear signs that public policy has shifted towards no longer Zero tolerance and restrictive measures and a realization, that’s probably guided by their chief medical scientists, that this particular variation of Omicron that is running thru the population a lot faster, I think if you just go through the small sample of my own colleagues in China, many of them have it right now, they all know somebody in their family or in their close circle of friends that has it and that’s across three different cities. So it looks like China is in the process of becoming self immunized if you like by a more liberal policy of allowing the virus to spread in a way that is reasonably contained.”* 15:50 min mark. *“there is a lot more freedom of movement. There has not yet been an edict from central government that the grand migrations for Chinese New Year, where you can get half a billion people getting on trains, cars, public buses and going to their families at Chinese New year is going to be discouraged as was the case for the last two cycles. Chinese New Year falls early and this is going to start around January 7/8. Air travel is up, public transport is being made free of charge in certain cities. China Eastern came out with a headline today they have 1,380 scheduled domestic flights that compares to five hundred and forty odd flights on the first of December. The population of China seems less scared of the Virus than was the case just a few weeks ago, and self-immunizing in a way that might happen a lot faster than we think”.* 17:15 min mark. *“.. and, as such, it stands a reasonable chance of not suffering the same toll that was the case in many other large countries. So with that degree of confidence in the economy, we have colleagues in China suggesting that international inbound air travel in China could be a reality as soon as Q2 next year, which was not in most people’s balances in supply demand predictions going forward. So that gives you a bit of a Nike swoosh or “J” shaped sort of view on demand for transportation fuel in China, notably jet fuel which is the big absent portion of the oil demand barrel. And has people getting quite bulled up for the second half of next year, if not somewhat sooner. But in the near term, of course, one has to be cautious because the public has been conditioned to self-isolate themselves and to avoid getting this virus if they can.”*

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**Oil – China road congestion +32.9% WoW, followed a +26% WoW.**

Last week's (Jan 1, 2023) Energy Tidbits memo had an item asking "A data blip? China road traffic +26% WoW for week ended Dec 28." At least for another week, the positive trend is continuing for pickup in China's traffic indicators. On Thurs, we tweeted [\[LINK\]](#) "China moving to herd immunity. Increasing traffic levels in all China major cities as Covid cases peak. Fits

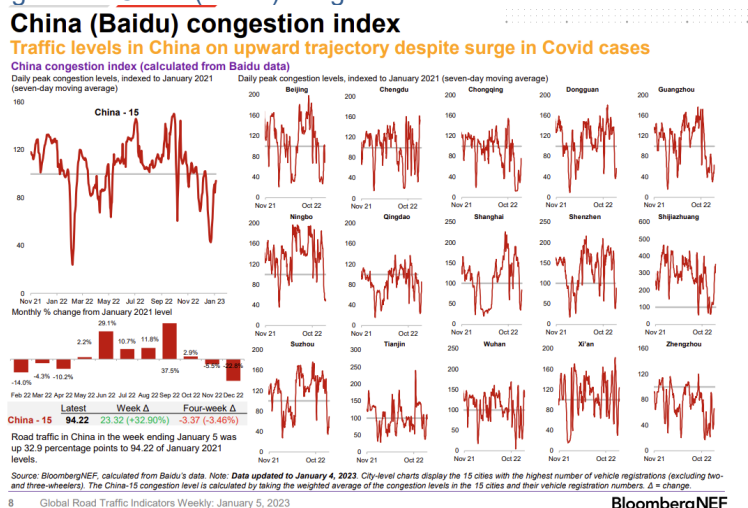
👉 12/15 tweet on @vitolnews @michaelwmuller set up for J shaped fuels pickup as early as Q2.Thx @BloombergNEF P Geurts, C Lubis, W Tan. #OOTT." Our tweet included the below chart from BloombergNEF's weekly Global Road Traffic Indicators, which noted an even larger pick up in the China (Baidu) congestion index. BNEF wrote "Road traffic in China in the week ending January 5 was up 32.9 percentage points to 94.22 of January 2021 levels." As we noted last week, this pickup in activity seems to be consistent with the reports out of China on how people are getting out to restaurants, etc. All the reports continue to say Covid has spread quickly across China, first in the major cities and now in more of the rural areas. We haven't seen any change in views that China should be hitting peak Covid cases and then reach herd immunity in Jan. as we wrote last week, when we saw this data, it reminded us of what happened in North America when there weren't travel restrictions and people had gone thru mild Covid – they got out and about. Maybe if this doesn't turn out to be a one-off data blip, this is part of the reason that people in areas that have had mild covid are getting out and about.

**China road congestion +32.9% WoW**

**Road congestion is up in all China's most populous cities**

Our tweet also included the below table of China's most populous cities The BloombergNEF graphs included nine of the ten most populous cities and all the graphs were in line the ramp up in road congestion. And these cities have, to the most part, been reported as having hit peak Covid cases in early Jan. So these cases fit the thesis that once most people feel three is some sort of herd immunity, they get out and about just like seen in other parts of the world.

Figure 27: China (Baidu) congestion index



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Source: BloombergNEF

Figure 28: China Most Populous Cities

Population of Cities in China (millions of people)

Rank	City	2020	2021
1	Shanghai	27.06	27.80
2	Beijing	20.46	20.90
3	Chongqing	15.87	16.38
4	Tianjin	13.59	13.79
5	Guangzhou, Guangdong	13.30	13.64
6	Shenzhen	12.36	12.59
7	Chengdu	9.14	9.31
8	Nanjing, Jiangsu	8.85	8.47
9	Wuhan	8.00	8.27
10	Xi'an, Shaanxi	8.00	8.27

Source: Statistics Times

Source: BloombergNEF

### Oil – Does EU, US, others believe China Covid isn't a deadly strain?

Last week's, (Jan 1, 2023) Energy Tidbits memo noted the start up of countries (US, Italy, Japan, Germany, Canada, etc) requiring negative Covid tests for any air traveler from China. And we also noted how Morocco was the first country to ban any travelers from China. At that time, we tweeted [\[LINK\]](#) "Who will follow Morocco in banning travelers coming from China? Or will thers follow US, Italy, Japan, etc in just doing mandatory testing for any travelers from China? Thx @MoroccoWNews. #OOTT." We haven't seen any other major countries follow Morocco, which would seem to imply that the world's major countries aren't, at least so far, worries that the China Covid is a deadly strain at least for major countries that have western vaccine protection. If so, we would think it would tend to put the return to 2020 scenario as not likely.

