Energy Tidbits

May 7, 2023

Produced by: Dan Tsubouchi

Tehran-based Danial Rahmat: Last 3 Mths, Iran Decided to Sell Most of its Floating Oil & Condensate with Remarkable Discounts

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. Tehran-based Danial Rahmat understands during the last 3 months, Iran decided to sell most of its oil & condensate in floating storage at remarkable discounts. (Click Here)

2. Good Sunday read, AECO recap by NBC Energy Team even if the message is "*it's not looking promising for AECO overall"* this summer. (Click Here)

3. Looks for increasing oil and natural gas production and processing to be shut-in because of increasing wildfires in Alberta and NE BC. (Click Here)

4. Vitol's Mike Muller thinks "*Iraq seems to have compensated for reduced or cancelled Kurdish exports to the north by exporting more from the south*". (Click Here)

5. Hard to believe Saudi Energy Minister Abdulaziz wanted to have an in-person OPEC+ June 4 meeting to announced no change. (Click Here)

6. Pease follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.

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

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Natural Gas - 54 bcf build in US gas storage; now 507 bcf YoY surplus

It's May so it's the normal natural gas injection season absent some unusual event. For the week of Apr 28, the EIA reported a +54 bcf build (vs expectations of a 52 bcf build), compared to the +77 bcf build reported for the week of Apr 29 last year. This is slightly less than last week's build of +79 bcf, and the 5-year average build of +43 bcf. Total storage is now 2.063 tcf, representing a surplus of +507 bcf YoY compared to a surplus of +525 bcf last week and is +341 bcf above the 5-year average vs +365 bcf above last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [LINK].

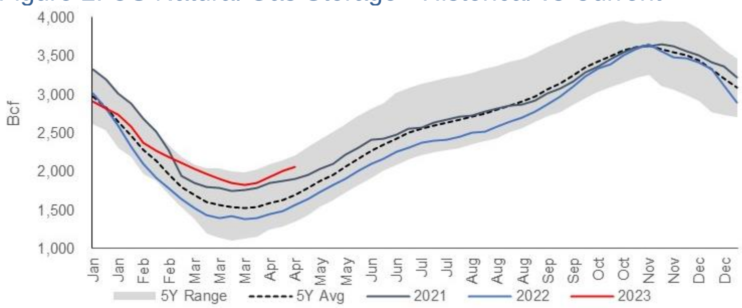
US gas storage 507 bcf YoY surplus

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Year ago (04/28/22)		5-year average (2018-22)	
Region	04/28/23	04/21/23	net change	implied flow	Bcf	% change	Bcf	% change
East	410	390	20	20	251	63.3	301	36.2
Midwest	481	468	13	13	322	49.4	360	33.6
Mountain	95	90	5	5	92	3.3	97	-2.1
Pacific	100	90	10	10	175	-42.9	193	-48.2
South Central	977	971	6	6	715	36.6	772	26.6
Salt	278	275	3	3	230	20.9	247	12.6
Nonsalt	699	695	4	4	486	43.8	525	33.1
Total	**2,063**	**2,009**	**54**	**54**	**1,556**	**32.6**	**1,722**	**19.8**

Source: EIA

Figure 2: US Natural Gas Storage - Historical vs Current



Source: EIA, SAF

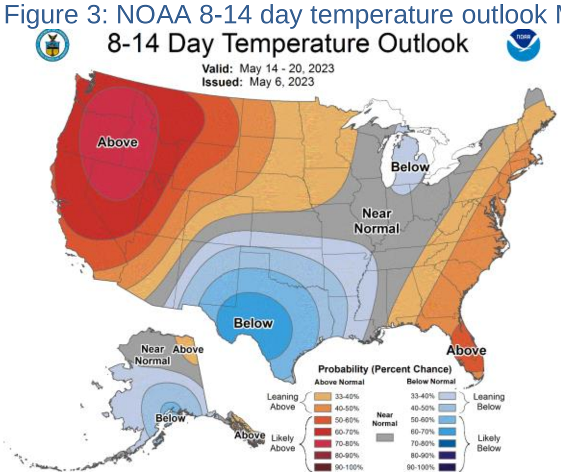
Natural Gas – NOAA 8-14 day temperature outlook is no major weather driven demand

We are now into one week into May and about to move into hotter summer temperatures. Sometimes there will be really hot temperatures in May that drive a good weather driven boost to natural gas demand. But there doesn't look to be that big boost in the current NOAA near term outlooks. NOAA posts daily an updated 6-10 day and 8-14 day temperature probability outlook. Yesterday's NOAA 8-14 day outlook [LINK] is valid for May 14-20, the 3rd week of May, and calls for hot weather in the NW, normal to cooler temperatures thru the middle of the US and then some warmer temperatures along the east coast. We wanted to

NOAA 8-14 day outlook

check out what AccuWeather sees for daily highs for cities like New York and Washington and the temperatures weren't that hot. New York was generally below 25C and Washington was generally between 24C and 28C for daily highs. So warmer but wouldn't be expected to be a big driver to natural gas demand.

Figure 3: NOAA 8-14 day temperature outlook May 14-20



Source: NOAA

Natural Gas – NBC Energy team "*its not looking promising for AECO"* this summer

NBC Energy team on AECO

One of the biggest lessons I have learned from working at SAF Group is that people with experience that specialize in commodities are big value added to my perspective on how I look at oil and gas. Which is also why I make a point of reading commodity focused groups views. One of my favorite daily reads is the National Bank of Canada Energy and FX Commentary. Thanks to Dave Nielsen and Kevin Streimer of NBC for the morning note and, more importantly, answering any of my questions. One of the big advantages of their report is that they don't just say AECO is likely weak this summer and make a couple of sentence. They provide data, analysis and forecast that gives the reader the WHY for their view. Their Tuesday morning note had a section on their updated look at AECO this summer and it is an excellent AECO discussion. No surprise, they warn "*Who knows for sure what 2023 and 2024 summers bring, but there is precedent to fill early in the year and shut-in production/send more via exports with basis widening. We'll continue to develop this AECO/NGTL outlook through the coming month and we probably have to adjust something, but it is not looking promising for AECO overall as the basin continues to face excess supply in the wake of restrictions and massive margins to inject."* We recommend reading their AECO analysis. Our Supplemental Documents package includes their AECO comments from Tuesday.

Natural Gas – Shell, "LNG Canada coming onstream around the middle of this decade"

Minor delays to LNG Canada Phase 1

Shell CEO didn't say it, but it sounds to us like there will be a minor delay to first LNG at the 1.8 bcf/d LNG Canada Phase 1. The reality is that, if so, it's pretty impressive that there is only a minor delay to the startup. Shell CEO previously said first LNG cargoes "by" the middle of the decade whereas in the Q1, he said "around" the middle of the decade". We suspect he is pointing to first LNG Canada cargos sometime in 2025 or early 2026. Shell knows there is a difference. (i) Shell held its Q1 call on Thursday and we tweeted [LINK] *"#Shell Q1 Q&A still on/ CEO Sawan "continue to be incredibly excited about the prospect of that project [#LNGCanada] coming onstream around the middle of this decade. It's making good progress". Sounds like minor delay vs Sawan 02/21/22 "by the middle of this decade" #LNG #OOTT."* (ii) In the Q&A on Thurs, CEO Sawan said ". *So no new guidance other than to say we continue to anticipate startup there around the middle of the decade. I look forward to seeing where that goes.".* (iii) This is different than what Sawan said in their Feb 21, 2022 Integrated Business Deep Dive before he took over as CEO. We highlighted this in our Feb 27, 2022 Energy Tidbits memo, where Sawan said "*The project remains dedicated to have the first cargo by the middle of this decade*". Our Supplemental Documents package includes the transcript we made of Sawan's comments from Thurs and from Feb 21, 2022.

Shell CEO Sawan's minor delay seems to fit Coastal GasLink timing

Shell CEO Sawan switching from "by" to "around" the middle of the decade would seem to fit with the uncertainty as to when Coastal GasLink will be fully commissioned and ready to start natural gas deliveries to LNG Canada. (i) TC Energy reported Q1 on Apr 28. In its Coastal GasLink update, TC Energy wrote "*Over the winter construction season, the Coastal GasLink project progressed in line with our revised cost and schedule and is now approximately 87 per cent complete. The entire project route has been cleared, grading is approximately 99 per cent complete, welding is approximately 95 per cent complete and we continue to target mechanical completion in late 2023."* Mechanical completion doesn't mean the pipeline is operational and ready to move natural gas as planned. (ii) TC Energy did not say this on Apr 28 but, in its Q4/22 release, wrote "*The work plan continues to target mechanical completion by year-end 2023, with commissioning and restoration work continuing into 2024 and 2025.*" We think the big factor is when will commissioning be completed ie. how far into 2024 or 2025 will the commissioning be? What isn't clear to us is will TC Energy allow Coastal GasLink to move into full operations if commissioning was complete but there are still people working on restoration along the pipeline and by pumping stations? Our Supplemental Documents package includes the Coastal GasLink updates from TC Energy's Q1/23 release and Q4/22 release.

Figure 4: Coastal GasLink Pipeline

Source: Coastal GasLInk

No questions or comments potential LNG Canada Phase 2 FID
Shell did not mention any potential LNG Canada 1.8 bcf/d Phase 2 FID in the Q1 release or in management's prepared comments on the Q1 call. Nor did any analyst ask any questions on a potential LNG Canada Phase 2 FID.

Natural Gas – Mexico's natural gas production finally above 5 bcf/d, +5.6% YoY

Mexico natural gas above 5 bcf/d in March

On Monday, Pemex reported [LINK] its natural gas data for March. Pemex reported natural gas production of 5.035 bcf/d, which was +5.6% YoY and +1.1% MoM. But the story for Mexico natural gas remains unchanged – for the past 5 years, an ongoing theme of the Mexican energy sector, has been their inability to grow domestic natural gas production. Other than a few months, Mexico's natural gas production has been stuck below 5 bcf/d since Sept 2017. In Jan, we saw one of the largest MoM gains (+2.3%) while Mexico begun increasing exports with downed export capacity in the US associated with the Freeport LNG outage. Mexico's unchanged production over the past five years has created the need for increased US pipeline exports to Mexico as Mexico builds out its domestic natural gas infrastructure. Pemex does not provide any commentary along with its production data. Below is our ongoing table of Pemex reported monthly natural gas production.

Figure 5: Mexico Natural Gas Production (bcf/d)

Natural Gas Production bcf/d	2017	2018	2019	2020	2021	2022	22/21	2023	23/22
Jan	5.326	4.910	4.648	5.005	4.848	4.713	-2.8%	4.955	5.1%
Feb	5.299	4.853	4.869	4.942	4.854	4.646	-4.3%	4.979	7.2%
Mar	5.383	4.646	4.857	4.946	4.839	4.766	-1.5%	5.035	5.6%
Apr	5.334	4.869	4.816	4.827	4.671	4.740	1.5%		
May	5.299	4.827	4.841	4.460	4.730	4.702	-0.6%		
June	5.253	4.840	4.843	4.754	4.727	4.744	0.4%		
July	5.216	4.856	4.892	4.902	4.725	4.815	1.9%		
Aug	5.035	4.898	4.939	4.920	4.656	4.796	3.0%		
Sept	4.302	4.913	5.017	4.926	4.746	4.798	1.1%		
Oct	4.759	4.895	4.971	4.928	4.718	4.795	1.6%		
Nov	4.803	4.776	5.015	4.769	4.751	4.845	2.0%		
Dec	4.811	4.881	5.024	4.846	4.697	4.845	3.2%		

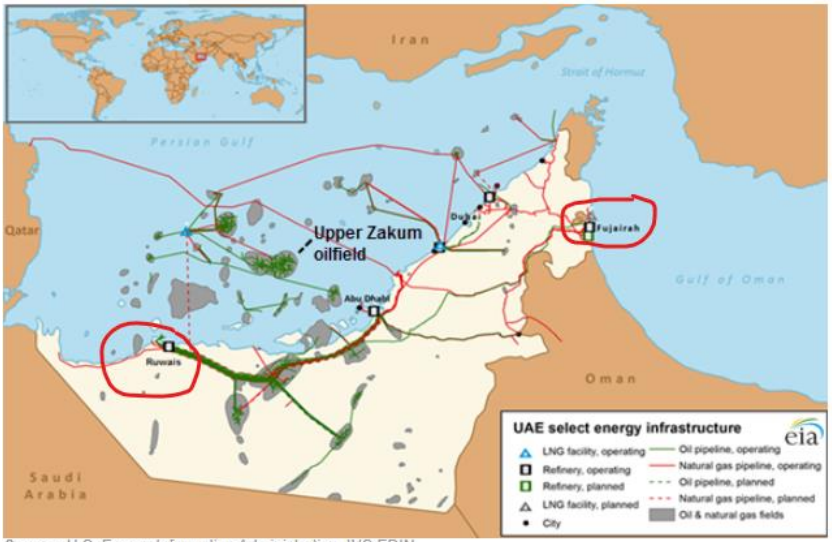
Source: Pemex

Natural Gas – UAE new LNG expansion switched to Ruwais in Persian Gulf

Switch in UAE LNG expansion location

On Tuesday morning, we were surprised to see the Bloomberg report that "*The United Arab Emirates has decided to build its new natural gas export facility at the Persian Gulf port of Ruwais instead of at Fujairah on the Gulf of Oman coast. State-controlled Abu Dhabi National Oil Co. initially planned to construct the plant — which will more than double the UAE's liquefied natural gas production capacity — at Fujairah, a major trading hub for oil products in the Middle East. The company said it had evaluated all options for locations and decided that Ruwais benefited from being closer to some of Adnoc's major facilities, which include gas fields and petrochemical plants."* We tweeted [LINK] "*Does UAE expect a future of getting along with Iran & less geopolitical risk to #1 #Oil #LNG chokepoint - the Strait of Hormuz? @A_DiPaola17 : UAE initially planned LNG export expansion at Fujairiah, free of Strait of Hormuz. But is switching to Ruwais in Persian Gulf. #OOTT."* We understand the operational logistics of having the new LNG export facility closer to the source natural gas, but the priority for the past few decades was getting export capacity not having to go thru the Strait of Hormuz. UAE is moving the location of the LNG facility expansion from Fujairiah, which is outside the Persian Gulf to Ruwais, inside the Persian Gulf and where all LNG tankers will now have to go thru the Strait of Hormuz. For the past few decades, the priority for UAE and Saudi Arabia has been to get their export products away from having to go thru the Strait of Hormuz due to risk of conflict with Iran. Saudi Arabia has increased their pipeline capacity to the Red Sea and UAE has focused on getting exports to Fujairiah. So this move surprised us. Our Supplemental Documents package includes the Bloomberg report.

Figure 6: UAE export ports at Ruwais in Persian Gulf and Fujairiah in Gulf of Orman



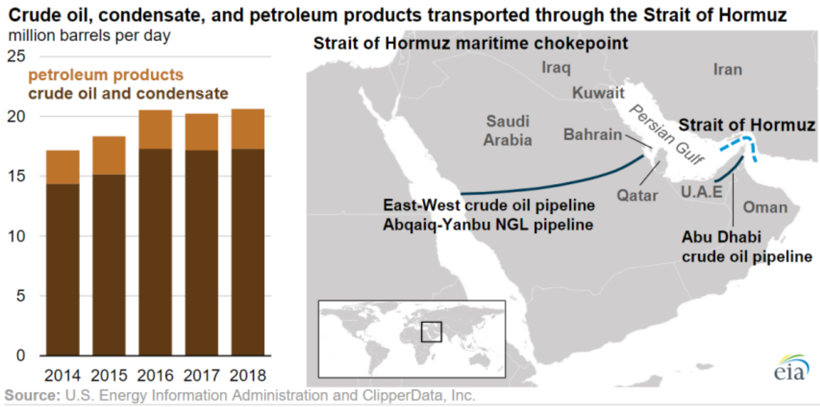
Source: U.S. Energy Information Administration, IHS EDIN

Source: EIA

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

As noted in the above map, the Gulf of Oman is just before the entry to the Strait of Hormuz, which is the most important chokepoint for global oil and LNG shipping. This EIA blog is four years old, but still provides an excellent recap of the significance of the Strait of Hormuz. We recommend adding the June 20, 2019 EIA brief "*The Strait of Hormuz is the world's most important oil transit chokepoint"* to reference libraries. The brief reminds that 17.3 mmb/d of crude oil and condensate flows thru the Strait of Hormuz, but also highlights there is 3.3 mmb/d of petroleum products and over 11 bcf/d of LNG flows thru the Strait. The significance is that the EIA the liquids flows are "*equivalent of about 21% of global petroleum liquids consumption".* This is of total global consumption, not of global oil import/export volumes. The brief also notes "*There are limited options to bypass the Strait of Hormuz. Only Saudi Arabia and the United Arab Emirates have pipelines that can ship crude oil outside the Persian Gulf and have the additional pipeline capacity to circumvent the Strait of Hormuz. At the end of 2018, the total available crude oil pipeline capacity from the two countries combined was estimated at 6.5 million b/d. In that year, 2.7 million b/d of crude oil moved through the pipelines, leaving about 3.8 million b/d of unused capacity that could have bypassed the strait*". Our Supplemental Documents package includes the EIA brief.