**Morocco bans travelers from China**

### Oil – Oil demand in H1/23 to be hit by less gas-to-oil switching

One of the negatives to near term oil demand is the crashing Europe natural gas prices with the well above normal temperatures across most of the Continental Europe. The dramatically lower TTF natural gas price means there is less pressure for gas-to-oil switching. On Wed, we tweeted [\[LINK\]](#) "TTF #NatGas prices now down ~40% since 12/31/22, down ~80% since late Aug. @IEA OMR Dec "expects roughly 550k b/d total switching related deliveries in EU this quarter and next". Thx @JWittels @RefinedRachel. #OOTT." The really warm weather in Europe has hammered Europe TTF gas prices, down 40% since Dec 31, but also down ~80% since the late Aug peak. It's why we believe there has to be an impact on oil demand as there isn't the near-term price incentive to drive users away from natural gas to petroleum products. Our tweet included a Bloomberg report on the recent IEA Oil Market Report Dec (posted Dec 14) that noted "Industrial users in Europe continued switching from natural gas to "considerably cheaper" gasoil, the International Energy Agency said in its monthly Oil Market Report. \* This "helps offset fears of a gas supply crunch over the winter and into 2023 and 2024" \* IEA now expects roughly 550k b/d total switching-related deliveries in

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Europe this quarter and next, 80k b/d higher than in last month's report \*\* "This upwards revision is almost entirely comprised of gasoil."

Figure 29: Dutch TTF Gas Feb'23 (TGG23) to Wed Jan 4 close.



Source: Barchart [https://www.barchart.com/futures/quotes/TG\\*1](https://www.barchart.com/futures/quotes/TG*1)

Source: Barchart

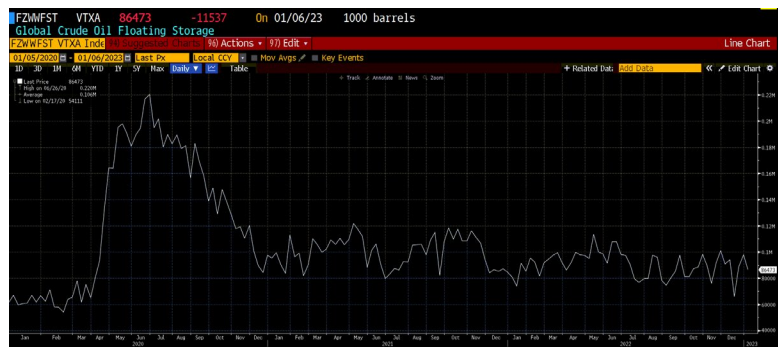
### Oil – Vortexa crude oil floating storage 86.47 mmb as of Jan 6, -11.54 mmb WoW

We are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 10am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Dec 31 at 10am MT. (i) As of 10am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for Jan 6 at 86.47 mmb, which is -11.54 mmb WoW vs upwardly revised Dec 30 of 98.01 mmb. Note Dec 30 of 98.01 mmb was revised +4.52 mmb vs 93.49 mmb originally posted on Bloomberg at 10am on Dec 31. (ii) Other than the revision to Dec 30, the rest of the revisions were small for the past several weeks. The revisions from the estimates posted yesterday at 10am MT vs the estimates posted on Bloomberg at 10am on Dec 31 are as follows: Dec 30 revised +4.52 mmb. Dec 23 revised -0.11 mmb. Dec 16 revised -0.11 mmb. Dec 9 revised -0.80 mmb. Dec 2 revised -0.57 mmb. Nov 25 revised -0.64 mmb. Nov 18 revised -0.76 mmb. (iii) There is still a wide range of floating storage for the past several weeks, but a simple average for the past seven weeks is unchanged at approx. 89.30 mmb (was 89.5 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) Jan 6 estimate of 86.47 mmb is -133.86 mmb vs the post-Covid peak on June 26, 2020 of 220.33 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. Jan 6 estimate of 86.47 mmb is +24.79 mmb vs pre-Covid Jan 6, 2020 of 61.68 mmb. Jan 6 estimate of 86.47 mmb is +5.75 mmb YoY vs Jan 7, 2022 of 80.72 mmb. (vii) Below are the last several weeks of estimates posted on Bloomberg as of 10am on Jan 7, 10 am on Dec 31, and 10am on Dec 24.

**Vortexa crude oil floating storage**

Figure 30: Vortexa Floating Storage posted on Bloomberg Jan 7 at 10am MT

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Source: Bloomberg, Vortexa

Figure 31: Vortexa Estimates Posted Jan 7 10am MT, Dec 31 10am MT, Dec 24 10am MT

Posted Jan 7, 10am MT				Dec 31, 10am MT				Dec 24, 10am MT																
ID	3D	1M	6M	YTD	1Y	5Y	Last Px	ID	3D	1M	6M	YTD	1Y	5Y	Last Px	ID	3D	1M	6M	YTD	1Y	5Y	Last Px	
Fr	01/06/2023						86473	Fr	12/30/2022						93489	Fr	12/23/2022							79111
Fr	12/30/2022						98010	Fr	12/23/2022						88734	Fr	12/16/2022							68337
Fr	12/23/2022						88620	Fr	12/16/2022						66097	Fr	12/09/2022							94117
Fr	12/16/2022						65993	Fr	12/09/2022						93469	Fr	12/02/2022							90397
Fr	12/09/2022						94265	Fr	12/02/2022						90319	Fr	11/25/2022							103,708k
Fr	12/02/2022						90887	Fr	11/25/2022						101,508k	Fr	11/18/2022							98330
Fr	11/25/2022						100,867k	Fr	11/18/2022						92871	Fr	11/11/2022							77867
Fr	11/18/2022						92113	Fr	11/11/2022						76732	Fr	11/04/2022							90147
Fr	11/11/2022						76062	Fr	11/04/2022						90004	Fr	10/28/2022							98760
Fr	11/04/2022						89658	Fr	10/28/2022						98051	Fr	10/21/2022							87871
Fr	10/28/2022						98148	Fr	10/21/2022						87631	Fr	10/14/2022							86443

Source: Bloomberg, Vortexa

**Oil – BNEF: global oil and product stocks deficit narrowed**

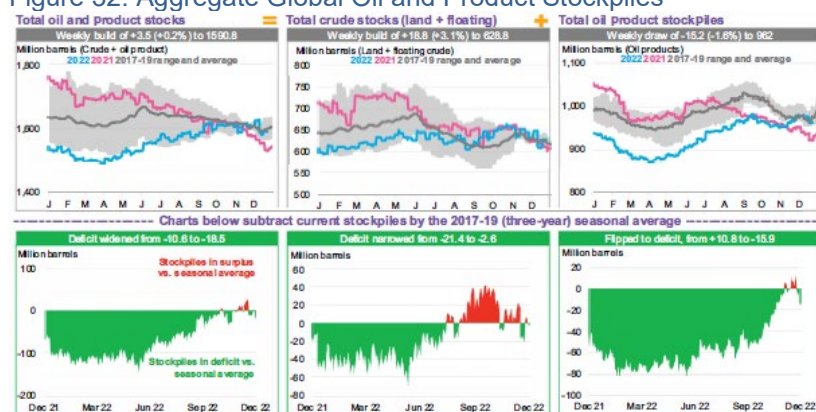
For those with a Bloomberg terminal we recommend flipping through BloombergNEF’s “Oil Price Indicators” weekly that came out on Tuesday as it provides good charts depicting near-term global oil demand and supply indicators. The global oil and products stockpile deficit for crude and products narrowed from a 21.4 mmb to a 2.6 mmb deficit. The stockpile deficit against the five-year average (2015-19) widened from 46.4 mmb to 47.8 mmb. Total crude inventories increased by 3.1% to 628.8 mmb, including global floating inventories. Product stocks were down 1.2% WoW with the stockpile deficit against the 3-year average widening from 0.3 to 10.5 mmb. Gas oil and middle distillate stocks have widened against their three-year average deficit (2017-2019) from 9.4 mmb to 18.7 mmb. Jet fuel consumption by international departures is set to increase by 53,100 b/d WoW while consumption by domestic passenger departures will decline by 14,900 b/d WoW. Below is a snapshot of aggregate global stockpiles. Our Supplemental Documents package includes excerpts from the BloombergNEF report.

**BNEF’s global oil inventories**

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Figure 32: Aggregate Global Oil and Product Stockpiles



Source: BloombergNEF

### Oil – Caixin PMI for Dec is still below 50 at 49.0, and down from last month at 49.4

On Monday, IHS Markit released the Caixin China Manufacturing PMI data for December [\[LINK\]](#) and the index showed the fifth consecutive month of below 50 with Dec at 49.0 (vs expectations of 49.1) and down from Nov at 49.4. On Monday we tweeted [\[LINK\]](#), “China Caixin PMI for Dec 49.0 v Est 49.1 & Nov 49.4, Oct 49.2, Sept 48.1. *“In the short term, infections are expected to explode, which will severely interfere with production and everyday life. Yet ‘Optimism improved significantly among businesses’ Thx @IHSMakitPMI #OOTT”.*

The tone continues to be negative for manufacturers although business confidence sits at its highest level in over 10 months. Production declined at a further, but slower rate and manufacturers experience a steep fall in new orders. Covid-19 containment and continued steps towards herd immunity are key reasons why optimism is back to new highs. The Caixin Insight Group said “*Encouragingly, business confidence around the 12-month outlook for output improved to the highest since February. Inflationary pressures meanwhile remained muted, as input costs rose modestly, and prices charged fell slightly.*” Our Supplemental Documents package includes the Caixin China PMI for December.

**Caixin PMI 49.0  
in Dec**

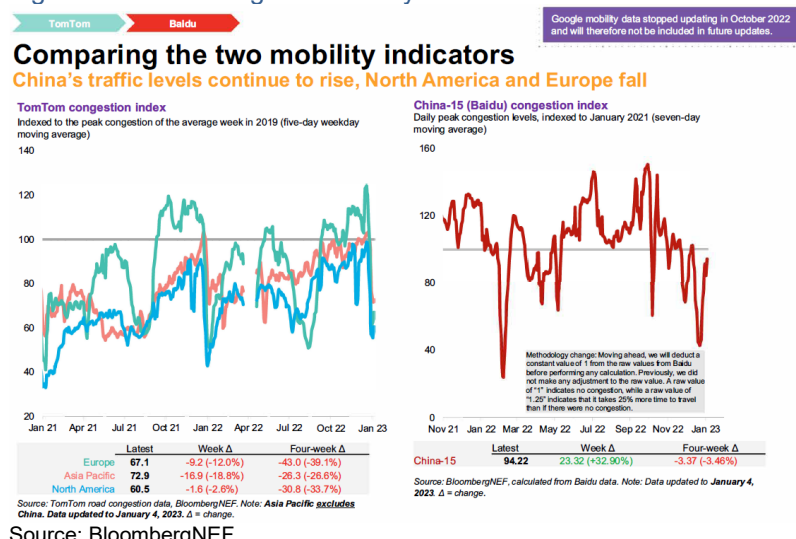
### Oil – Mobility indicators, all major regions continue to fall, except China

We like to review the BloombergNEF weekly indicators reports as they provide updates on WoW changes, but also remind that WoW changes do not necessarily mark a trend. On Thursday, BloombergNEF posted its Global Road Traffic Indicators which included a continued WoW decrease in mobility across the globe, with the exception of China. This should come as no surprise as the holiday season typically brings a decrease in congestion levels. As the holiday season wraps up, expect these numbers to pick up again. TomTom trends continued moving lower relative to 2019 and all three major regions decreased 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 -12.0%, Asia Pacific down -18.8%, and North America down -2.6% from last week. Europe and North America are bullish and subject to drivers responding to rising cost, including high gasoline prices. Our Supplemental Documents package includes excerpts from the BNEF Global Road Traffic Indicators report.

**All major mobility  
indicators fall  
WoW**

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Figure 33: BloombergNEF Mobility Indicators



Source: BloombergNEF

### Oil & Natural Gas – Liberals emissions hit on oil and gas will only get worse

We realize that we are more worried than most on how hard the Liberals will hit the oil and gas sector on emissions, but we still believe there are bigger hits to come after seeing the Canadian Press report “An activist in office: Steven Guilbeault's first year as environment minister”. (i) Our concerns are unchanged from what we wrote in our April 3, 2022 Energy Tidbits memo that was titled “Liberals Emissions Reduction Plan Is Setting Up the Oil & Gas Sector for Failure”. It included our key concern that there is a massive emissions cut required by 2030 and the Liberals hard targets for 2025 have to make sure the oil and gas sector is on track for the massive cuts by 2030. Below is the ERP graph with the faint dotted line for 2030 target that has a massive acceleration in cuts required to hit the 2030 end point. We still wonder if people didn't read the 271-pg report or overlooked this graph. (ii) Canadian Press wrote “He is quick to agree the heavy lifting isn't done. Most of his files are works in progress, with final regulations still to be developed or implemented. That includes making a decision on how the government will cap emissions from oil and gas production, which will involve more political bickering with the government of Alberta.” (iii) We also get reminded that politicians talk about consulting other groups but have already made their mind up on what they are going to do. I.e. consulting doesn't mean listening and considering. Guilbeault has spent his life in environmental cause, and it seems like he believes he knows what the answer is. And won't waste his time on considering if there is a contrary view. The Canadian Press writes ““He kind of understands what the scale of the challenge is,” said Timothy Gray, executive director at Environmental Defence Canada. “You don't need to spend hours briefing him, and so that makes a huge difference.” Anyone who has seen decisionmakers at work knows it doesn't take time to brief someone if all you are doing is providing confirming views. It's when you have differing views that takes time. (iv) Oil and gas emissions will be a priority for Guilbeault in 2023. Canadian Press wrote “Heading into 2023, Guilbeault expects movement on the oil and gas emissions cap, clean electricity regulations, electric vehicle

Liberals priority on oil and gas emissions in 2023

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mandates and legislation to enshrine Canada's nature conservation goals into law.” Our Supplemental Documents package includes the Canadian Press report.