Figure 7: Crude oil, Condensate & Petroleum Products Flows Thru Strait of Hormuz



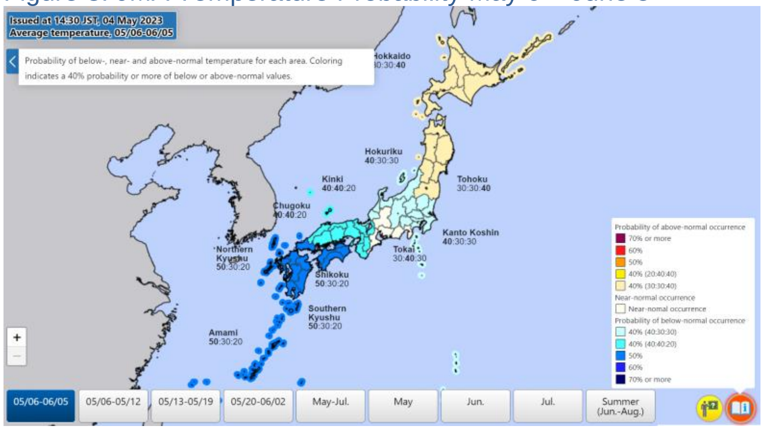
Source: EIA

Natural Gas – No real weather natural gas demand expected in May in Japan

It looks like there won't be any significant weather driven natural gas demand in May in Japan. On Thursday, the Japan Meteorological Agency updated its 30-day outlook [LINK] and is forecasting cooler than normal temperatures for May throughout most of Japan. If so, this would be a temperature forecast that really doesn't have any weather driven natural gas demand. Rather it would be perfect leave the windows open weather. Below is the JMA's temperature probability forecast for May 6 to June 5.

Colder than normal May for Japan

Figure 8: JMA Temperature Probability May 6 – June 5



Source: Japan Meteorology Agency

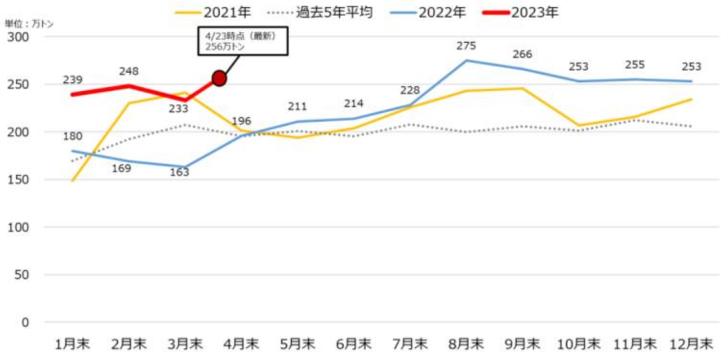
Natural Gas – No weekly reporting of Japan's LNG stocks due to Golden Week

It was Golden Week in Japan this week, which meant markets were closed most of the week for the annual week long holiday at the end of April and beginning of May that includes a number of key holidays such as Constitutional Memorial Day on May 3 and Children's Day on May 5. Last week's (Apr 30, 2023) Energy Tidbits memo reported on the last Japan's METI weekly LNG stocks data that was released on Wed Apr 26 [LINK]. LNG stocks on Apr 23

No Japan LNG stocks data

were ~122.9 bcf +5.79% WoW from Apr 15 of ~116.2 bcf and well above the 5-year average of ~93.7 bcf. Below is the LNG stocks graph from the METI weekly report.

Figure 9: Japan's LNG Stocks



Source: METI

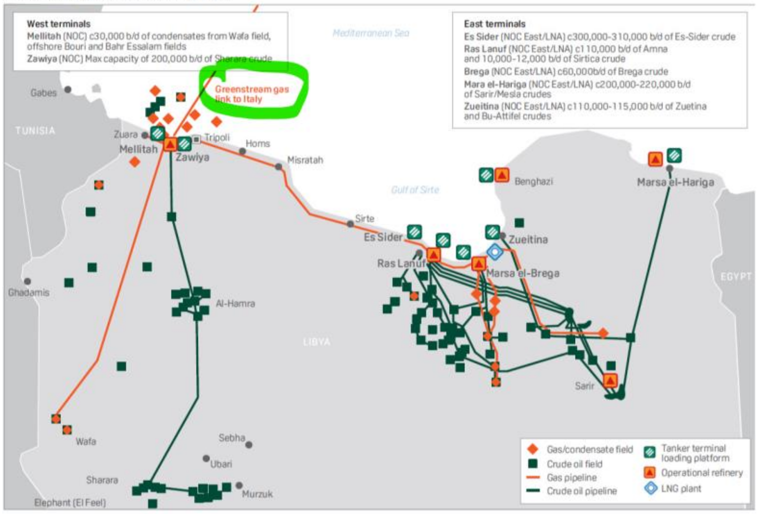
Natural Gas – Libya's Greenstream gas pipeline to Italy stated 3-week maintenance

Greenstream pipeline maintenance

It's not a huge volume at 0.25 bcf/d, but Libya's Greenstream natural gas pipeline to Italy started an approx. 3-week maintenance on May 1. Last Sunday, the Libya National Oil Corporation had a Facebook posting [LINK] that said, via Google Translate "*The meeting, which was held today, Saturday, via closed circuit, discussed the arrangements that will be taken during the comprehensive stoppage of the Mellitah complex, starting from 1/5/2023, to ensure the provision of quantities of natural gas to operate the iron and steel complex and power stations, as well as the possibility of securing additional quantities of gas via line 103. - The coastal field to produce the largest possible quantities of electricity to cover the expected deficit in electricity supply as a result of the lack of gas during the shutdown period, which is expected to last approximately 3 weeks.*" The natural gas is imported by Eni. We couldn't find the actual volumes imported. But it looks like there was 0.31 bcf/d of Libya gas via Greenstream in 2021 and, in the summer of 2022, Libya NOC reportedly told Eni it was going to cut exports by 25% as they need more natural gas for Libya domestic markets. So we have assumed current volumes are ~0.25 bcf/d. Below is a Platts map of Libyan Oil and Gas Infrastructure that shows the Greenstream gas pipeline to Italy at the Northwest coast of Libya.

Figure 10: Greenstream gas pipeline from Libya to Italy

LIBYAN OIL AND GAS INFRASTRUCTURE



Source: S&P Global Platts

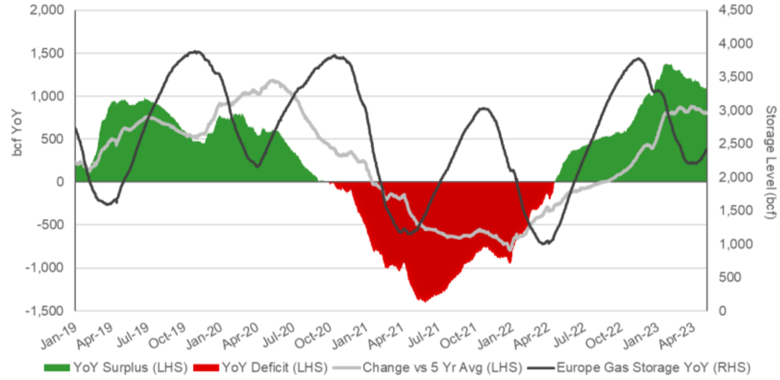
Source: Platts

Natural Gas – Europe storage is now +19.34% vs 5-yr average, +25.80% YoY

European gas storage

The big global natural gas story for Q1/23 was how mild winters in Europe and Asia were the key reason why Europe made it through winter without a natural gas shortage. There was negligible weather driven demand for natural gas, which along with the continued industrial demand destruction, meant storage levels are at still at high levels. However, we are seeing a narrowing of the Europe gas storage surplus with the lower European natural gas prices and how the strikes in France reduced LNG imports in April. This winter (Nov 1/22) began with gas storage at 94.94% capacity, up 17.86% YoY and is now a YoY surplus of 26.42%. However, average temps continued to get warmer this past week resulting in storage increasing by +2.07% WoW to 60.73% on May 5. Storage is now +25.80% greater than last year levels of 34.93% and is +19.34% above the 5-year average of 41.39%. In addition, current storage is currently within the 5-year range, albeit at the top end of the range. Below is our graph of Europe Gas Storage Level.

Figure 11: Europe Gas Storage Level



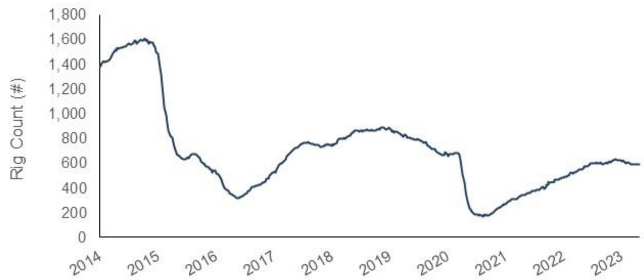
Source: Bloomberg

Oil – US oil rigs down WoW at 588 oil rigs on May 5

US oil rigs down WoW

Baker Hughes released its weekly North American drilling activity data on Friday. This week total US oil rigs were flat WoW at 588 rigs as of May 5. Total US oil rig count is now at 599 rigs, +31 rigs YoY, +107 from the 2022 low of 481 rigs in January and +416 since the 2020 low of 172 rigs on Aug 14. Notably, on a per basin basis the Permian was down -5 rigs to 352 and "Others" added +4 rigs to 88 oil rigs, respectively. Williston rig counts declined by -1 rigs while Cana Woodford was up +1 rigs to 39 and 26 rigs, respectively. US gas rigs were down -4 rigs WoW to a total of 157 rigs, with Eagle Ford down -2 rigs to 6 total gas rigs and Haynesville and Others both down -1 rigs to 62 and 32 rigs respectively. US gas rigs have increased +11 rigs YoY. Below is our graph of total US oil rigs.

Figure 12: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

Oil – Total Cdn rigs flat WoW at 93 total rigs, but wildfires like to see rigs go down

Cdn total rigs flat WoW

Cdn drilling is now well into spring break up, which is the period of declining rigs that goes to the yearly trough in rigs. Traditionally, Cdn rigs hit their trough the last week of April or first week of May. And it looks like that held true in 2023 as it appears that Canada hit its seasonal trough this week. The caveat to that call is the Alberta wildfires and we expect to see Cdn rigs and frack crews be impacted by the wildfires. So look for declines again this week. Total Cdn rigs were down flat WoW at 93 rigs as of may 5. Notably, the week of May 5 saw a -4 rig decline in AB, +4 rig increase in BC with all other provinces flat WoW. There are now a total of 93 active rigs, +42 rigs vs the comparable Covid period of 51 rigs on Apr 30, 2021. Cdn oil rigs and rigs fell by -2 rigs WoW to 34 while Cdn gas rigs increased +2 to 59 rigs. Cdn oil rigs are now -8 YoY compared to 42 rigs last year while gas rigs are +10 YoY from 49 rigs. Below is our graph of total Cdn oil rigs.

Figure 13: Baker Hughes Total Canadian Oil Rigs

Source: Baker Hughes

Oil – US weekly oil production up WoW at 12.3 mmb/d

US oil production up WoW

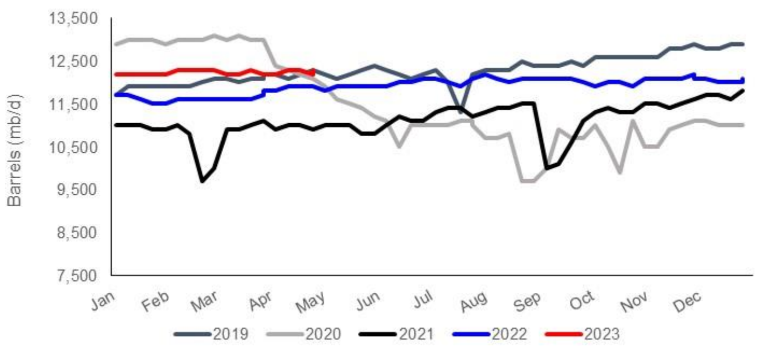
We shouldn't be surprised to see the EIA weekly oil production estimates up this week to 12.3 mmb/d given how the EIA's "actuals" from their Form 914 data ha been reporting US oil production higher than the weekly estimates. The EIA estimates US oil production was up WoW to 12.3 mmb/d for the week ended Apr 28 with the Lower 48 also up 0.100 mmb/d at 11.9 mmb/d and Alaska flat at 0.442 mmb/d. US oil production, based on the weekly estimates, was mostly range bound in 2022 between 11.9 to 12.1 mmb/d since the 2nd week of May. But this year production broke above 12.1 mmb/d to 12.2 mmb/d for the week ended Jan 6, and has remained at or above 12.2 mmb/d ever since. The first time since it touched 12.2 mmb/d since the pandemic was the 1st week of August in 2022. Total US production reached its highest level since March 13, 2020, this year on Feb 3 at 12.3 mmb/d. US oil production is up +0.400 mmb/d YoY at 12.3 mmb/d but is still down significantly at -0.900 mmb/d since the 2020 peak of 13.1 mmb/d on March 13, 2020.

Figure 14: EIA's Estimated Weekly US Oil Production

	Week 1		Week 2		Week 3		Week 4		Week 5	
Year-Month	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
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
2023-Jan	01/06	12,200	01/13	12,200	01/20	12,200	01/27	12,200		
2023-Feb	02/03	12,300	02/10	12,300	02/17	12,300	02/24	12,300		
2023-Mar	03/03	12,200	03/10	12,200	03/17	12,300	03/24	12,200	03/31	12,200
2023-Apr	04/07	12,300	04/14	12,300	04/21	12,200	04/28	12,300		

Source: EIA

Figure 15: US Weekly Oil Production



Source: EIA, SAF

EIA's Form 914 "actuals" for Feb were +0.18 mmb/d vs weekly estimates
Here is what we wrote in last week's (Apr 30, 2023) Energy Tidbits memo. "*As a reminder there is a sizeable difference between what the EIA looks as "actuals" for US oil production vs the EIA's weekly estimates noted above. On Friday, we tweeted [LINK] "#EIA Form 914 actuals: US oil production stronger than many expect. Feb 23 was 12.483 mmb/d, +1.177 mmb/d YoY. 2nd highest since Covid, following revised up Jan 23 of 12.536 mmb/d. Note Feb actuals of 12.483 mmb/d are +0.18 mmb/d vs @EIAgov weekly estimates. #OOTT." On Friday, The EIA released its Form 914 data [LINK], which is the EIA's "actuals" for February US oil and natural gas production. There were two key takeaways from the EIA's weekly US oil production*

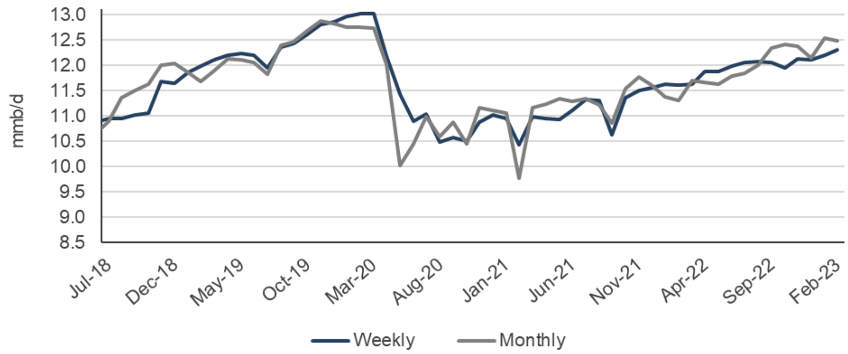
data for Feb – the actuals were 183,000 b/d more than the weekly estimates, and Feb was the 2nd highest US oil production since Covid at +1.177 mmb/d YoY to 12.483 mmb/d vs. Jan's post-Covid peak of 12.536 mmb/d. Note that Jan's data was revised up by +74,000 b/d since the March Form 914 release. (i) Form 914 estimates that total US oil production saw a marginal decrease of -53,000 b/d MoM to 12.483 mmb/d in February. The actuals for February were 183,000 b/d higher than the EIA's weekly estimates that worked out to 12.300 mmb/d. January actuals were adjusted higher to 12.536 mmb/d and were 336,000 b/d higher than weekly estimates of 12.200 mmb. (ii) There was a slight MoM decrease of -0.053 mmb/d vs Jan of 12.536 mmb/d. Our Supplemental Documents package includes the New Mexico, Texas and offshore Gulf of Mexico tables attached to our tweet.

Figure 16: EIA Form 914 US Oil Production (thousand b/d)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	12,536	12,483										
2022	11,369	11,316	11,701	11,668	11,629	11,797	11,844	12,002	12,337	12,417	12,379	12,149
2021	11,124	9,925	11,326	11,305	11,356	11,356	11,347	11,277	10,918	11,569	11,790	11,634
2020	12,852	12,842	12,797	11,914	9,713	10,442	11,006	10,577	10,921	10,457	11,196	11,168
2019	11,869	11,673	11,913	12,149	12,154	12,218	11,902	12,486	12,590	12,809	13,000	12,978
2018	10,001	10,281	10,467	10,500	10,435	10,641	10,897	11,392	11,443	11,509	11,886	11,945
2017	8,875	9,110	9,166	9,101	9,185	9,111	9,247	9,250	9,517	9,669	10,085	9,983

Source: EIA

Figure 17: EIA Form 914 US Oil Production vs Weekly Estimate



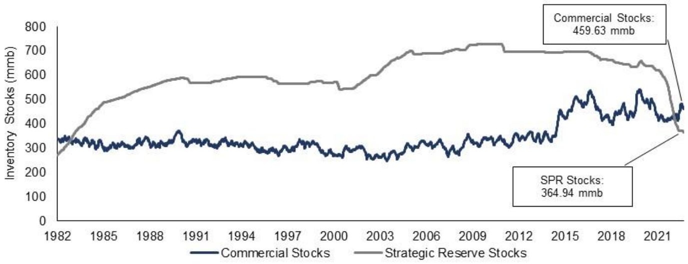
Source: EIA

Oil – US SPR reserves now -94.69 mmb lower than commercial crude oil reserves

US SPR reserves

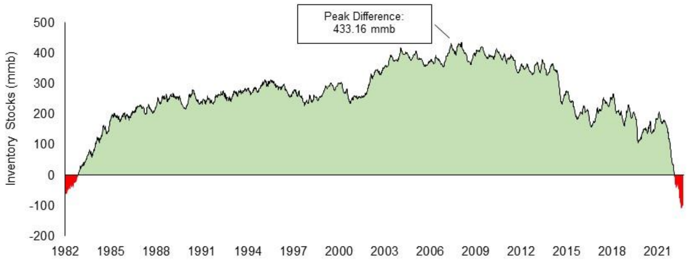
Oil in US Strategic Petroleum Reserves (SPR) moved below total US commercial crude oil reserves in the Sept 16 week for the first time since 1983, with the deficit narrowing this week due to the draw in commercial oil stocks exceeding that in the SPR. However, this week's data showed another SPR draw of -2.0 mmb compared to the -1.02 mmb draw last week and came after 10 consecutive weeks of no change up until the Jan 13 week. The EIA's weekly oil data for Apr 28 has SPR reserves at 364.94 mmb vs commercial crude oil reserves at 459.63 mmb. The last time the SPR was down at this level was on Nov 4, 1983, at 368.32 mmb. The below graphs highlight the difference between commercial and SPR stockpiles.

Figure 18: US Oil Inventories: Commercial & SPR



Source: EIA

Figure 19: US Oil Inventories: SPR less commercial



Source: EIA

Oil – SPR now down 6.6 mmb of planned 26 mmb SPR draw ie. 19.4 mmb to go

SPR going 26 mmb lower

We have been reminding that the US SPR was going 26 mmb lower. With the 2.0 mmb draw for the April 28 week, the recent SPR withdraws are now up to 6.6 mmb, which means there is still another 19.4 mmb to go until the 26 mmb draw is reached. Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. "*On Monday, Bloomberg reported "The Biden administration plans to sell more crude oil from the Strategic Petroleum Reserve, fulfilling budget directives mandated years ago that it had sought to stop as oil prices have stabilized. The congressionally mandated sale will amount to 26 million barrels of crude, according to people familiar with the matter. The sale is in accordance with a budget mandate enacted in 2015 for the current fiscal year, said a spokesperson for the Department of Energy. The Energy Department has sought to stop some of the sales required by 2015 legislation so that it can refill the emergency reserve, which currently has about 371 million barrels. After this latest release, the reserve will dip to about 345 million." The last time the SPR was 345 mmb was in Aug 1983 at 345.7 mmb.*

Oil – Cdn oil differentials narrowed $0.50 to close at $14.15 on May 5

WCS less WTI differentials

We have been highlighting how Chevron's start of Venezuela oil imports into PADD 3 Gulf Coast should have a negative impact on Cdn heavy/medium oil prices. The more Venezuela oil that reaches the Gulf Coast means less Cdn barrels are needed in the Gulf Coast. There are two near term positives to Cdn heavy/medium oil prices: the voluntary OPEC+ cuts that started on May 1, and less Mexico oil into PADD 3 as its refineries kick up crude oil processed starting this summer. Since the Apr 3 OPEC+ announcement, WCS differentials are basically unchanged. WCS less WTI differentials were $14.15 on March 31, which was the Friday before the Sun Apr 2 reports that OPEC+ was going to cut. The WCS less WTI differential widened to $15.40 on Apr 13, and then narrowed to $14.65 on Apr 28. This week, WCS less WTI differential s narrowed by $0.50/b to close at $14.15/b on May 5. For perspective, a year ago, the WCS-WTI differential was $13.55 on May 5, 2022. We also remind that WCS less WTI differentials normally reach their narrowest in May. Below is Bloomberg's current WCS–WTI differential as of May 5, 2023 close.

Figure 20: WCS less WTI oil differentials including May 5 close

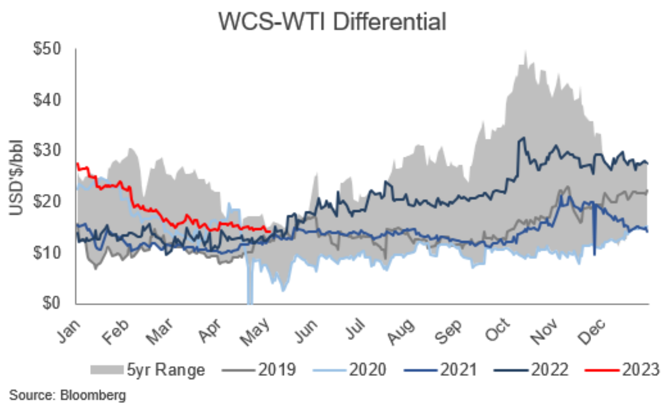
Source: Bloomberg

Oil – May is normally when Cdn heavy oil differentials are at their narrowest

There are always unplanned events (ie. last year's Keystone interruption) that impact WCs-WTI differentials. And also big items like releases of mostly medium oil out of the SPR or OPEC cuts that normally first involve cutting heavy/medium crudes. However, special items aside, May is normally when Cdn heavy oil differentials are at their narrowest. Cdn heavy oil differentials normally narrow in the Feb/Mar/Apr period as this is when refineries tend to maximize production of asphalt ahead of the annual summer paving season. As is said in Canada, there are two seasons in Canada – winter and paving season. Below is graph showing WCS-WTI differentials that shows this normal seasonal trend of narrowing WCS-WTI differentials from Feb thru April with the narrowest normally being in May ie. right now.

WCS differentials normally narrow in spring

Figure 21 WCS less WTI oil differentials



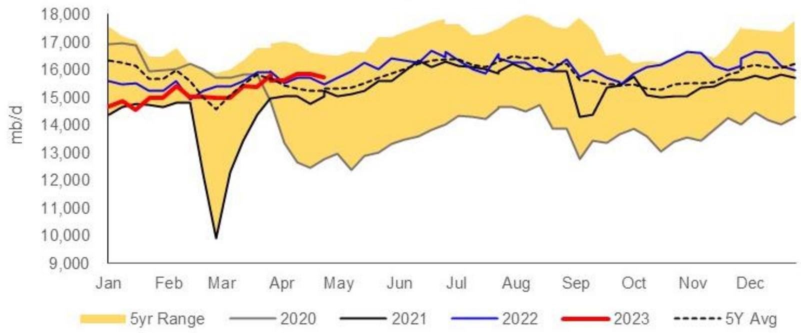
Source: Bloomberg

Oil – Refinery inputs down -0.098 mmb/d WoW to 15.735 mmb/d

Refiners switching to summer fuel blends

Refinery crude oil inputs decreased this week after being up last week. There are always unplanned refinery issues, and we remind Feb/early March is normally when we see refineries move into turnaround/maintenance i.e., crude oil inputs seasonally decline as refineries switch to produce more summer blend fuels. And normally, refineries come out of turnarounds in late March/early April to start their ramp up in refining of summer blend fuels. On Wednesday, the EIA released its estimated crude oil input to refinery data for the week ended Apr 28. The EIA reported crude oil inputs to refineries were down -0.098 mmb/d this week to 15.735 mmb/d but are up +0.269 mmb/d YoY from 15.466 mmb/d for the week ended Apr 29, 2022. This week's refinery utilization was down -0.6% WoW to 90.7% and is up +1.0% YoY. Total products supplied (i.e., demand) increased WoW, down -0.403 mmb/d to 19.805 mmb/d, and Motor gasoline was down -0.893 mmb/d to 8.618 mmb/d from 9.511 mmb/d last week. The 4-week average for Motor Gasoline was down -0.169 mmb/d YoY to 8.896 mmb/d. The 4-week average of Total demand was up +0.223 mmb/d YoY to 19.596 mmb/d.

Figure 22: US Refinery Crude Oil Inputs (thousands b/d)



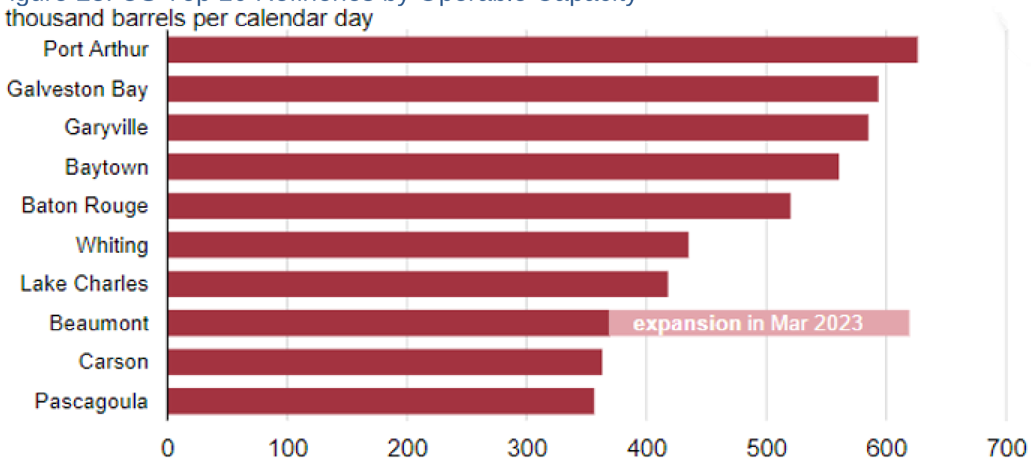
Source: EIA

Oil - Exxon's 250,000 b/d capacity add at Beaumont

Exxon's 250,000 b/d Beaumont refinery expansion

On Tuesday, the EIA posted its blog "*Beaumont refinery expansion boosts Gulf Coast petroleum refining capacity".* [LINK] The EIA highlights the March startup of Exxon's expansion at its Beaumont (Texas) oil refinery. he expansion makes the oil refinery one of the largest in the United States, behind the Port Arthur Refinery with its refining capacity now totalling over +630,000 b/d. The Beaumont expansion is the first major refinery expansion to come online since the COVID-19 pandemic which caused multiple refinery closures across the US in 2020 and 2021. The added capacity capitalizes also reminds of the growing refinery capacity in the Gulf Coast (PADD 3), which hosts 8 of the 10 largest refineries in the US, and benefits from existing infrastructure for shipping refined products to the East Coast and Mexico. The increased refinery capacity and resulting increased gasoline and diesel production are expected to reduce fuel prices this summer in comparison to 2022, while the possibility remains for the more refinery inventory to be offset by increasing consumption and lower inventories. We previously wrote on this in our March 19, 2023 Energy Tidbits memo which noted: *"On Thursday, ExxonMobil announced the completion of its Beaumont refinery expansion, increasing capacity by +250,000 b/d to a total of ~620,000 b/d [LINK]. This was* *the largest US refinery expansion seen since 2012 and makes Beaumont facility one of the largest refineries in the US, with total capacity falling just short of Saudi Aramco's Port Arthur refinery capacity of 626,000 b/d. The significant increase in capacity will help Exxon meet growing global demand for energy with strategic advantages being underpinned by the Beaumont refinery's connection to a network of crude pipelines from the Permian and Delaware basins.* Our Supplemental documents package includes the EIA blog.

Figure 23: US Top 10 Refineries by Operable Capacity



Source: EIA

Oil – Something doesn't look quite right in the EIA weekly oil imports by country data

US net oil imports

Looks like something is off in the EIA's estimates of weekly oil imports by country data. (i) For some reason, the EIA weekly data does not include any oil imports from Venezuela in 2023, when we have seen Chevron importing oil from Venezuela into its and other PADD 3 Gulf Coast refineries. What we don't know if the EIA has just allocated to some other country. Later in the memo, we note the Bloomberg tanker tracker data that estimates US oil imports from Venezuela were 143,000 b/d in April. (ii) That issue aside, US "NET" imports were up +0.103 mmb/d to 1.659 mmb/d for the Apr 28 week. US imports were up +0.02 mmb/d to 6.396 mmb/d. US exports were down -0.082 mmb/d to 4.737 mmb/d. The WoW increase in US oil imports was driven mostly by "Others" while the Top 10 posted an increase of +0.083 mmb/d. Some items to note on the country data: (iii) Canada was up +0.199 mmb/d to 3.526 mmb/d. (iv) Saudi Arabia was down -0.151 mmb/d to 0.242 mmb/d. (v) Mexico was down -0.022 mmb/d to 0.706 mmb/d. (vi) Colombia was flat +0.000 mmb/d at 0.143 mmb/d. (vii) Iraq was down -0.074 mmb/d to 0.148 mmb/d. (viii) Ecuador was up +0.021 mmb/d to 0.057 mmb/d. (ix) Nigeria was up +0.110 mmb/d to 0.214 mmb/d.

Figure 24: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Feb 17/23	Feb 24/23	Mar 3/23	Mar 10/23	Mar 17/23	Mar 24/23	Mar 31/23	Apr 7/23	Apr 14/23	Apr 21/23	Apr 28/23	WoW
Canada	3,197	3,605	3,780	3,371	3,240	2,957	3,980	3,590	3,519	3,327	3,526	199
Saudi Arabia	545	310	476	385	483	228	514	376	339	393	242	-151
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	683	725	556	633	1,118	541	920	450	615	728	706	-22
Colombia	284	143	222	294	244	269	71	159	303	143	143	0
Iraq	251	290	265	346	144	138	345	241	180	222	148	-74
Ecuador	145	97	55	46	0	118	80	242	131	36	57	21
Nigeria	256	98	243	170	129	104	302	236	112	104	214	110
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	5,361	5,268	5,597	5,245	5,358	4,355	6,212	5,294	5,199	4,953	5,036	83
Others	965	940	674	971	814	970	932	899	1,095	1,423	1,360	-63
Total US	6,326	6,208	6,271	6,216	6,172	5,325	7,144	6,193	6,294	6,376	6,396	20

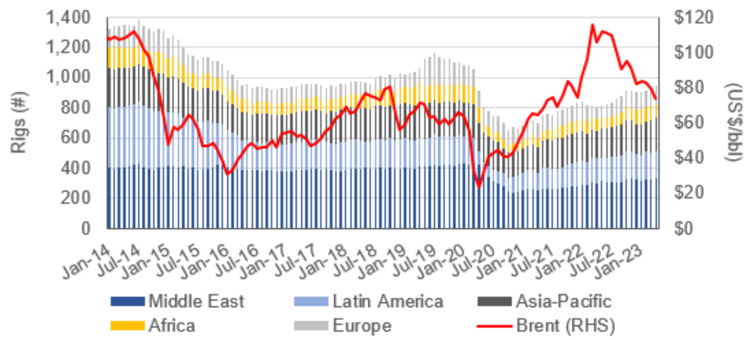
Source: EIA

Oil – Baker Hughes International rigs +17 MoM to 947 rigs in February

International rigs +17 MoM

Baker Hughes posted its monthly update to international rigs on Friday, which showed a large MoM increase in rig counts. April's increase is back in-line with the six-month trend of rig net additions seen from May to October of 2022. (i) Total international rigs increased by +17 rigs MoM to 947 rigs in April, and total rigs are now up +141 rigs from the recent low of 806 in April 2022. (ii) Libya, Indonesia, and Saudi Arabia had the largest MoM increases of +6 to 14 rigs, +6 to 43 rigs, and +6 to 84 rigs, respectively. In contrast, Bolivia, Columbia, and India had the largest MoM declines of -3 to 4 rigs, -3 to 31 rigs, and -2 to 75 rigs, respectively. Notably, Ukraine's rig count was flat for the fourth straight month at 37 rigs and is up +32 rigs YoY. (iii) April's count of 947 rigs was +17% YoY from 806 in April 2022, and up +3% vs pre-Covid April 2020 of 915 rigs. The YoY rig count is as follows: Africa +15, Asia-Pacific +35, Europe +49, Latin America +15, and the Middle East +37. (iv) Rig counts continue to be solid in the major Persian Gulf countries but remain below pre-Covid levels. Since February 2022, the UAE has added +22 rigs YoY to 56 active rigs in April 2023, while Saudi Arabia added +17 rigs and Iraq added +16 rigs each over the same period. Africa moderately increased its rig count YoY with Nigeria adding +5 rigs and Angola adding +3 rigs. Below is our graph of international rigs by region and avg monthly Brent price.