### **Liberals Emissions Reduction Plan sets up oil & gas for failure**

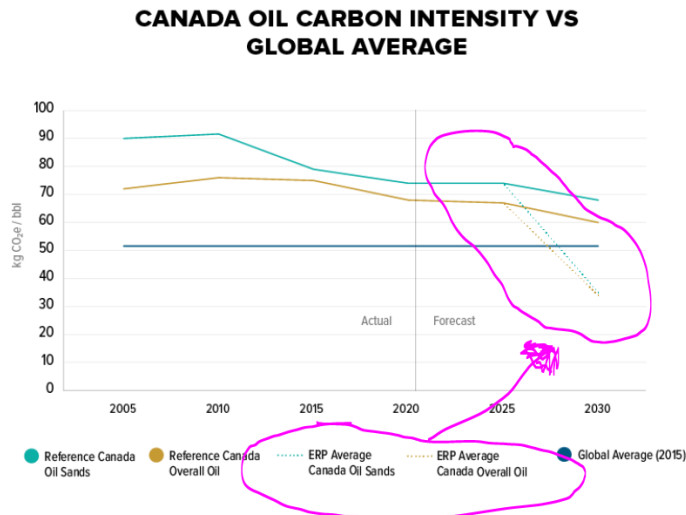
Here is what we wrote in our April 3, 2022 Energy Tidbits memo. *“We are surprised that we didn’t see outrage from the oil and gas sector after the Liberals released the 2030 Emissions Reduction Plan on Tuesday, the 271-page report is found at: [\[LINK\]](#). The plan sets up the oil and gas sector for failure. (i) Our comments are based on the 271-pg report and not just the press release. (ii) There is still bad news to come as the plan specifically doesn’t include key details. (iii) No details on what is being eliminated in the Liberals statement of eliminating subsidies for fossil fuel. Pg 53. Note this is for 2023. If this is like Biden’s elimination of fossil fuels, this would hit things like CDE and much more. We suspect that people just didn’t read the Biden Greenbook. It just seems like the same angle on “subsidies” for fossil fuels. “Eliminating subsidies for fossil fuel. The Government has committed to eliminating inefficient fossil fuel subsidies, and developing a plan to phase-out public financing for the fossil fuel sector, including by federal Crown corporations.” Pg 102 “..Canada recently accelerated this commitment from 2025 to 2023”. (iv) We were disappointed to see that the Liberals announcement on its new emissions reduction plan did not, as expected, include the hard targets for emissions reduction for the oil and gas sector. We are still waiting for the targets for 2025. Pg 8, No change to the big picture target of oil and gas reductions, but still haven’t defined the specific 2025 target. “The Plan presents modelling of the most economically efficient pathway to meeting Canada’s 2030 target. Drawing on that modelling, the Plan includes a projected contribution from the oil and gas sector of emission reductions to 31% below 2005 levels in 2030 (or to 42% below 2019 levels). This will guide the Government of Canada’s work with industry, provinces, Indigenous partners, and civil society to define and implement the cap on oil and gas sector emissions. Following consultations, the cap will be designed to lower emissions at a pace and scale needed to achieve net-zero by 2050.” (v) Our concern remains that the Liberals are setting a 2025 hard target that keeps the oil and gas sector on track for the massive cut by 2030. Pg 50. Note this below graph on where it has to go. As noted on page 8 above, they haven’t defined the exact dotted lines from 2022 to 2030, but they have set the end point in 2030. There is massive cutting required. (vi) Reminder there are checks in 2023 to make sure the oil and gas sector is on track to meet 2025 and 2030 emissions reduction targets. Pg 7. There are progress checks so they can take more actions if behind the timelines. “Progress under the plan will be reviewed in progress reports produced in 2023, 2025, and 2027. Additional targets and plans will be developed for 2035 through to 2050”. (vii) Looks like the Liberals are setting up the oil and gas sector for failure and to be a bigger villain. The Liberals will be setting emissions reduction targets that rely upon items beyond proven reduction actions to hit targets including targets in 2025. They are basically setting up impossible to achieve targets. On Tuesday, it appears that most were commenting based on the short press release and not the 271-pg report. It’s why we tweeted [\[LINK\]](#) “Hmmm! One of the tidbits in 271-pg Liberals 2030 Emissions Reduction Plan. pg 197, #Oil #NatGas sector will need to develop new actions beyond existing proven solutions to meet still to be defined targets, even to meet 2025 & 2026 reduction targets. #OOTT”*

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and [LINK](#) "Is #Trudeau #EmissionsReductionPlan setting up #Oil #NatGas #OilSands for failure and be the fall guy? See pg 197, how can they hit targets if Liberals plan says will need new actions/inventions beyond existing proven solutions to meet targets including 2025/26 targets?" Pg 197. For anyone who thinks the emission reduction targets for oil and gas will be not too hard to attain, they should read this item. They are signaling their targets, even for 2025 and 2026, will be based on technologies, etc that aren't identifiable today to generate these targeted reductions. "Drive new and more ambitious actions. Targets for the oil and gas sector should be ambitious and require new actions that go beyond what is already contemplated using existing proven solutions. Regulatory targets drive innovation. Targets should lead to a scale of emissions reductions that would not otherwise have occurred. At the same time, targets must be realistic and credible, while pushing the sector to go further than it would otherwise. Targets should result in visible leadership, innovation in technology and business models, and new investments. It is acceptable to set emissions reduction targets in the future for which there is not currently complete certainty on how to attain the target. The further away the target is (e.g., 2030 versus 2025 or 2026), the more this principle applies." (viii) Pg 52. Oil and gas companies can afford it. Trudeau made this same comment in his speech. "Canada's oil and gas industry is currently generating record cash flow. If deployed strategically, these funds could enhance carbon competitiveness and enable the sector to do its fair share in contributing to the country's climate goals." (ix) Pg 53: Note the "intent". "The intent of the cap is not to bring reductions in production that are not driven by declines in global demand. " Linked to this is Pg 196 "... While the International Energy Agency (IEA) has forecasted that global demand for oil and gas over the next 5 years will decline". They linked to the IEA forecast, which does not show this. Rather, the linked IEA forecast Here is the table from the linked IEA oil demand forecast is 99.4 mmb/d in 2022, 101.2 mmb/d in 2023, 102.3 mmb/d in 2024, 103.2 mmb/d in 2025 and 104.1 mmb/d in 2026."

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Figure 34: ERP: Canada's Oil Carbon Intensity vs Global Average



Source: Government of Canada

**Oil & Natural Gas –Liberals Just Transition means less grads to help increase supply**

There was a reality check from Precision Drilling CEO Kevin Neveu on the challenge to attract young people to an industry that governments are trying to eliminate. Earlier this morning, we tweeted [\[LINK\]](#) “Ironic! western leaders know #Oil #NatGas prices drove high inflation/cost of living. Yet, a key factor holding back supply is lack of young people entering oil & gas because they know same leaders are working to end the industry. Thx @ChrisVarcoe. #OOTT.” In the old days, oil companies couldn’t hire enough people when oil and gas prices were strong and also didn’t offer any jobs (rather cut people) when oil prices crashed to below \$20. But now, when even the western leaders grudgingly see higher for way longer oil and gas prices, oil companies can’t attract grads. It’s understandable, how can a young grad pick a career in a sector that the governments want to eliminate? But as Neveu points out, it means that the industry can’t deliver as much supply as they could with more people. Calgary Herald wrote “As it looks to hire people needed to drill and maintain wells, the company — along with the country’s oilfield services industry — also faces a labour challenge: federal talk about “just transition” legislation to help oil and gas workers shift into other sectors. “The energy transition is a great political headline. It’s going to take decades, not years, decades,” Precision Drilling CEO Kevin Neveu said in an interview. “The tone of some of the charismatic political leaders . . . does not encourage new entrants into the workforce. So, we’ve had to combat that by aggressively marketing our Evergreen (environmental) products, and the things we’re doing to be part of the solution. But it does mean extra costs, extra resources.” Our Supplemental Documents package includes the Calgary Herald report. [\[LINK\]](#)

**Liberals priority on oil and gas emissions in 2023**

**Energy Transition – Germany energy transition will be a fiasco without nuclear**

We have to believe German Transport Minister Wissing didn’t make many friends in the German coalition government with his blunt comments that, because coal is the only way

**Germany needs nuclear**

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Germany hasn't obstructed (ie. Russian natural gas) themselves, the energy transition will become a fiasco without keeping nuclear. Frankfurter Allgemeine [LINK](#) interviewed Wissing and he was clear that Germany needs nuclear energy or else the energy transition will be a fiasco, and fiasco was his word. Wissing comments are exactly the type of comments we expected to see in 2022 from leaders that the energy transition wasn't working and it would lead to an ongoing energy crisis unless there was a reality check. Wissing said there needs to be scientific view on nuclear, not a political view. He said *"We do not need a political dispute and no dogmatism, but we need a technical answer to the question of how we can ensure a stable and affordable energy supply and at the same time achieve our climate protection goals," he told the F.A.Z. "If we do not want to discuss it politically, then we have to clarify it scientifically."* Right now, Germany's remaining three nuclear power plants are to be taken off the grid in mid-April. Wissing said those nuclear power plants are needed if his department is to meet the legally stipulated climate protection targets with many more electric cars. FAZ wrote *"The balance of electric cars is also clear when nuclear power plants are shut down and, in addition to electricity from wind power and solar plants, coal-fired electricity is used for charging. "In the transport sector, we cannot do anything for climate protection with electromobility if we use coal-fired electricity for charging," said Wissing. "We are currently organizing the ramp-up of electromobility. If people experience that electric cars are not only expensive, but bad for the climate, the transformation becomes a fiasco." Wissing criticized that Germany had not progressed fast enough with the expansion of renewable energies. "We can't just opt for coal as a bridging technology now, because that's the only way we haven't obstructed ourselves. That doesn't fit in with climate protection."* Our Supplemental Documents package includes the FAZ interview.

### Energy Transition – German e-cars are not only expensive but also bad for climate

The simple reality of Germany trying to replace Russian natural gas is that it had to rely on coal and that means emissions will be higher. On the Wissing interview, on Tuesday, we tweeted [LINK](#) *"#1 challenge for mass adoption of EVs, not just high income - they are expensive. DE Transport Minister @Wissing "If people realize that e-cars are not only expensive, but also bad for the climate, the transformation will become a fiasco". #Oil will be needed for longer. #OOTT."* Wissing was blunt that e-cars are expensive and will be bad for the climate without nuclear replacing coal. FAZ wrote *"The balance of electric cars is also clear when nuclear power plants are shut down and, in addition to electricity from wind power and solar plants, coal-fired electricity is used for charging. "In the transport sector, we cannot do anything for climate protection with electromobility if we use coal-fired electricity for charging," said Wissing. "We are currently organizing the ramp-up of electromobility. If people experience that electric cars are not only expensive, but bad for the climate, the transformation becomes a fiasco."*

Germany needs nuclear

### Energy Transition – Mercedes launching charging network in US/Can in urban areas

Mercedes may not have said it, but it looks like their roll out of their global EV charging network is being driven by where can they get reliable, available, affordable electricity. Mercedes is starting the rollout in US and Canada and not in their home market. (i) On Friday, we tweeted [LINK](#) *"1/2. It's all about having reliable, available, affordable #Electricity. #MercedesBenz global #EV charge roll out starts in US/CAN, not DE/EU home market. See 🗨️ 01/03 tweet, Germany is power short & dirtier. US/Can have 24/7 power. #OOTT."* Our tweet referenced our Jan 3 tweet on German Transport Minister Wissing blunt comments