Figure 25: Baker Hughes International Rig Count and Brent Price



Source: Baker Hughes, Bloomberg

Oil – increasing Venezuela oil into Gulf Coast, negative to WCS-WTI differentials

More Venezuela oil into Gulf Coast

Last week's (Apr 30, 2023) Energy Tidbits memo highlighted our Apr 29 tweet [LINK] that Chevron's start of Venezuela oil imports into the Gulf Coast is likely impacting Cdn WCS less WTI differentials and how Venezuela oil into the Gulf Coast will be increasing in March and

April. On Monday, Bloomberg's Tanker Tracker for Venezuela confirmed the increases in March and April. We tweeted [LINK] '*Blame it on #Chevron. Seasonal narrowing for WCS-WTI differentials, but not as much as might be expected. Increasing PADD 3 Gulf Coast imports of VEN #Oil. Feb: 89 kbd. Mar: 115 kbd. Apr: 143 kbd. Thx @business Tanker Tracker, @lkassai. #OOTT".* Our Supplemental Documents package includes the Bloomberg report and the Bloomberg Tanker Tracker that lists each tanker lifting Venezuela oil and its signaled destination.

Figure 26: Blomberg Venezuela oil exports by month and destination

Destination	MoM Change	April	March	February	January
(Thousand barrels per day)					
China	7	330	323	284	348
US	28	143	115	89	76
All destinations	86	561	475	404	450

Source: Bloomberg

Oil – Pemex oil production still below 1.6 mmb/d but this excludes partner volumes

Pemex March oil production

Pemex reported their production figures for March on Monday [LINK], we note that they do not provide explanation on the data. Pemex's March oil production for its interests was up 0.9% MoM, in a similar size as the MoM decrease in their partners production. On Wednesday, Pemex released its March production for its interests, it was 1.597 mmb/d of oil for Pemex working interest barrels, which is still down from the last several months. Pemex has been unable to grow its own oil production and failed to hit hits refining targets for most of 2022. As a result, total Mexico oil production (Pemex and non-Pemex) was 1.858 mmb/d for March and 1.849 mmb/d for February. Below is our table tracking Pemex oil production.

Figure 27: Pemex (Excl 3rd Party) Mexico Oil Production

Oil Production (thousand b/d)	2016	2017	2018	2019	2020	2021	2022	2023	23/22
Jan	2,259	2,020	1,909	1,623	1,724	1,651	1,705	1,584	-7.1%
Feb	2,214	2,016	1,876	1,701	1,729	1,669	1,684	1,582	-6.1%
Mar	2,217	2,018	1,846	1,691	1,745	1,697	1,696	1,597	-5.8%
Apr	2,177	2,012	1,868	1,675	1,703	1,693	1,686		
May	2,174	2,020	1,850	1,663	1,633	1,688	1,690		
June	2,178	2,008	1,828	1,671	1,605	1,698	1,702		
July	2,157	1,986	1,823	1,671	1,595	1,701	1,707		
Aug	2,144	1,930	1,798	1,683	1,632	1,657	1,691		
Sept	2,113	1,730	1,808	1,705	1,643	1,709	1,685		
Oct	2,103	1,902	1,747	1,655	1,627	1,692	1,698		
Nov	2,072	1,867	1,697	1,696	1,633	1,691	1,706		
Dec	2,035	1,873	1,710	1,706	1,650	1,694	1,576		

Source: Pemex

Oil – Mexico exports 971,000 b/d of oil in March

Pemex March oil exports

Please note that we continue to expect Mexico oil exports to decline throughout 2023 as they start up their new refinery. On Wednesday, Pemex posted its oil exports for March [LINK] which were 0.971 mmb/d, up +7.3% YoY from 0.905 mmb/d in March 2022, and up +2.3% MoM from 0.949 mmb/d in Feb. Oil exports can normally vary +/- 1.0 mmb/d, but changes in export volumes can be impacted by varying production levels of petroleum products.

Although this month was not impacted, an increase in the production of petroleum products (i.e., Mexico refined more of its oil) would result in further reductions in export volumes. Mexico oil exports in the US wore 0.648 mmb/d in Ma, which is down -1.9% from 0.650 mmb/d in Feb and -1.9% YoY. Below is our table of the Pemex oil export data.

Figure 28: Pemex Mexico Oil Exports

Oil Exports (thousand b/d)	2016	2017	2018	2019	2020	2021	2022	22/21	2023	23/22
Jan	1,119	1,085	1,107	1,071	1,260	979	832	-15.0%	980	17.8%
Feb	1,241	1,217	1,451	1,475	1,093	1,006	925	-8.1%	949	2.6%
Mar	1,062	1,001	1,176	1,150	1,144	925	905	-2.2%	971	7.3%
Apr	1,081	1,017	1,266	1,023	1,179	923	1,024	10.9%		
May	1,204	958	1,222	1,205	1,062	1,031	965	-6.4%		
June	1,098	1,157	1,110	995	1,114	1,106	1,029	-7.0%		
July	1,146	1,255	1,156	1,079	1,051	1,173	1,062	-9.5%		
Aug	1,261	1,114	1,181	1,082	1,190	1,099	915	-16.7%		
Sept	1,425	1,159	1,206	995	1,023	983	1,022	4.0%		
Oct	1,312	1,342	1,027	963	908	935	971	3.9%		
Nov	1,273	1,388	1,135	1,114	1,171	1,025	893	-12.9%		
Dec	1,115	1,401	1,198	1,115	1,243	1,037	900	-13.2%		

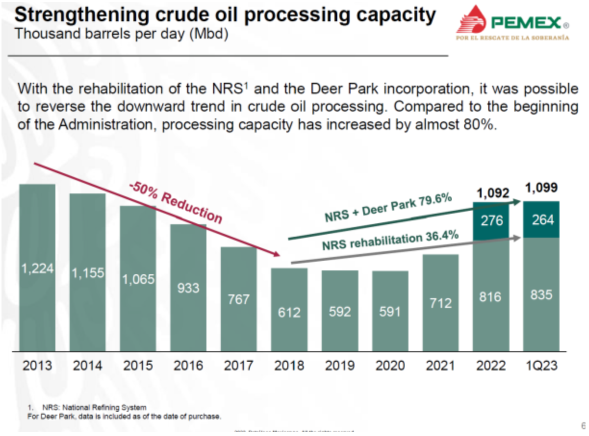
Source: Pemex

Oil – Pemex existing refineries are processing more Mexico crude oil

Pemex refining volumes

One of the major positives for Cdn heavy/medium crude oil in 2023 is Mexico's refineries are refining more of Mexico's oil production. The big event is the startup of the new Olemeca refinery (formerly known as Dos Bocas) that is expected to hit 170,000 b/d by July 1 and reach its full 340,000 b/d by Sept 15. But apart from that, Pemex priority has been slowly but steadily increasing the performance of its existing refineries. The more Pemex refineries process, the less oil there is for export. On Wednesday, Pemex reported its Q1 results, which included the below graph that highlights its existing refineries have increased their crude oil processing from 712,000 b/d in 2021, to 816,000 b/d in 2022 and now 835,000 b/d in Q1/23.

Figure 29: Pemex – strengthening crude oil processing capacity



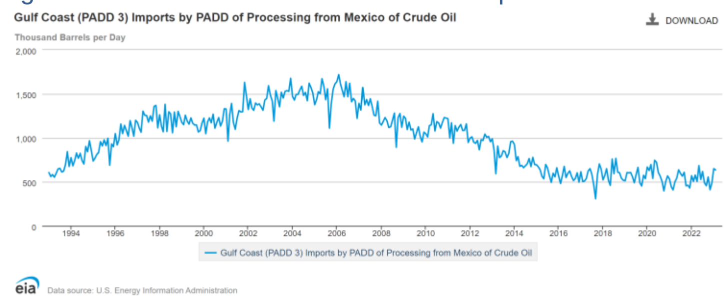
Source: Pemex

Oil – Key 2023 oil theme, Mexico should significantly reduce oil exports to PADD 3

Mexico reducing oil exports

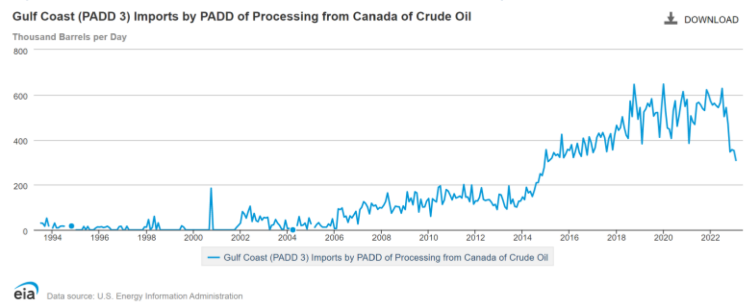
There are three 2023 themes that are impacting Cdn heavy/medium differentials apart from the normal seasonal trends: negative is increasing Venezuela oil into PADD 3 Gulf Coast, positive is decreasing Mexico oil into PADD 3, and OPEC+ cuts that are typically focused on heavy/medium crude. For now, it is looking like the biggest impact if increasing Venezuela oil into PADD 3 but declining Mexico oil exports into PADD 3 should start this summer. We remind that a key theme for Cdn oil in 2023 will be Mexico significantly reducing its oil exports. Here is what we wrote in our Dec 25, 2022 Energy Tidbits memo. "*Yesterday, we tweeted [LINK] "Key #Oil theme for 2023 - Mexico refines more oil in its plan to cut exports to zero! Positive to Cdn oil ie. less MEX oil to Gulf Coast. AMLO: Olemeca refinery to hit 170 kbd July 1, full 340 kbd Sept 15. In Nov, Pemex exported 894 kbd incl 499 kbd to Gulf Coast. #OOTT." One of our key oil themes for 2023 is that Mexico expects to cut oil exports down to zero over the next 12 to 18 months. This was supposed to be happening around now, but the big delay and cost overruns at the new Olemeca (Dos Bocas) refinery pushed that back a year. The stoppage of oil exports wasn't just Olemeca it was the capital put into trying to improve operations to more consistent refinery production at its existing refineries. Our tweet referenced the AMLO tweets on how Olemeca should refine 170,000 b/d July 1, and then an additional 170,000 b/d on Sept 15. AMLO's goal has been to eliminate all Mexico oil exports by adding the new Olemeca refinery and putting capital to increase the capacity utilization of Pemex's existing refineries. And by the added and improved refinery utilization, Mexico could then be able to process all Mexico oil production and therefore eliminating exports. And if Mexico eliminates oil exports, it is a positive for Cdn oil going to the Gulf Coast (PADD 3). Below are the EIA current graphs showing Gulf Coast (PADD 3) oil imports from Mexico and Canada."*

Figure 30: Gulf Coast PADD 3 crude oil imports from Mexico



Source: EIA

Figure 31: Gulf Coast PADD 3 crude oil imports from Canada



Source: EIA

Oil - Colombia oil production still below pre-Covid, March was 0.771 mmb/d

Colombia March oil production

It's hard to see how Colombia oil production ever sustainably rallies anywhere back to the 1 mmb/d or even 900,000 b/d given Colombia's goal to reduce oil and natural gas. Despite stronger oil prices, the past two years saw Colombia oil production stuck at levels below 0.750 mmb/d up until September 2022, when it reached 0.754 mmb/d. Following the MoM decrease of -2.1% in Feburary, the National Hydrocarbons Agency (ANH) reported [LINK] March's oil production increased by +1.8% MoM to 0.771 mmb/d on higher drilling, which continues to reverse the MoM increases seen in the final months of 2022. On May 3, ANH reported Colombia oil production in March was up +2.6% YoY to 0.771 mmb/d vs 0.751 mmb/d in March 2022 on higher drilling and exploration activities in its core producing fields. March's data brings average YTD production to 0.767 mmb/d, up +1.7% YoY from 2022's 0.754 mmb/d but production remains -13.43% below pre-Covid levels of 0.886 mmb/d in 2019. Our Supplemental Documents package includes the ANH release.

Figure 32: Colombia Oil Production

mmb/d	2016	2017	2018	2019	2020	2021	21/20	2022	22/21	2023	23/22
Jan	0.986	0.860	0.860	0.899	0.884	0.745	-15.7%	0.740	-0.7%	0.774	4.6%
Feb	0.955	0.864	0.823	0.893	0.878	0.746	-15.1%	0.740	-0.8%	0.757	2.4%
Mar	0.917	0.804	0.856	0.885	0.857	0.745	-13.0%	0.751	0.8%	0.771	2.6%
Apr	0.915	0.857	0.865	0.891	0.796	0.745	-6.4%	0.751	0.8%		
May	0.904	0.851	0.866	0.895	0.732	0.703	-3.9%	0.746	6.1%		
June	0.888	0.857	0.864	0.892	0.730	0.694	-4.9%	0.752	8.4%		
July	0.843	0.856	0.860	0.869	0.735	0.731	-0.5%	0.748	2.3%		
Aug	0.827	0.858	0.866	0.883	0.742	0.748	0.8%	0.749	0.1%		
Sept	0.859	0.851	0.869	0.879	0.749	0.744	-0.7%	0.754	1.3%		
Oct	0.846	0.864	0.879	0.883	0.751	0.740	-1.5%	0.757	2.3%		
Nov	0.855	0.851	0.883	0.880	0.761	0.747	-1.9%	0.771	3.2%		
Dec	0.837	0.870	0.889	0.882	0.759	0.745	-1.8%	0.784	5.2%		

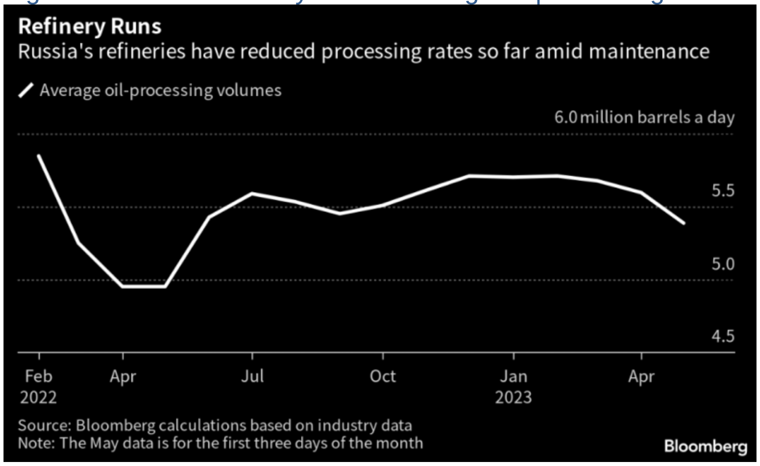
Source: Bloomberg, ANH

Oil – Russian refinery maintenance freed up ~280,000 b/d of oil for export

More Russia oil available for export

Russia Deputy PM Novak didn't really do enough to allay views that Russia did not deliver the 500,000 b/d cuts in March as promised so pretty well everyone is assuming Russia's production and exports in March and April have been higher than what would have been expected if they delivered the 500,000 b/d cut. However, there is one other reason that isn't cheating that would lead to higher exports – Russia's refineries maintenance means that the refineries are using less oil, which frees up the unused oil for export. On Friday, we tweeted [LINK] "*More Russia #oil available for export as seasonal refinery maintenance reduced domestic demand for oil by ~280,000 b/d vs March. Less refinery consumption = more oil available for export. Thx @ja_herron. #OOTT.*" Bloomberg reported that "*Russia's refineries processed less oil in early May due to seasonal maintenance, reducing domestic demand for crude as Moscow said it was cutting production. The nation's facilities refined an average of 5.39 million barrels a day of crude from May 1-3, according to a person familiar with the matter. That's 216,000 barrels a day, or 3.9%, lower than the average for most of April, which itself was down 1.4% from March.*" That means refineries were processing ~280,000 b/d less in early May versus March. Our Supplemental Documents package includes the Bloomberg report.