Mercedes charge hubs in US and Canada

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that Germany needs to continue with nuclear power in light of their decision to stop Russian natural gas because the replacement has been coal. And that means higher emissions. Wissing's punch line was *"If people realize that e-cars are not only expensive, but also bad for the climate, the transformation will become a fiasco"*. Mercedes didn't say it, but the US and Canada choice is obvious – we have reliable, available, affordable electricity. Something Europe and Germany in particular, don't have today. (ii) The other aspect of Mercedes EV charge hubs is where in US/Canada they are being put – it has to be where there is already access to electricity. *"The Mercedes-Benz charging hubs will be located in key cities and urban population centres, close to major arteries, convenient retail and service destinations, including participating Mercedes Benz dealership sites."* Mercedes is putting their charge hubs in cities and urban areas and not highways. On Friday, we tweeted [\[LINK\]](#) *"2/2. #MercedesBenz #EV charge hubs in cities, not where most needed on highways further away from home. 📍 11/14 tweet. highways don't have high voltage infrastructure, cities are already grid connected. it's all about reliable, available, affordable #Electricity. #OOTT #NatGas."* The 11/14 tweet was [\[LINK\]](#) *"WOW! Bet most don't appreciate that a SINGLE large passenger/truck highway charging plaza will be ~equivalent to the electric load of a small town. SINGLE 20-fast charger #EV highway play = load of an outdoor stadium. Thx @nationalgrid. #NatGas #OOTT[LINK]"*. There is a massive capital need to provide high voltage electricity to these proposed highway charge hubs and that would have to be done for any Mercedes highway charge hub. Whereas cities and urban areas are already grid connected. (iii) Mercedes wrote *"It will begin to be built this year in the US and Canada, followed by other regions around the globe. The aim is to have the full network in place before the end of the decade, when Mercedes-Benz intends to go all-electric wherever market conditions allow. The Mercedes-Benz high-power charging network will greatly enhance customers' charging experience, accelerate the journey towards the all-electric future and create a global infrastructure asset with future value-creation potential. The Mercedes-Benz charging hubs will be located in key cities and urban population centres, close to major arteries, convenient retail and service destinations, including participating Mercedes Benz dealership sites. The company believes this strategic move will significantly enhance the usability and convenience of its new generation of electric vehicles, differentiate the Mercedes-Benz ownership experience and accelerate the EV transformation. The charging network will focus first and foremost on Mercedes-Benz customers, who will enjoy preferential access via a reservation function and other benefits. However, it will also be open to drivers of all other brands with compatible technology. Our Supplemental Documents package includes the Mercedes announcement."*

### **Massive electricity will be needed for highway EV charging**

Here is what we wrote in our Nov 20, 2022 Energy Tidbits. *"We know it's not going to happen, but we really wish western leaders would listen to what they need to hear and not just to what they want to hear. Or at least their advisors will tell what they need to hear and not just what they know the leaders want to hear. One area that no one is listening to is the massive electricity requirements to set up highway charging for electric passenger cars and medium/heavy trucks. Because if they were listening, they would be worried about how much it will cost and if it's even possible to provide the level of charging that will be expected. On Monday, we tweeted [\[LINK\]](#) "WOW! Bet most don't appreciate that a SINGLE large passenger/truck highway charging plaza will be ~equivalent to the electric load of a small town. SINGLE 20-fast charger*

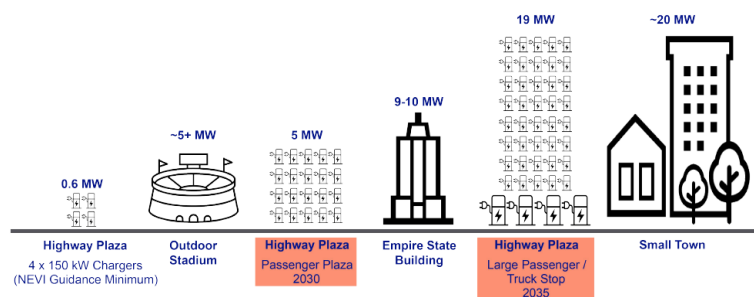
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#EV highway play = load of an outdoor stadium. Thx @nationalgrid. #NatGas #OOTT[LINK]”. We included the below National Grid graphic. But think of this, a single large passenger/truck highway charging plaza will require the equivalent electricity load of a small town. That is for a single charging plaza. This wasn’t an anti-EV report by a fossil fuel or anti-climate change group. Rather it was from the National Grid. There will be \$trillions or some massive amount of capital needed over the next 10 to 20 years. We really don’t believe politicians appreciate how much electricity is needed for charging. The National Grid analysis shows that every single typical highway charging station will require massive electricity, especially if the highway station charges passenger vehicles and trucks. A single highway passenger only charging electricity needs will be equal the same as an outdoor stadium. A single large highway passenger + truck charging electricity needs will be equal to a small town. And then throw on top of that, there will be a massive need for connection of the large highway charging stops to a high voltage transmission systems, assuming there is a high voltage nearby to hook into. Anything above the 5 MW distribution limit will require access to high voltage transmission. And the scale of the increased energy demand from highway charging sites is off the charts. It’s hard to see a scenario that this can be done. Attached are a couple of the key National Grid exhibits. Our Supplemental Documents package includes excerpts from the National Grid report. [LINK]“

Figure 35: Comparative peak loads for illustrative charging sites vs other major users

For perspective, the Mixed Use Traffic Plaza and Passenger Plaza will each require about 5 MW of charging capacity by 2030—about the amount of power used by an outdoor professional sports stadium. By 2035, the nameplate charging capacity required at the Large Passenger/Truck Stop site will be roughly equivalent to the electric load of a small town (Figure 21). Note that the other large energy users’ loads depicted in the figure below are approximate based on a range of loads.

Figure 21. Comparative Peak Loads for Illustrative Sites and Other Major Users<sup>35</sup>



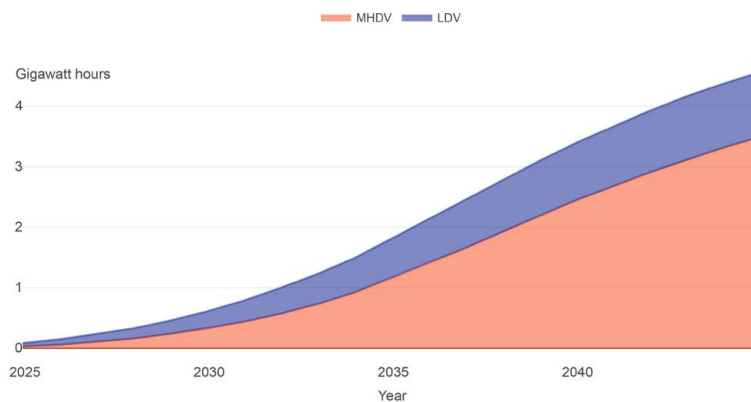
Source: National Grid

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Figure 36: Average daily energy demand across all highway charging sites

Figure 22. Average Daily Energy Demand Across All Sites



Source: National Grid

### Energy Transition – UK seniors using warm banks and bus passes to save electricity

It was interesting to hear how the energy crisis is impacting working class people in England from one of our friends who was visiting her relatives in northern England. Her family are working class generally in the late 50's and older. We asked if they were using the "warm banks" and, yes, many people are using warm banks. For those who haven't followed, warm banks are basically places, like a hall or something where the electricity bill is being covered so people, especially retired people, will go to spend hours in someplace warm instead of sitting in their flat with the temperatures turned low to save on the electricity bill. The one that we hadn't heard about but that is happening is that people are buying monthly bus passes so they can ride the buses most of the day with a book to stay warm. Again to be able to save money on their flat electricity bill.

**UK working class people feeling the pinch**

### Capital Markets – Best 2020s predictions, Deutsche Bank CEO 09/07 keynote speech

This is the period of 2023 predictions and it seems like many/most are covering, but expanding on, the key themes from the Deutsche Bank CEO Christian Sewing Sept 7 keynote speech. On Tues, we tweeted [\[LINK\]](#) "Predictions for 2023. Seems like most incl the key global themes from 📌 09/07 thread on Must Read @DeutscheBank CEO speech.ie. "reducing this [China] dependency will require a change no less fundamental than decoupling from Russian energy". And many more themes! #OOTT." Sewing's speech was a more than just a 2023 prediction, rather he set the context for the global challenges for the 2020s. It's a must read and we attached it to our tweet. Here is what we first wrote on Sewing's speech in our Sept 11, 2022 Energy Tidbits memo. "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

**Deutsche Bank CEO views**

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will .. #OOTT”, and [\[LINK\]](#) “2/2..”require a change no less fundamental than decoupling from RUS energy”. Globalization gone, labor a global bottleneck. Extremely expensive #Electricity #NatGas s a threat to economy. the longer inflation remains high the higher the potential for social unrest, etc. #OOTT.” (ii) As you can see from our tweets, there are many thoughts. We tend to agree with a lot of what he is saying unless there is a social revolt to say enough is enough. (iii) The real theme of his theme of his speech is excellent – the world has changed for the foreseeable future. The norms of the past decades are gone. Globalization gone. China dependency must be reduced. Global value and supply chains disrupted. Workforce a worldwide bottleneck. Electricity/natural gas will be expensive in EU for a long time.. The truth is that 30 years of presumed calm will now be followed by a period of heightened volatility with economic uncertainty, regular crises and geopolitical conflicts that are also likely to drag on for decades. Trouble spots are not cut off from the rest of the world; they impact other regions in a number of ways. (iv) And he doesn’t say much about it, but says “But the longer inflation remains high, the greater the strain and the higher the potential for social conflict.” We still wonder about social conflict and if there will be Arab Spring type revolt within Germany and other European countries to how people feel they are getting hit by the Russian sanctions. (v) His views are relevant to longer term capital allocation. It’s not just Germany has a terrible economic outlook. He raises issues like we have noted about China is the next Russia type target even if they don’t invade Taiwan. Germany affects more than itself. And think about it, if Germany can hold the line on Russian sanctions on energy, then it probably says most of Europe can hold the line other than a handful like Hungary, etc. (vi) There is much more in this short viewpoint. Our Supplemental Documents package includes the CEO viewpoint.”

### Capital Markets – Expect increased taxes on stocks over time

We are in the camp that expects increased taxes on higher income and high wealth people for years to come. This is also why we expect to see increased taxation, in one form or another, on stocks. The group most hurt by any additional taxes on stocks are the wealthy, whereas the average income people are hurt the most by any additional hits to homes and consumer durable goods. On Monday, we tweeted [\[LINK\]](#) “Here’s why equities are always at risk for more taxation. Hurts Top 1% the most, who own 27.2% of total assets, but 52.5% of equities/mutual funds. Also why risk for tax on jets, yachts, expensive homes as real estate/consumer durable goods only 14.9% of Top 1% assets. #OOTT.” Our tweet included the below table of the Federal Reserves most recent distribution of wealth data. [\[LINK\]](#). It’s a quarterly recap that shows the asset breakdown by wealth percentile group. We added a calculation of the % that a particular asset class is of the total wealth for that class. It shows how real estate makes up over 50% of the wealthy of people in the bottom 50% of wealth, whereas real estate is <9% for the top 0.1% of the wealth class. However, equities and mutual funds make up 52.5% of the total wealth of the top 1%. The other theme that become apparent is why the wealthy should expect more taxes on expensive real estate and consumer durable goods, which represent less <15% of the wealth of the top 1%.

**Equities/mutual funds are 52.5% of Top 1% wealth**

Figure 37: Distribution of Wealth

DFA: Distributional Financial Accounts - Distribution of Wealth

Assets by wealth percentile group in 2019: Q4

Wealth Component	Top 0.1% (US\$ Trillions)	99-99.9% (US\$ Trillions)	90-99% (US\$ Trillions)	50-90% (US\$ Trillions)	Bottom 50% (US\$ Trillions)
Real Estate	1.15	3.18	9.11	12.94	3.62
Consumer Durable Goods	0.38	0.36	1.26	2.40	1.34
Corporate Equities and Mutual Fund Shares	6.31	9.07	10.41	3.22	0.18
Defined Benefit Pension Entitlements	0.03	0.42	8.31	8.07	0.31
Defined Contribution Pension Entitlements	0.12	0.79	5.19	4.25	0.52
Private Businesses	3.34	2.91	3.87	1.59	0.18
Other Assets	2.10	3.93	7.42	6.25	0.97
<b>Total</b>	<b>13.43</b>	<b>20.66</b>	<b>45.57</b>	<b>38.72</b>	<b>7.12</b>

Asset % by Each Class: Q3/2022	Top 0.1% (%)	99-99.9% (%)	90-99% (%)	50-90% (%)	Bottom 50% (%)
Real Estate	8.56%	15.39%	19.99%	33.42%	50.84%
Consumer Durable Goods	2.83%	1.74%	2.76%	6.20%	18.82%
Corporate Equities and Mutual Fund Shares	46.98%	43.90%	22.84%	8.32%	2.53%
Defined Benefit Pension Entitlements	0.22%	2.03%	18.24%	20.84%	4.35%
Defined Contribution Pension Entitlements	0.89%	3.82%	11.39%	10.98%	7.30%
Private Businesses	24.87%	14.09%	8.49%	4.11%	2.53%
Other Assets	15.64%	19.02%	16.28%	16.14%	13.62%