Figure 33: Russia refinery runs – average oil processing volumes



Source: Bloomberg

Oil – Russia gets more oil/products to export markets via reroute from Saudi Arabia

More Russia oil hits export markets

Another way that Russia is getting more of their oil and petroleum products into export markets like Europe is from increasing their exports to Saudi Arabia who can then reroute to other markets. Yesterday, we tweeted [LINK] "*Saudi imported new record 330 kbd from Russia incl record 198 kbd of #Gasoline #Diesel in Apr. Then rerouted to effectively get more RUS #Oil & products to export markets ie. markets like Europe. Thx @Jamie__Ingram @Kpler. #OOTT.*" On Friday, MEES reported [LINK] "*Saudi Arabia imported a new record 330,000 b/d of oil from Russia in April according to data intelligence firm Kpler, including a record 198,000 b/d of gasoil/diesel. Saudi Arabia and the UAE in particular have increased imports of Russian gasoil since the 5 February EU embargo on Russian oil products came into force, capitalizing on pricing arbitrages. As TotalEnergies CEO Patrick Pouyanné said in his firm's Q1 earnings call, "the diesel of Russia was quickly rerouted: to Africa and South America… but also to the Middle East, where some producing countries prefer to buy some diesel with a good discount and to sell their crude with no discount, which is, by the way, a good transfer of value from Russia to some Middle East countries."Saudi imports from Russia have steadily climbed this year, hitting a record 94,000 b/d in February before breaking that with 192,000 b/d in March (MEES, 14 April) and then last month's 330,000 b/d. However, Kpler figures suggest that imports have now peaked, for the time being at last, with only relatively modest arrivals expected in May*."

Oil – Will Russia/Ukraine return to #1 market story, incl commodities, in May?

Russia/Ukraine escalation in May?

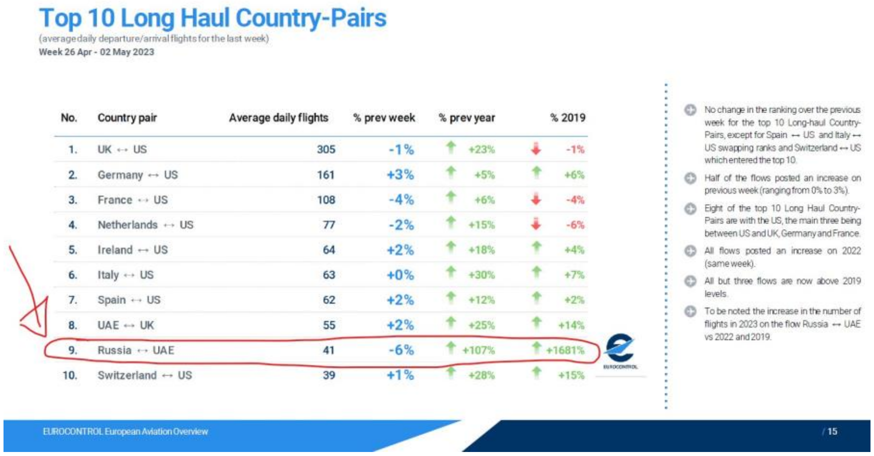
There are many updates every day on what is happening in the Russian/Ukraine war and too many for us to fully report. But this week's events only reinforce that the Russia/Ukraine war continues to escalate and, with escalation, we see an increased risk for the unpredictable. A few of the key events were the two drones at the Kremlin in Russia, Russia's public response of all options on the table, Russia saying it's time to eliminate Zelensky, Ukraine's increasing drone attacks at key Russia war supply chain facilities (ie fuel tanks, refineries) within southern Russia, etc. Even still, we were surprised that more aren't wondering if May will turn out to be when the Russian/Ukraine war returns to be the #1 market story and for commodities, including oil, food, etc. We are concerned that May turns out to be a game changer.

Oil – What is going on with the huge escalation of Russia/UAE air travel

Huge Russia/UAE air travel increase

Sometimes you see something that makes you go Hmmm! So we don't know how this specifically impacts markets but when we see something like this, we thought we would mention it. We were looking at the new Eurocontrol air activity recap and forecast to see how China and Asia continue to be absent from long haul air travel. We cover this later in the memo. But then in their table of Top 10 Long Haul Country-Pairs, the huge increase in Russia/UAE daily trips caught out attention. What is going on between Russia and the UAE. Earlier this morning, we tweeted [LINK] "*Are rich people fleeing Russia via UAE? What's going between the two? @eurocontrol: Russia/UAE "average daily flights" Apr 26-May 2 were 41, +107% YoY, +1681% vs 2019. Only slightly less than traditional busy UK/UAE flights. China/Asia are missing from long haul! #OOTT.*" There has to be a reason for this huge increase in Russia/UAE flights. We naturally assume its rich Russian's fleeting via the UAE, but there could be other reasons. Regardless, its' definitely something that goes Hmmm!.

Figure 34: Eurocontrol – Top 10 Long Haul Country-Pairs for Apr 26-May 2



Top 10 Long Haul Country-Pairs

(average daily departure/arrival flights for the last week)
Week 26 Apr - 02 May 2023

No.	Country pair	Average daily flights	% prev week	% prev year	% 2019
1.	UK ↔ US	305	-1%	+23%	-1%
2.	Germany ↔ US	161	+3%	+5%	+6%
3.	France ↔ US	108	-4%	+6%	-4%
4.	Netherlands ↔ US	77	-2%	+15%	-6%
5.	Ireland ↔ US	64	+2%	+18%	+4%
6.	Italy ↔ US	63	+0%	+30%	+7%
7.	Spain ↔ US	62	+2%	+12%	+2%
8.	UAE ↔ UK	55	+2%	+25%	+14%
9.	Russia ↔ UAE	41	-6%	+107%	+1681%
10.	Switzerland ↔ US	39	+1%	+28%	+15%

- No change in the ranking over the previous week for the top 10 Long-haul Country-Pairs, except for Spain ↔ US and Italy ↔ US swapping ranks and Switzerland ↔ US which entered the top 10.
- Half of the flows posted an increase on previous week (ranging from 0% to 3%).
- Eight of the top 10 Long Haul Country-Pairs are with the US, the main three being between US and UK, Germany and France.
- All flows posted an increase on 2022 (same week).
- All but three flows are now above 2019 levels.
- To be noted the increase in the number of flights in 2023 on the flow Russia ↔ UAE vs 2022 and 2019.

EUROCONTROL European Aviation Overview / 15

Source: Eurcontrol

Oil – IMF fiscal breakeven oil prices for Middle East oil exports ie. $80.90/b in 2023

IMF fiscal breakeven oil prices

For those that follow the economies of the Middle East and Central Asia, the IMF posted a good report this week, its "*May 2023 Regional Economic Outlook: Middle East and Central Asia".* The report includes some good economic data on each of the countries. One of the headline stories coming out of the report is the IMF's forecast of breakeven oil prices needed for Middle East exports to reach fiscal breakeven in their budgets. The headline on Saudi Arabia was that they still need $80.90/b oil price to have a fiscal breakeven in their budget. What is getting overlooked is that Saudi Arabia's breakeven oil price continue to decline with its push to strengthen non-oil sectors. It still has a way to go catch up to countries like UAE, but MBS's push in his Vision 2030 is making progress, albeit at a modest pace. The other number that jumped out at us was the IMF estimating Iran needs $351.70/b for a fiscal breakeven price. On Wednesday, we tweeted [LINK] "*#IMF fiscal Breakeven #Oil price. Saudi declining $85.80 in 22, $80.90 in 23, $75.10 in 24 with push on non-oil sectors. Iran $351.70 in 23! Many other great tables in Appendix ie. current account balance. #OOTT.*" Our tweet references the many good tables in the Statistical Appendix. Our Supplemental Documents include excerpts from the Statistical Appendix.

Figure 35: IMF Breakeven oil prices

Table 6. Breakeven Oil Prices

(U.S. dollars per barrel)

	Average 2000–2019	2020	2021	2022	Projections 2023	Projections 2024
FISCAL BREAKEVEN OIL PRICE[1]						
Oil exporters						
Algeria	102.1	89.6	111.4	85.7	112.4	111.9
Azerbaijan	51.9	66.3	57.9	63.6	77.0	78.2
Bahrain	83.2	113.7	134.8	133.6	126.2	129.1
Iran	85.6	546.5	259.4	278.3	351.7	375.4
Iraq	75.8	56.6	53.3	66.3	75.8	76.4
Kazakhstan	...	192.1	183.5	95.5	99.8	83.9
Kuwait[2]	46.8	76.2	62.4	63.2	70.7	66.3
Libya	71.7	141.7	52.0	85.1	64.4	62.2
Oman	69.1	86.4	76.7	62.1	72.2	66.4
Qatar	45.1	49.3	46.5	44.7	44.8	41.5
Saudi Arabia	80.4	76.3	83.6	85.8	80.9	75.1
Turkmenistan	...	40.5	32.3	37.3	38.1	40.0
United Arab Emirates	49.9	51.7	53.1	55.1	55.6	54.8

Source: IMF

Oil – Reminder OPEC+ 1.157 mmb/d voluntary cuts were to start May 1

OPEC+ voluntary cuts

We remind that tomorrow, May 1, is when the OPEC+ voluntary cut (production adjustments) of 1.157 mmb/d are effective and to run thru 2023. This was the breaking news in our April 2, 2023 Energy Tidbits memo, which OPEC followed up with their April 3, 2023 press release. [LINK] . These voluntary cuts were in addition to Russia's prior announcement of cutting 500,000 b/d vs Feb 2023 production and that would be until the end of 2023. The voluntary cuts were Saudi Arabia 500,000 b/d, Iraq 211,000 b/d, UAE 144,000 b/d, Kuwait 128,000 b/d, Kazakhstan 78,000 b/d, Algeria 48,000 b/d, Oman 40,000 b/d, and Gabon 8,000 b/d.

Oil – OPEC+ switches June 4 meeting from a virtual to an in-person meeting

OPEC+ to have in-person meeting

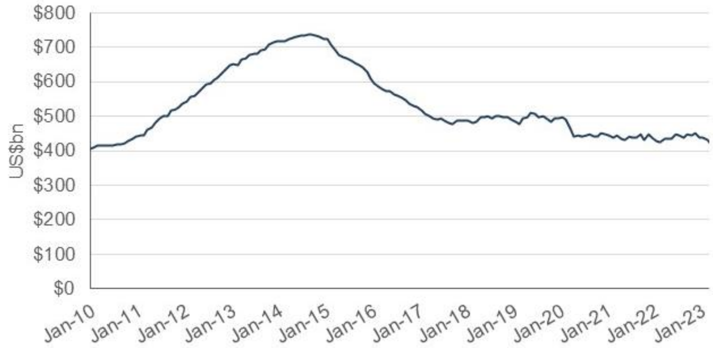
There was no press release, but Reuters and other OPEC+ watchers reported that OPEC+'s June 4 ministerial meeting will be an in-person meeting in Vienna and not a virtual meeting as expected. There have been no reports refuting the in-person commentary, which, to us, signals the expectation for something other than no change. We have trouble believing that OPEC+, in particular Saudi Energy Minister Abdulaziz, would change from a virtual to an in-person meeting if they didn't expect or, at least set the expectation, for change to their production levels, either voluntary or via quota changes. It's why we tweeted [LINK] "*Can't see "The Man" Saudi Energy Minister Abdulaziz having an in-person OPEC meeting June 4 in Vienna to say no change. His track record is clear: great read of supply/demand, surprises are to support Oil. Especially given the below #IMF breakeven prices ie. KSA $80.90. #OOTT.*"

Oil – Saudi nest egg, larger decrease in net foreign assets for March

Saudi net foreign assets

We continue to believe the #1 financial theme for Saudi Arabia in the 2020s will be their continued, and likely increasing, use of Other People's Money as they try to transition their country to MBS's Vision 2030. We believe this has been obvious with how Saudi Arabia's net foreign assets dropped by about $300 billion over seven years. We are surprised that markets and oil watchers didn't seem to pay attention to the Saudi net foreign assets data i.e., what we call their nest egg to help them thru the Energy Transition. Above $100 oil last year helped arrest the decline in the Saudi nest egg. But Saudi net foreign assets have dropped by $304.9 in the last 8 years, from is peak of $737.0b on Aug 31, 2014, to $419.0b on mar 31, 2023. That is an average of $3.0b per month for the last 8 years. Oil prices remained relatively flat throughout the month with Brent crude averaging ~$79 in March compared to ~$82 in February. Saudi Arabia's net foreign assets on March 31 were down -$14.04b MoM to $419.0b vs $433.0b in February and $437.6b in January. Saudi Arabia is far from going broke but there has been a huge decline in the last 8 years, but it is still a very big nest egg. This net foreign asset depletion is why we have been highlighting that the primary financial theme for Saudi Arabia in the 2020s is getting Other People's Money (OPM) to fund as much of their Vision 2030 as possible. And no question, accessing OPM has helped to slow down and temporarily pause the decline in net foreign assets. Saudi Arabia's central bank (SAMA) doesn't provide explanations for the monthly swings. Below is our graph of Saudi Arabia net foreign assets updated for the March 31 data.

Figure 36: Saudi Arabia Net Foreign Assets



Source: Bloomberg

Oil – Amena Bakr "*we might hear some good news soon*" on a Saudi Houthis deal

Saudi/Houthi deal soon?

We always try to listen when we hear comments from plugged-in to OPEC analysts like Amena Bakr (Energy Intelligence) and Helima Croft (RBC). On Tuesday, we tweeted [LINK] *""#Houthis/Saudi. "was supposed to be an announcement of a ceasefire around Eid or before Eid, that didn't happen. But we understand the talks are going well and we might hear some good news soon" says @Amena__Bakr, who has good insights into #OPEC thinking. #OOTT @gulf_intel."* Bakr is hearing that some good news is coming soon on a Saudi/Houthi ceasefire deal. Our tweet included a transcript we made of comments by Amena Bakr (Deputy Bureau Chief, Energy Intelligence) with on Gulf Intelligence PODCAST: Daily Energy Markets – May 2nd hosted by Dyala Sabbagh (Partner Gulf Intelligence) [LINK] Items in "*italics*" are SAF Group created transcript. Bakr "… *of course, this rapprochement really does help to bring at* *least a hope of stability for this region. And it's good news generally for other countries such as Iraq, Yemen, etc. where we saw a lot of these proxy wars play out. So, talks are still ongoing in Yemen we understand between the Houthis and the Saudis. There was supposed to be an announcement of a ceasefire around Eid or before Eid, that didn't happen. But we understand the talks are going well and we might hear some good news soon so that would mean more exports for LNG and oil possibly out of Yemen, might take them a little bit of time*."

Oil – Iran's floating oil and condensate storage reportedly sold in past few months

Iran sold its floating storage

No question oil has been week over the past couple months and one overlooked, at least by us, is that Iran has reportedly sold off all their 100 million barrels of floating oil and undisclosed million barrels of condensate over the past few months. No question, it's been a negative to oil prices, but it also means that floating storage isn't there when demand increases over the coming months. Please note that some of this oil will be in floating oil storage estimates and some will be in transit oil, albeit very slow moving in transit. But the point is that it takes this either floating storage or in very slow transit off the market and into customers. On Friday morning, we tweeted [LINK] " "*Iran, during the last 3 mths, decided to sell most of its [floating] #Oil with remarkable discounts" "And there is almost no gas condensate floating right now" Tehran-based @DanialRahmat12 to @FrankKaneDubai on @gulf_intel. Torque to oil price when demand returns. #OOTT*". We hadn't realized Iran had recently sold its floating oil and condensate storage. We try to listen to the 30-min Gulf Intelligence podcast every morning as they have an excellent group of experienced guests from all over the world. One of the regular commentators is Tehran-based Senior Energy Security Consultant, Danial Rahmat. We have referenced his comments in prior memos as Rahmat has typically been a pretty plugged in energy consultant in Iran. Our tweet included the SAF Group created transcript of comments by Danial Rahmat (Tehran-based Senior Energy Security Consultant) with moderator Frank Kane (Editor-at-Large, Arabian Gulf Business Insights) on Gulf Intelligence PODCAST Daily Energy Markets – May 5th. [LINK]. Items in "*italics*" are SAF Group created transcript. Kane asked Ramat on Iran saying they are increasing more oil of late and one of the reasons "*we have seen the price weakness of late*?" Rahmat ".... *Please consider, remember last year at this time, we were speaking about Iran's floating reserves in Asia, which was about 100 million barrels. Right now there is almost nothing left of that. So you see that Iran has delivered a very huge amount of oil to the markets this last year. Basically, within the last six months*." Kane: "*Dan, let me clarify one point, you said that the 100 million barrels of floating oil has now gone*?" Rahmat "*Mostly. Iran, because of the high level of uncertainty in the market. And actually, backwardation in the market where future contracts are cheaper than the spot prices. Iran, during the last 3 months, decided to sell most of its oil with remarkable discounts. Because it was not making sense to keep that oil floating because the prices were getting better and better so you were there to sell your oil with a discount instead of keeping that floating accepting the risk, and also spending the money for keeping that floating. So sold most of its oil. And there is almost no gas condensate floating right now*. "

Oil – Still no visibility for restart Iraq/Kurdistan oil thru Turkey

Turkey holds up Kurdistan oil exports

Our update this week is basically unchanged from last week on is there visibility when Kurdistan/Iraq oil will resume exports via Ceyhan in Turkey – there is no visibility. As of our 7am MT news cut off, we have not seen any reports giving any indication of when there will be a resumption of ~450,000 b/d of Iraq/Kurdistan oil exports via Ceyhan (Turkey). Nor have we seen any reports that any face-to-face negotiations have even started between Turkey and Iraq. And Iraq and Kurdistan still need to finalize some details of their preliminary agreement announced a month ago. No one knows when these exports will resume.

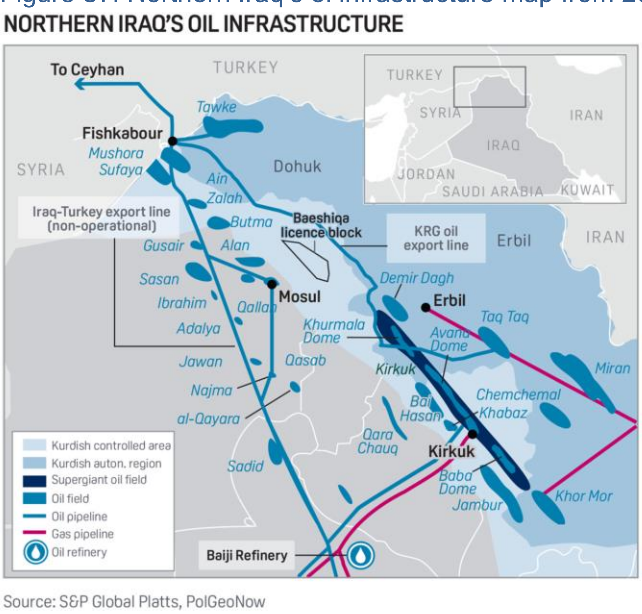
But Vitol sees Iraq compensating by increasing oil exports from the south

One of the supply surprises to the negative from the northern Persian Gulf countries is Iraq. No question they are not exporting their +400,000 b/d of Kurdistan/Iraq oil via Turkey. However an interesting comment this morning from Vitol's Mike Muller on the Gulf Intelligence daily podcast that Iraq is making up for a good portion of the >400,000 b/d Kurdistan and Iraq oil that hasn't been able to be moved thru the northern pipeline to export via Ceyhan in Turkey. Earlier this morning, we tweeted [LINK] *"#Oil supply surprise. There is no visibility to return of .400 kbd of Kurdish/Iraq exports via Turkey, BUT @michaelwmuller to @gulf_intel "i think Iraq seems to have compensated for reduced or cancelled Kurdish exports to the north by exporting more from the south". #OOTT."*

Iraq's court case win halted 370,000 Kurdistan & 75,000 b/d Iraq oil exports

Here is what we wrote in our March 26, 2023 Energy Tidbits memo. "*Breaking news yesterday that Iraq reportedly halted 445,000 b/d of crude oil exports thru its north on the export pipeline to Ceyhan, Turkey. Iraq won an arbitration with Turkey, which means that Turkey has to deal with Iraq's oil marketing arm for approval of all Iraq oil exports, including oil from Kurdistan. It's not clear how long it will take to get to a mechanism for Iraq dealing with Turkey on the oil exports. Don't know if's wishful thinking but Kurdistan media was pointing to not too long to get an understanding. Regardless, until Iraq resumes oil exports via Turkey, it means there will be ~445,000 b/d of crude oil off the market. Yesterday, we tweeted [LINK] Iraq reportedly halts 370 kbd KRG + 75 kbd federal oil thru export pipeline thru Turkey reports @Ahmed_Rasheed_R @RowenaCaine. Positive for #Oil until Iraq resumes northern exports ie. agrees on mechanism to export Iraq oil thru Turkey in line with its arbitration win. #OOTT." Yesterday, Reuters reported [LINK] "Iraq halted crude exports from the semi-autonomous Kurdistan region and northern Kirkuk fields on Saturday, an oil official told Reuters, after the country won a longstanding arbitration case against Turkey. The decision to stop shipments of 450,000 barrels per day (bpd) of crude relates to a case from 2014, when Baghdad claimed that Turkey violated a joint agreement by allowing the Kurdistan Regional Government (KRG) to export oil through a pipeline to the Turkish port of Ceyhan. Baghdad deems KRG exports via Turkish Ceyhan port as illegal. The International Chamber of Commerce ruled in favour of Iraq on Thursday, Iraq's oil ministry confirmed on Saturday. Turkey has informed Iraq that it will respect the arbitration ruling, a source said. Turkish shipping officials told Iraqi employees at the Ceyhan oil export hub that no ship will be allowed to load Kurdish crude without the approval of the Iraqi government, according to a document seen by Reuters. Turkey subsequently halted the pumping of Iraqi crude from the pipeline that leads to Ceyhan, a separate document seen by Reuters showed. On Saturday, Iraq stopped pumping oil through its side of the pipeline which runs from its northern Kirkuk oil fields, an official told Reuters. Iraq had been pumping 370,000 bpd of KRG crude and 75,000 bpd of federal crude through* *the pipeline, according to a source familiar with its operations. "A delegation from the oil ministry will travel to Turkey soon to meet energy officials to agree on new mechanism to export Iraq's northern crude oil in line with the arbitration ruling," a second oil ministry official said." Kurdistan region Prime Minister Masrour Barzani expects this to be quickly resolved. Yesterday Kurdistan 24 news reported [LINK] "Kurdistan Region Prime Minister, Masrour Barzani, on Saturday reiterated the Kurdistan Regional Government's (KRG) good relations with the Iraqi federal government. "Our recent understandings with Baghdad have laid the groundwork for us to overcome the arbitration ruling today," PM Barzani wrote in the tweet. "A team from the KRG will visit Baghdad for talks tomorrow to build on the goodwill of our discussions," Barzani added." Below is a Platts Northern Iraq's oil infrastructure map from 2020 [LINK].*

Figure 37: Northern Iraq's oi infrastructure map from 2020



Source: Platts

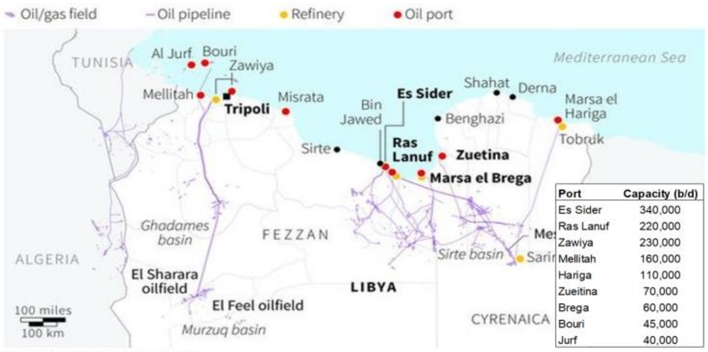
Oil – Libya NOC says oil production continues to be stable at ~1.2 mmb/d

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 six months or so. The Libya National Corporation tends to post a short oil production update on its Facebook [LINK]. The latest update was on Thurs May 4 and the Google Translate was "*Crude oil production reached 1.214 million barrels per day, and condensate production reached 18 thousand barrels per day during the past 24 hours.*"

Libya oil production ~1.2 mmb/d

Figure 38: Libya Ports, Major oilfields and Terminals map

SAF Group Compiled Libya Ports & Terminals Status



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

Source: Bloomberg, HFI Research, SAF

Source: SAF Group

Libya sees low-risk development to go from 1.2 to 1.5 mmb/d in 2023

Here is what we wrote in our Feb 19, 2023 Energy Tidbits memo. "*We have been reporting on how Libya has surprisingly been able to keep oil production steady ~1.2 mmb/d. At the same time, we have always highlighted the big near term upside potential to its oil production if east vs west armed fighting can stay on the sidelines as that will see the return of foreign capital for both natural gas and oil. But even before foreign capital, the Libya National Oil Corporation has many low risk development opportunities to increase oil production. On Tuesday, the Libya Herald reported [LINK] on comments from one of Libya NOC's operating companies, Arabian Gulf Oil Company (AGOCO) Chairman Salah Gatrani. The Libya Herald wrote "The continuation of the Arabian Gulf Oil Company's (AGOCO) development operations at this pace will inevitably lead to Libya reaching a production rate of more than 1.5 million barrels of oil per day in 2023, AGOCO chairman Salah Gatrani said in an exclusive statement to Libya Herald. He said this was because of the stability witnessed by the country in general, and by the oil sector in particular. Therefore, he continued, the Gulf Company has developed its own plan within the efforts of the National Oil Corporation (NOC). Libya has been unable to maintain production beyond 1.2 million bpd. Gatrani was commenting to Libya Herald following Sunday's AGOCO's meeting on developing reserves and increasing oil production in the sector companies, attended by relevant AGOCO and NOC management. The AGOCO chairman said that his company has already begun to implement the plan prepared by the NOC to raise production and increase reserves." Our Supplemental Documents package includes the Libya Herald report."*

Oil – China scheduled domestic flights for May still well below March 28 expectation

China domestic flights

The Chinese mobility indicators continue to point to a stalling or at least a slower than expected China recovery in April and continuing into May. China scheduled domestic flighyts are increasing but at a much slow rate of increase than expected at the end of March. On Monday, we tweeted [LINK] "*China stalling recovery. China scheduled domestic flights +0.04% WoW for Apr 25-May 1 to 94,471. Fcast to climb to 100,045 for next 4-weeks. BUT that is 20.7% below 119,180 for Apr per Mar 28 schedule. Thx@BloombergNEF Claudio*

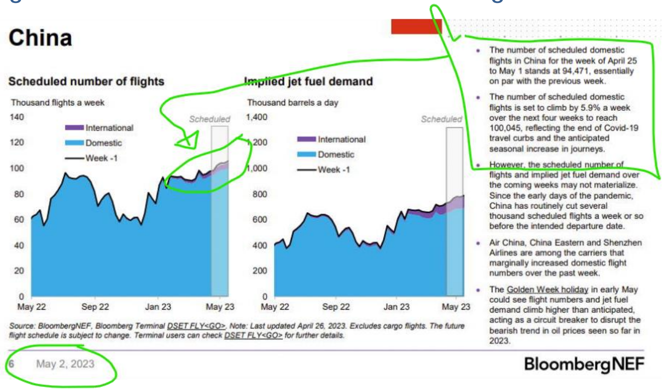
Lubis #OOTT.": China's scheduled domestic fights were up marginally at +0.04% WoW, but the negative or the stalling of the China domestic air travel remains in that the scheduled next 4 weeks of domestic flights to start May is still well below the next 4 weeks flights forecast from March 28 for April of 119,180 flights. This big drop from the March 28 forecast for April and May is the negative as it is showing the recovery seems to be stalling out or at least is growing at a much slower than expected pace vs March 28. This is still saying the big jump up in scheduled domestic flights for April didn't happen and not expected to happen in May. Rather April was a more modest increase and May is expected to be more of the same. BNEF wrote "*The number of scheduled domestic flights in China for the week of April 25 to May 1 stands at 94,471, essentially on par with the previous week. • The number of scheduled domestic flights is set to climb by 5.9% a week. Scheduled over the next four weeks to reach 100,045, reflecting the end of Covid-19travel curbs and the anticipated seasonal increase in journeys."*Our tweet included the BloombergNEF chart and our listing of WoW changes from the prior BloombergNEF reports.

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

Apr 25-May 1: basically flat at +0.04% to 94,471
Apr 18-24: +2.1% WoW to 94.138
Apr 11-17: +0.7% WoW
Apr 3-10: -4.2% WoW
Mar 28-apr 3: +6.8% WoW
Mar 21-27: +1.5% WoW
Mar 14-20: -0.6% WoW
Mar 7-13 week: -0.8% WoW
Feb 27-Mar 3 week: -2.6% WoW
Feb 21-27 week: +0.0% WoW (note this was +0.01%)
Feb 14-20 week -0.5% WoW
Feb 7-13 week -0.7% WoW
Jan 31- Feb 6 week +10.9% WoW
Jan 24-30 week -9.2% WoW
Jan 17-23 week +7% WoW
Jan 10-16 week +20% WoW

Source: BloombergNEF

Figure 40: China scheduled domestic air flights



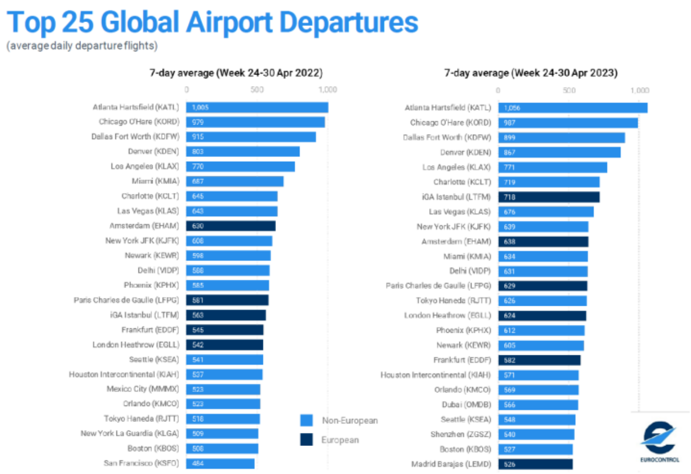
Source: BloombergNEF

Oil – Beijing and Shanghai are absent from world's busiest airports

Beijing and Shanghai airports

There was a great reminder this week of how international travel in and out of China is nowhere near normal levels. On Friday, Eurocontrol posted its updated outlook for 2023, which calls for continued modest growth in Europe air travel throughout the year [LINK]. But what also caught out attention was Eurocontrol's chart showing the Top; 25 Global Airport Departures ranking, which included only one Asian airport – Tokyo as the 22nd ranked. For perspective, pre-Covid in 2019, the ranking of the world's top 10 busiest airports had Beijing at #2, Tokyo at #5 and Shanghai at #8.

Figure 41: Eurocontrol's Top 25 Global Airport Departures



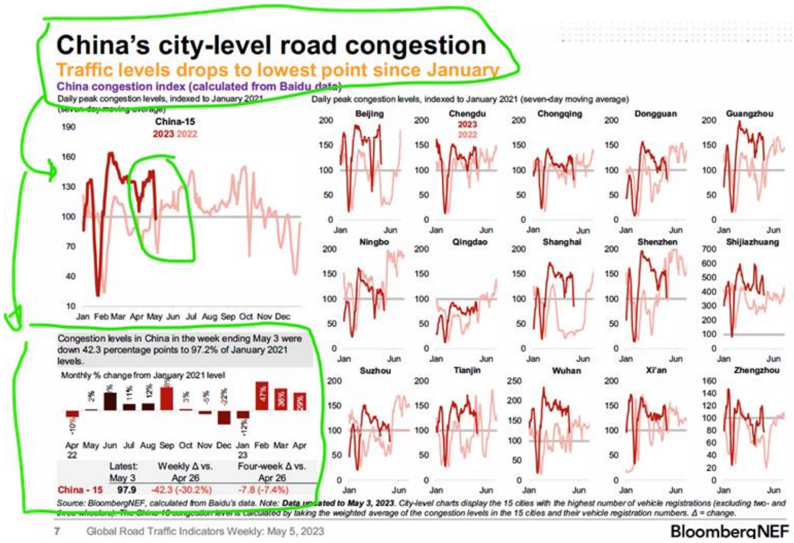
Source: Eurocontol

Oil – Was China city congestion -30.2% WoW due to people going on holiday?

China road traffic congestion

The next China road congestion data will be important to reaffirm that the nosedive in China's traffic congestion was due to all the Chinese people heading out away from their work in the cities and going on holidays. That is the inference given the record number of domestic trips during the May Day holiday. On Thursday, we tweeted [LINK], *"China's [road] congestion nosedives as Labor Day celebrated. It was a holiday BUT traffic -30.2% WoW to lowest point since Jan. Asia Pacific Ex China +3.7% WoW, still well <2019 EU -6.7% WoW, back <2019 NA +2.6% WoW, close to 2019 @BloombergNEF Global Road Traffic Indicators #OOTT"*. Three weeks ago, BNEF reported China traffic congestion fell -21.7% WoW, which was promptly followed by two consecutive WoW increases that resulted in a total 2-week gain of +28.9%. This week, China road congestion were down -30.2% WoW to 97.2% of January 2021 levels. Our tweet also included the below BloombergNEF graphic on China road congestion.