Source: Board of Governors of the Federal Reserve System

Source: Board of Governors of Federal Reserve System

**Capital Markets – New Shell CEO Sawan priority is to be connected to the Shell people**

We recognize that big company videos of their CEOs being interviewed by someone within the company are promotional videos, but the reality is that each CEO picks what they want to say and how they want to be viewed. And since they are CEOs, ultimately judged by people outside and inside the company. So they are promotional, but they are important messaging in particular to their teams. So we like it when we see a video like new Shell CEO Wael Sawan as he sets for his people what they should expect. And we really liked his setting the bar for his people that he will stay connected to them day in and day out. Certainly the type of comments you want to hear from your leader. The video is at [\[LINK\]](#). What's the best advice you received about your new role? Sawan. *“Come in as if you've never been in the company, which is tough for someone who has been in the company for 25 years. But, I think the advice is: Open your mind as to what's possible and don't be defined by what's available. Secondly, be connected to the people in the organization. A company is not about the leadership of the company. A company is about the heart and soul of the company. And that's the, in our case, the 80,000 people who make Shell what it is today. And so how I stay connected day in and day out is, I suspect one of the biggest things that I need to heed a s good advice.”*

**New Shell CEO  
Sawan**

**Capital Markets – UN FAO Food Price Index dropped in December and is down YoY**

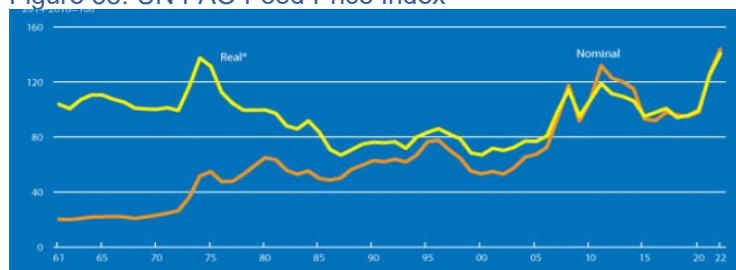
We recognize the UN FAO Food Price Index isn't a measure of what people pay when they go to the grocery store. We know this because grocery prices aren't going down. The UN global food price index for December 2022 was down for the 9<sup>th</sup> consecutive month. The UN wrote, *“The decline in the index in December was driven by a steep drop in the international prices of vegetable oils, together with some declines in cereal and meat prices, but partially counterbalanced by moderate increases in those of sugar and dairy.”* It was -1.0% YoY, and that is down huge from the all-time record YoY highs of +33.6% YoY seen in March 2022. On Jan 6, the UN posted its monthly update of its FAO Food Price Index [\[LINK\]](#) titled

**UN food price  
index -1.0% YoY**

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“FAO Food Price Index continued to drop in December, however, it rose substantially on a yearly basis” Note this is on a Real price basis. The FFPI averaged 132.4 points for December 2022, which was -1.9% MoM and down -1.0% YoY. The FFPI reported a mixed index’s MoM in December. The Vegetable oil index was down -6.7% MoM, after eight months of decline. The Sugar Price Index was up +2.4% MoM and the Dairy Price Index was down -1.1% MoM though still +7.9% YoY. The Meat Price Index was down -1.2% MoM, driven primarily by the overall decrease in prices of poultry meats and bovine. Below is the all time FFPI graph. Our Supplemental Documents package includes the UN FAO Food Price Index update.

Figure 38: UN FAO Food Price Index



Source: UN

#### Twitter – Look for our first comments on energy items on Twitter every day

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

**@Energy\_Tidbits  
on Twitter**

#### LinkedIn – Look for quick energy items from me on LinkedIn

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

**Look for energy  
items on LinkedIn**

#### Misc Facts and Figures.

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

##### **1<sup>st</sup> international flight to land post lifting in China was from Toronto**

Earlier today, China Daily reported that the first international flight to land in China post the lifting of the travel ban took off from Toronto. They reported “A China Southern Airlines plane landed at Guangzhou Baiyun International Airport at 00:16 am on Sunday after flying for about 15 hours from Toronto, Canada. The CZ312 that took off Toronto Pearson International Airport on Saturday became the first

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*international flight to land in the mainland after the country optimized its COVID-19 policies and the Civil Aviation Administration of China relaxed restrictions on international flights starting on Sunday, said a statement released by the airline on Sunday.”*

### Miramichi (NB) is #1 in per capita buying of Tim Hortons Original Blend Coffee

Last week's, Tim Hortons released its “Tim Hortons reveals which Canadian towns and cities were the biggest fans this year of some Tims favourites, including Original Blend coffee, espresso beverages, Quenchers, Farmer's Wraps and Loaded Wraps.” [\[LINK\]](#) Tims led off “Millions of Canadians across Canada go on a Tims Run each and every day, whether it's for breakfast and their morning coffee, a quick and delicious lunch or dinner, or something to satisfy their sweet tooth.” Tims then ranked the cities based on the highest per capita spending on some of their menu items. For their original blend coffee, it was Miramichi (NB). But for some reason, they didn't say where was the highest per capital donut sales. Rather the news release seemed also like a reminder to people of some of their less well known items. For example, we suspect many didn't know they sell Tim Hortons Canned Soup in grocery stores, but Calgary ranked #1 in per capita buying.

Figure 39: Top Tims Towns 2022



Source: UN

### Portuguese introduced deep fried food (Tempura) to Japan

Just like people forget that pasta took off in Europe post Marco Polo's return from China in 1295, people forget that the Portuguese really introduced deep fried food (tempura) to Japan. Note we say pasta took off after Marco Polo returned, when some say it was the introduction of pasta. Yesterday, Jan 7, was National Tempura Day. Foodimentary writes [\[LINK\]](#) “Tempura was introduced to Japan in the mid-sixteenth century by Portuguese Jesuits, during the same period that panko and such dishes as tonkatsu were also introduced from Portugal. Tokugawa Ieyasu, founder and first shogun of the Tokugawa shogunate of Japan, reportedly loved tempura. The word “tempura”, or the technique of dipping fish and vegetables into a batter and frying them, comes from the word “tempora”, a Latin word meaning “times”, “time period” used by both Spanish and Portuguese missionaries to refer to the Lenten

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*period or Ember Days (ad tempora quadragesimae), Fridays, and other Christian holy days.”*

#### **Classic throwing shade on Urban Meyer post Jaguars winning the AFC South**

The Jacksonville Jaguars beat the Tennessee Titans 20-16 last night to win the AFC South. It was a huge turnaround from last year under then head coach Urban Meyer. Doug Pederson came over and took them from last overall in the NFL to winning the AFC South. Post the game, there was a classic throwing shade at Meyer. ESPN's Jeremy Fowler tweeted *“Marvin Jones on the notion the #Jaguars were broken after last year with Urban Meyer. “I think one person was broken. It wasn't us,” he said.”* Jones is a wide receiver.

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