Figure 42: China city-level road congestion for week ended May 2



Source: BloombergNEF

Oil – China domestic trips at record levels for 5-day May Day holiday

China May Day holiday travel

In the prior item, we note the inference that the China' plunging city traffic congestion is likely linked to people taking their holidays from their jobs in the city and going on vacation. Earlier this morning, we tweeted [LINK] "*China services vs manufacturing. More support for services sectors. Chinese made 274 mm domestic trips during May Day holiday, +71% YoY, +19% vs 2019. But manufacturing sector keeps declining. See 👇05/03 Caixin PMI: Feb 51.6, Mar 50.0, back to contraction in Apr 49.5. #OOTT".* Our tweet attached Xinhua's report yesterday

Oil – Xi recognizes China's #1 short term economic priority is get "real industry" going

Xi: don't force traditional industries into "low end" industries

We thought there were two key short term economic takeaways from Xi's address to the Central Financial and Economic Affairs Commission: First, he knows China needs to do what it can to strengthen the "real economy" (ie. industry, manufacturing, etc) as it is the backbone to the China economy. We have to believe that means policy support. Second, China isn't going to make these "traditional industries" uncompetitive by doing things that effectively eliminate them as "low end industries" such as too many burdens in going green. Earlier this morning, we tweeted [LINK] "*Xi sees #1 short term priority - get industry going. Must maintain "real economy" as mainstay, upgrade traditional industries, not eliminate them as "low end industries". Implies (i) policy to support industry (ii) won't make them uncompetitive with going green. #OOTT."* Here is the excerpt from the Xinhua reporting of the Xi address "*It was stressed at the meeting that to accelerate modernizing the industrial system with the real economy as the pillar concerns whether China can take the strategic initiative when it comes to its future development and global competition. We must grasp the opportunity of the new scientific and technological revolution which involves artificial intelligence among others, adapt to the requirement for harmony between humanity and nature, maintain and strengthen the advantages of a complete industrial system with strong capabilities of coordination, and effectively accumulate innovation factors worldwide, so as to ensure that the industries are* *smarter, greener and more integrated, and build a more complete, advanced, safe and modernized industrial system. We must maintain the real economy as the mainstay and prevent it from being sidelined, take steady and incremental steps instead of going after what is big and foreign and maintain an integrated development of primary, secondary and tertiary industries and prevent them from being isolated and opposite to each other. We must also keep promoting the transformation and upgrading of traditional industries rather than eliminating them as "low-end industries," and adhere to openness and cooperation instead of divorcing ourselves from reality."*

Oil – Xi recognizes China's long term economic problem is shrinking population

Xi recognizes need for population growth

Xi's speech noted China's #1 short term economic problem, but he also highlighted China's #1 long term economic problem – need to get population growth. The real question for China will be what happens to its population between now and 2040 and can Xi quickly get China back on a strong population growth rate. We say quickly because one of the basic fundamentals for economic growth is more working age population. And babies in 2024 won't hit the work force until after 2040. And Xi knows there is a link between population and economy. Yesterday we tweeted [LINK] "*Population development is of vital importance to the rejuvenation of the Chinese nation" says Xi. Also recognizes "relationship between population and economy and society" Demographic trends are very tough to change so a growing post 2030 China economic problem. #OOTT #Oil."* And [LINK] "*China needs increasing birth rate ASAP. Babies born in 2024 don't become contributing work force members until >2040. Shrinking population may be a growing post 2030 problem but increasing birth rate is an immediate challenge. Demographics are predictable! #OOTT #Oil."* Xinhua (and other Chinese state media) reported on Xi's address to the Central Financial and Economic Affairs Commission with a report titled "*Xi stresses building of modern industrial system and high-quality population development*." [LINK]. Xi noted the relationship of between population and economy and society, stressed that "*Population development is of vital importance to the rejuvenation of the Chinese nation, and efforts must be made to improve the overall population quality so as to support Chinese modernization*." There is much more in the reports but the bottom line is that Xi knows China needs to get population growth growing as it impacts the economy. Our Supplemental Documents package includes the Xinhua report.

China's population declined in 2022 for 1st time in 60 years

Here is what we wrote in our Jan 22, 2023 Energy Tidbits memo. "*Demographic impacts don't surprise overnight, but demographics are predictive. And one of the key demographic trends for the next 30 years is China's aging population. And it looks lie Covid caused an abrupt pivot to a declining population in 2022. And it may be down the road, but China, like any aging population will eventually face a Japan problem. On Monday, we tweeted [LINK] "China population shrinks by 850,000 to 1.4118 b, 1st decline in 60 yrs. Seems Covid impact with deaths and also lower birth rates. But reminds of long-term challenge for China - an aging population ie. a Japan demographic problem in 10 or 20 years. Thx @sunyue_luna. #OOTT." The South China Morning Post [LINK] reported "2022 officially marked the year China saw its first population decline in six decades, with the national birth rate falling to a record low. And the deepening demographic crisis threatens far-reaching implications for China's already slowing economic growth. China's overall population plummeted by*

850,000 people – to 1.4118 billion in 2022, from 1.4126 billion a year earlier, the National Bureau of Statistics (NBS) said. Mothers in China had 9.56 million babies last year, a 9.98 per cent drop from 10.62 million in 2021. The national birth rate fell to a record low of 6.77 births for every 1,000 people in 2022, down from 7.52 in 2021, and marking the lowest rate since records began in 1949. The national death rate was 7.37 per thousand last year, putting the national growth rate at negative 0.6 per thousand people." Our Supplemental Documents package include the SCMP report."

Pre-Ukraine, Putin's greatest concern was Russia's shrinking population

Xi isn't as direct on his population concerns, whereas, for years, Putin has been blunt that Russia's shinking population was his greatest concern. At least that was so prior to their invasion of Ukraine. Here is what we wrote before Russia invaded Ukraine in our Jan 2, 2022 Energy Tidbits memo. "*On Tuesday, we tweeted [LINK] "ICYMI. Putin is asked "what is your greatest concern?", he replies "demographics is one of our main problems for our humanitarian and economic considerations" ie. Russia's shrinking population". on. A big factor why he needs stronger for longer #Oil #NatGas #Metals prices. #OOTT. Putin's big press conference comments this week on Russia's population reminded us of an item we forgot to include in our Dec 5, 2021 Energy Tidbits – Putin's greatest concern is the shrinking Russia population. This week, Putin noted "There are issues that cannot but cause concern, including life expectancy, which has slightly decreased from 71.5 to 70.1 years." The item we forgot to include was Putin's comments at the "Russia Calling! Investment Forum" on Nov 30. [LINK]. Putin was asked "What keeps you awake at night?" In the sense, "What is your greatest concern?". Putin responds "We have domestic issues typical of Russia, primarily demographic problems. We had two natural declines in our demographic development: during World War II or the Great Patriotic War, as we call it, in 1943–1944, and in the early and middle 1990s after the collapse of the Soviet Union. There was an equal drop in the birth rate. It was the lowest in 1999 – I believe a little over 1,200,000. In 2006, we already had almost two million births – more than 1,900,000. This problem has acquired a systemic and economic character due to the shortage of workforce in the labour market. We have a little over 80 million there and our losses amount to 1.1–1.2 percent a year. In this context, demographics is one of our main problems both for humanitarian and economic considerations, and because we need to strengthen our statehood as well. I will not enumerate all the measures and instruments we are using and intend to continue using in the future in order to tackle this problem. In general, we managed to get things moving in the recent past. Overall, we understand what we can do and know how to do it."*

Oil – Vitol sees Asian countries switching back to LNG from low sulphur fuel oil

Asians switching back to LNG from oil

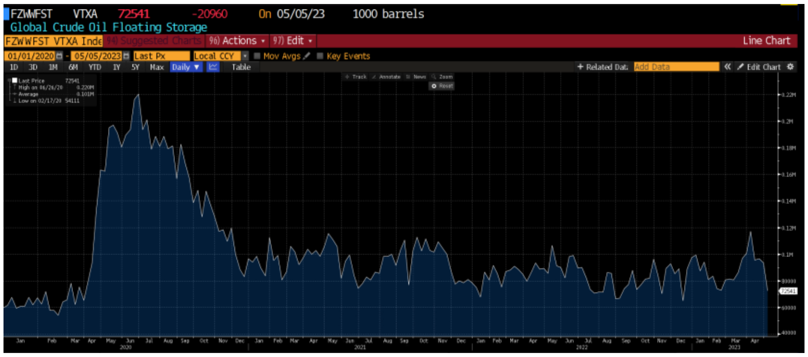
Another factor contributing demand being a little les than expected is natural gas/LNG. Earlier this morning, we tweeted [LINK] *"Also #Oil demand switching back to #NatGas @vitolnews @michaelwmuller to @gulf_intel : when #OPEC cut took Brent to $86/87, gas price didn't go with it. "#LNG is now competitive to low sulfur fuel into utilities", back into S/SE Asian economies after 1.5 yrs. #OOTT."* Vitol's Mike Muller was discussing the reasons why demand hasn't been as strong. Our tweet included the transcript we made of his comments on the Gulf Intelligence daily podcast today [LINK]. At 10:45 min mark, Muller said ".. *the final* *thing that is weighing down on oil is gas. Because if you pull up gas price, you see the US Henry Hub at just above $2/mmbtu. That's obviously been weak all along. But the international price of LNG has also come down and really moved in a very different way. So after the OPEC announcement that took Brent to $86/$87/b, gas didn't' really go with oil at that point. And gas has been weak to a point where LNG is now competitive to low sulphur fuel into utilities. And we have to remind ourselves that a large amount of oil demand has been boosted by oil displacing LNG in power generation. And LNG now has a chance of featuring in those south and southeast Asian economies where it has been shunned for the best part of the last year and a half*".

Oil – Vortexa crude oil floating storage at My 5 was 72.54 mmb, -20.96 mmb WoW

Vortexa floating storage

We are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 9am MT yesterday. Note that these estimates get revised over the course of the week and the revisions can go back months. We do not check daily for the revisions, so our comments on the new estimates are compared to the prior week's Vortexa estimates posted on Bloomberg on Apr 29 at 9am MT. (i) As of 9am MT yesterday, Bloomberg posted Vortexa crude oil floating storage estimate for May 5 at 72.54 mmb, which was -20.96 mmb WoW vs upwardly revised Apr 28 of 93.50 mmb. Note Apr 28 was revised +6.20 mmb vs the 87.30 mmb posted on Bloomberg as of 9am MT on Apr 29. (ii) Please note our tweet yesterday on Vortexa floating storage highlighted the big -44.50 mmb drop in floating storage vs Apr 7, 2023. And we wrote "*See 👇table, -44.50 mmb MoM, is this Iran selling floating storage, RUS oil being rerouted after being transferred?"* We discuss this more in a couple items in this memo. (iii) Other than the +6.20 mmb revision to Apr 28 data, the rest of the revisions were small. The revisions from the estimates posted yesterday at 9am MT vs the estimates posted on Bloomberg at 9am on Apr 29 are as follows: Apr 28 revised +6.20 mmb. Apr 21 revised +0.60 mmb. Apr 14 revised +0.94 mmb. Apr 7 revised +0.44 mmb. Mar 31 revised -2.25 mmb. Mar 24 revised -0.45 mmb. Mar 17 revised -0.94 mmb. (iv) There is a wide range of floating storage estimates for the past seven weeks, but a simple average for the past seven weeks is 96.06 mmb, which is down vs last week's then seven-week average of 97.34mmb. The decrease is due dropping a higher week from the 7-week and replacing with the May 5 of 72.54 mmb. (v) Also remember Vortexa revises these weekly storage estimates on a regular basis and we do not track the revisions through the week. Rather we try to compare the first posted storage estimates on a consistent week over week timing comparison. (vi) May 5 estimate of 72.54 mmb is -147.65 mmb vs the post-Covid peak on June 26, 2020 of 220.19 mmb. (vii) Note the below graph now goes back to Jan 1, 2020 and not just three years as floating storage in Apr 2020 had started to reflect the Covid impact. (viii) May 5 estimate of 72.54 mmb is +6.93 mmb vs pre-Covid Feb 28, 2020 of 65.61 mmb. (ix) May 5 estimate of 72.54 mmb is -13.02 mmb YoY vs May 6, 2022 of 85.56 mmb. (x) Below are the last several weeks of estimates posted on Bloomberg as of 9am MT May 6, 9am MT Apr 29, and 9am MT Apr 22.

Figure 43: Vortexa Floating Storage posted on Bloomberg May 6 at 9am MT



Source: Bloomberg, Vortexa

Figure 44: Vortexa Estimates Posted May 6 9am MT, Apr 29 9am MT, Apr 22 9am MT

Posted May 6, 9am MT		Apr 29, 9am MT		Apr 22, 9am MT	
Date	Last Px	Date	Last Px	Date	Last Px
Fr 05/05/2023	72541	Fr 04/28/2023	87301	Fr 04/21/2023	93468
Fr 04/28/2023	93501	Fr 04/21/2023	96026	Fr 04/14/2023	101.875k
Fr 04/21/2023	96627	Fr 04/14/2023	94491	Fr 04/07/2023	120.394k
Fr 04/14/2023	95425	Fr 04/07/2023	116.598k	Fr 03/31/2023	107.335k
Fr 04/07/2023	117.039k	Fr 03/31/2023	102.661k	Fr 03/24/2023	101.269k
Fr 03/31/2023	100.406k	Fr 03/24/2023	97293	Fr 03/17/2023	91152
Fr 03/24/2023	96842	Fr 03/17/2023	87009	Fr 03/10/2023	85234
Fr 03/17/2023	86070	Fr 03/10/2023	80922	Fr 03/03/2023	86891
Fr 03/10/2023	80467	Fr 03/03/2023	84681	Fr 02/24/2023	82811
Fr 03/03/2023	81210	Fr 02/24/2023	79295	Fr 02/17/2023	75854
Fr 02/24/2023	80599	Fr 02/17/2023	72822	Fr 02/10/2023	77442

Source: Bloomberg, Vortexa

Oil – Vortexa crude oil floating storage WoW changes by regions

Vortexa floating storage by region

Please note the following comment on Iran/Russia floating storage. Bloomberg also posts the Vortexa crude oil floating storage in the key regions, but not all regions of the world. The regions covered are Asia, Europe, Middle East, West Africa and US Gulf Coast. We then back into the "Other" or rest of world. The largest WoW changes were in Asia -7.42 mmb WoW, Europe -6.29 mmb WoW, Other -4.76 mmb WoW, and Middle East -3.35 mmb WoW. Below is the table we created of the WoW changes by region posted on Bloomberg at of 9am MT yesterday. Our table also includes the "Original Posted" regional data for Apr 28 that was posted on Bloomberg at 9am MT on Apr 29.

Figure 45: Vortexa Floating Crude Oil Storage Weekly Changes by Region

Vortexa Crude Oil Floating Storage by Region (mmb)				Original Posted		
Region	May 5/23	Apr 28/23	WoW	Apr 28/23	Apr 7/23	May 5 vs Apr 7
Asia	40.70	48.12	-7.42	40.29	61.56	-20.86
Europe	6.97	13.26	-6.29	11.78	25.23	-18.26
Middle East	3.71	7.06	-3.35	10.39	5.39	-1.68
West Africa	4.94	4.31	0.63	4.31	6.02	-1.08
US Gulf Coast	0.23	0.00	0.23	0.00	2.83	-2.60
Other	15.99	20.75	-4.76	20.53	16.01	-0.02
Global Total	72.54	93.50	-20.96	87.30	117.04	-44.50
Vortexa crude oil floating storage posted on Bloomberg 9am MT on May 6						
Source: Vortexa, Bloomberg						

Source: Bloomberg, Vortexa

Oil – Is it Russia/Iran floating oil that is impacting the Vortexa floating oil data?

Is it Russia and Iran floating oil?

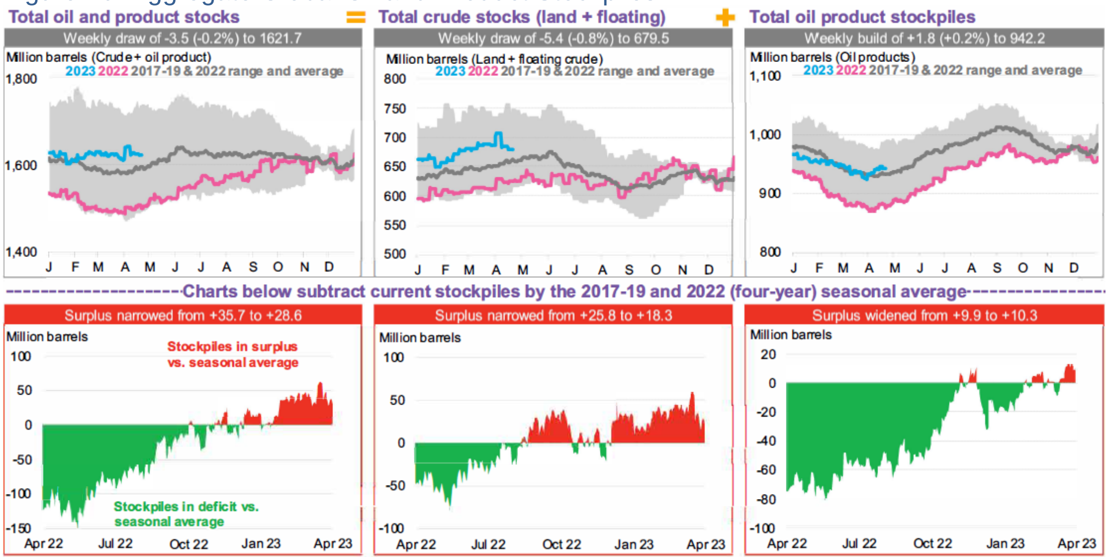
Earlier in the memo, we noted the how Saudi Arabia is increasing imports of Russian oil and petroleum products and Iran reportedly selling its floating storage/very slow in transit oil at discounted prices. When we look at the Vortexa data, we have to wonder if these two factors are part of what is at play in the Vortexa data. (i) Middle East floating storage for May was 3.71 mmb, vs the originally posted Apr 28 of 10.39 mmb. We have to wonder if these were tankers carrying Russian oil that were holding in the Middle East and are now being rerouted to other markets. And also Russian oil being rerouted after being transferred to other tankers? (ii) There has been a huge drop in floating storage in the last month and we have to wonder if this is due in great part to Iran reportedly selling off its floating storage and very slow moving in transit oil. Vortexa estimated May 5 global floating oil storage of 72.54 mmb is -44.50 mmb vs Apr 7, 2023 floating storage of 117.04 mmb. Including in the global total, Vortexa estimated May 5 Asia floating storage was 40.70 mmb, which is -20.83 mmb vs Apr 7, 2023 Asia floating storage of 61.56 mmb.

Oil – BNEF: global oil and product stocks surplus narrowed WoW to 28.6 mmb

BNEF's global oil inventories

One of the negatives for oil going into 2023 was that there was expected to be surplus oil in Q1 and a building of global oil inventories. That's happened. So, a key data point to watch will be does the building in Q1 and early Q2/23 start to turn into a draw as markets move thru Q2/23. And we remind that there are weekly changes that can flip flop but the key will be to watch the trend. Last week's April 23, 2023) Energy Tidbits memo noted that the widening of the oil and product stock surplus with this week's data showing a reversal. For those with a Bloomberg terminal we recommend flipping through BloombergNEF's "Oil Price Indicators" weekly that came out on Monday as it provides good charts depicting near-term global oil demand and supply indicators. The global stockpile for crude oil and products surplus narrowed from 35.7 mmb to 28.6 mmb for the week ending Apr 21. Land crude oil inventories decreased by – 6.42 mmb WoW to 583.7 mmb, widening the deficit to 27.6 mmb against the five-year average (2016-2019, 2022). Total crude inventories (incl. floating) decreased by – 5.44 mmb WoW to 679.5 mmb, narrowing the surplus from 25.8mmb to 18.3 mmb. Total product stocks were up by +1.9 mmb WoW to 942.2 mmb, further widening the stockpile surplus against the 4-year average (2017-2019,2022) to 10.3 mmb for the Apr 21 week. The gas, oil, and middle distillate stocks decreased by -0.15 mmb WoW at 149.1 mmb/d, with the deficit against the four-year average narrowing to 14.3 mmb. Jet fuel consumption by international departures for the week of May 7 is set to increase by +71,000 b/d WoW, while consumption by domestic passenger departures is forecast to decrease by -31,600 b/d WoW. Below is a snapshot of aggregate global stockpiles.

Figure 46: Aggregate Global Oil and Product Stockpiles



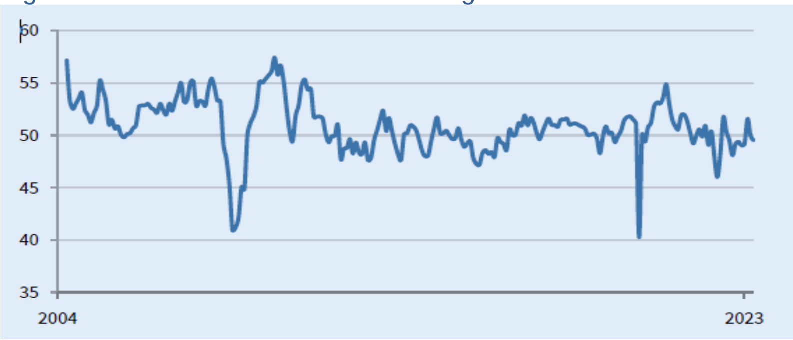
Source: BloombergNEF

Caixin PMI decreased -0.5 MoM

Oil - Caixin PMI back to contraction, -0.5 MoM to 49.5 in April

We continue to see data/indicators mostly pointing to a stalling out of the China recovery. On Wednesday, IHS Markit released the Caixin China Manufacturing PMI data for April [LINK] and the index fell from the neutral level of 50 in March to at 49.5 in April (vs expectations of 50.3) and down from Feb at 51.6. This slip has signalled the first sign of deterioration in the manufacturing sector's health over the last three months. On May 3 we tweeted [LINK], *"Stalling China recovery doesn't help #Oil. Back in contraction, miss in China Caixin PMI for Apr 49.5 vs Est 50.3. Mar 50.0, Feb 51.6, Jan 49.2, Dec 49.0. "in a nutshell, manufacturing activity weakened in April" "domestic demand became a main drag". Thx @SPGlobalPMI. #OOTT".* Firms reduced their staffing levels once again in April due to subdued client demand, with layoffs being at the highest rate seen in three months. Output has slightly increase in April, while production growth slowed for the second consecutive month. The optimism of the 12-month outlook for output has improved, as new products, supportive state policies, and new equipment are expected to drive growth. The Caixin Insight Group commented, "*The Caixin China General Manufacturing PMI in April dropped 0.5 points from the previous month to 49.5, slipping into contractionary territory for the first time in three months. This suggests that China's economic recovery significantly slowed after Covid-19 infections peaked at the start of this year, given that the index stood at 51.6 and 50 in February and March, respectively.*", "*The recovery in demand was even worse. Domestic demand became a main drag, as the subindex for total new orders fell back into contraction.*" And "*In a nutshell, manufacturing activity weakened in April.*" Our Supplemental Documents package includes the Caixin China PMI for January.

Figure 47: China General Manufacturing PMI



Source: Bloomberg, ANH

Oil – RBC Michael Tran "*weaker than consensus outlook*" for summer gasoline

Michael Tran on summer gasoline demand

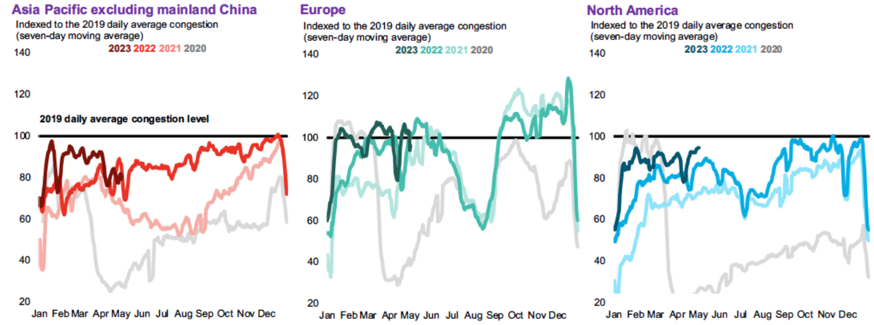
Another great read this week was RBC Michael Tran's "*Digital Intelligence Strategy: RBC Connected Vehicle x Gas Station Visits Tracker"* on Thursday. We tweeted [LINK] *"Real time visits to US gas stations "..suggest a weaker than consensus outlook for the upcoming summer driving season, #Gasoline demand wise". Vs pre-Covid, seeing impact of #EVs & work from home. Usual great insights from @michael___tran. #OOTT."* Tran's gas station data is suggesting a weaker than consensus summer driving season gasoline demand wise. Tran's conclusion is "*Our mosaic of leading indicators (incl the GOAT index) currently suggest a weaker than consensus outlook for the upcoming summer driving season, gasoline demand wise. That said, our views evolve alongside our data*." Tran then notes how the data suggests EVs are having an impact as wells as working from home. Our Supplemental Documents package includes his public summary.

Oil – Global road traffic remains subdued despite uptick in North America

BNEF Global Road Traffic Indicators

BNEF release it Global Road Traffic Indicators on Thursday, which is a good report on road traffic congestion across various global markets. This week's release noted an uptick in North American road traffic congestion was offset by a sharp European decline, while Asia-Pacific saw a slight reduction in growth. North America road traffic congestion was up 2.4% WoW while Europe was down -6.9% WoW. Asia's congestion grew by 2.9% WoW but is down -2.1% from the rolling 4-week average. Europe as a whole scored a 94 when indexed to 2019 levels of 100. Notable cities weighting this decline were Warsaw at 89, Lisbon at 87 and Athens at 82. The decline in Athens was driven by major roadway restrictions as the annual Commemorative march took place last week. North America's increase was primarily driven by the beginning of the summer driving season.

Figure 48: Global road congestion for week ended May 2



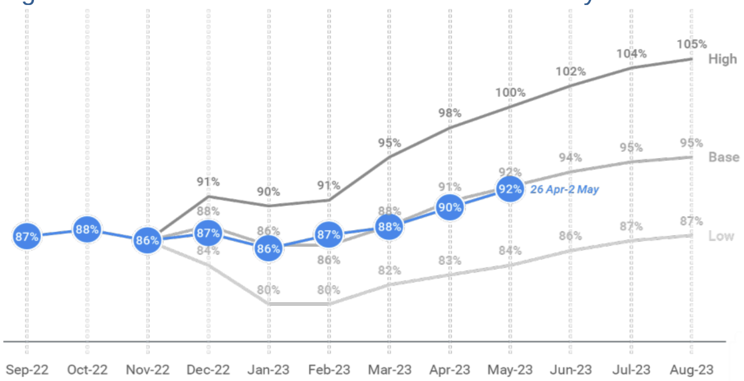
Source: BloombergNEF

Oil – Eurocontrol sees air travel to return to 92% of pre-pandemic in April

Eurocontrol April Aviation Overview

The global air travel continues to unfold with the US and Europe recovering and China being hit by Covid. On Friday, Eurocontrol posted its updated outlook for 2023, which calls for continued modest growth throughout the year [LINK]. The latest Eurocontrol traffic scenarios predict steady growth between April and peak summer, reaching 105% of 2019 traffic by August in their base scenario. The release noted *"The Network recorded 28,204 average daily flights (+7% vs 2022), increasing (+1%) vs the previous week and standing at 92% of 2019 levels", "In April, the number of flights in the Network was 90% of the 2019 levels, matching the base scenario of the flight forecast released in December2022.", Arrival and Departure punctuality continue to be affected by the long-term French industrial action. They are around 6 percentage points below 2019."* Our Supplemental Documents package includes excerpts from the Eurocontrol.

Figure 49: Eurocontrol Air Traffic Scenarios at May 2



Source: Eurocontrol

Oil – Asian Pacific Airlines March air traffic results show stalling air cargo volume

On Thursday, the Association of Asian Pacific Airlines released its March traffic results [LINK] which is comprised of aggregate data across a total of 40 Asia Pacific airline carriers. The AAPA report highlighted steady growth in passenger demand but further weakness in cargo markets. Air travel appears to be rapidly recovering but is still just 59% of demand when compared to 2019 levels. We tweeted *"Stalling Asian economy recovery. AAPA is trade association for international airlines based in Asia Pacific. Air travel rapidly recovering but still 59% of 2019." [LINK]* Air freight is pulling back, Q1/23 was down 13.1% YoY and back below 2019.In March 2023, Asian Pacific airlines served a total of 19.8mm passengers, which is up +494.6% YoY from 3.3mm in March 2022 with international traffic measured in revenue per passenger kilometers (RPK) up +354.6% YoY to 74.06b vs 16.29b in March 2022. The uptick in regional air traffic resulted in an average international load factor of 82.5% in March which is now at pre-Covid levels. In contrast, international air cargo demand measured in freight tonne kilometres (FTK) fell -0.2% YoY in March, leading to a -7.5% decline in the international freight load factor to 63.2%. Weak air cargo data was cited to be the result of global economic weakness and export market constraints. AAPA Director General, Subhas Menon commented, *"Asia Pacific airlines carried a combined total of 54 million international passengers in the first quarter of 2023, well over six times the 8 million passengers recorded in the same period last year. Demand continues to be robust as remaining travel restrictions are lifted across the region…However, air cargo markets declined by 13.1% during the same period, reflecting weakness in consumer demand amidst general inflationary pressures and rising economic uncertainty."*

Figure 50: AAPA Preliminary International Air Traffic Data

International	Mar-23	Mar-22	% Change
Passengers (Thousand)	19,805	3,331	+ 494.6%
RPK (Million)	74,060	16,291	+ 354.6%
ASK (Million)	89,784	30,861	+ 190.9%
Passenger Load Factor	82.5%	52.8%	+ 29.7 pp
FTK (Million)	5,428	6,095	- 10.9%
FATK (Million)	8,594	8,615	- 0.2%
Freight Load Factor	63.2%	70.7%	- 7.5 pp

Source: APAA

Oil & Natural Gas – Tough Q1 reporting ahead for E&P with prices down QoQ & YoY

Tough Q1 reporting for Cdn E&P

We should start to see the start of Q1 reporting for the Cdn oil and gas companies this week and one thing is clear, it will be a tough Q1 reporting when comparing to Q4/22 and Q1/22 with oil and gas prices down QoQ and YoY. On April 8, we tweeted [LINK] "*Tough Q1 reporting for E&P in a few weeks. See 👇#Oil #NatGas price table. Q1/23 prices down QoQ for all prices except WCS. Q1/23 prices down even more YoY for all prices. Looking further ahead, Q2/23 YoY price comparison will be even worse as Q2/22 was peak prices*. #OOTT." Our tweet included our quarterly oil and gas price table. Q1/23 Ed Par prices of US$73.80 were -7.5% QoQ and -21.0% YoY. Q1/23 WCS prices of US$56.52 were +3.4% QoQ and -31.3% YoY. Q1/23 AECO prices of $3.10 were -38.2% QoQ and -31.2% YoY. Our tweet reminded that the YoY comparisons for Q2/23 reporting this summer will be even worse as Q2/22 was the period of peak oil and natural gas prices. Below is our updated table of quarterly oil and natural gas prices.

Figure 51: Oil and Natural Gas Prices

Quarter	Brent US$	WTI US$	EdPar US$	WCS US$	HH US$	AECO C$
Q1/18	$67.00	$62.86	$57.19	$37.07	$3.11	$1.97
Q2/18	$74.41	$67.83	$60.78	$49.88	$2.83	$1.17
Q3/18	$75.27	$69.69	$59.81	$42.32	$2.92	$1.18
Q4/18	$68.18	$59.41	$36.53	$25.63	$3.79	$1.53
Q1/19	$62.91	$54.49	$50.28	$43.79	$2.93	$2.42
Q2/19	$68.58	$59.96	$54.41	$47.46	$2.57	$1.07
Q3/19	$61.95	$56.48	$52.43	$43.91	$2.38	$0.94
Q4/19	$62.51	$56.83	$50.61	$37.98	$2.40	$2.33
Q1/20	$51.28	$46.73	$39.75	$28.55	$1.92	$1.94
Q2/20	$31.14	$27.67	$21.84	$18.02	$1.70	$1.90
Q3/20	$42.70	$40.87	$36.83	$31.13	$1.96	$2.14
Q4/20	$44.47	$42.67	$37.92	$31.34	$2.46	$2.51
Q1/21	$60.51	$57.75	$54.17	$45.83	$3.39	$2.97
Q2/21	$68.44	$65.90	$61.94	$53.11	$2.89	$2.80
Q3/21	$72.95	$70.57	$66.90	$57.65	$4.28	$3.40
Q4/21	$79.45	$77.26	$73.78	$60.87	$4.74	$4.47
Q1/22	$99.08	$94.57	$93.40	$82.27	$4.60	$4.51
Q2/22	$112.72	$108.76	$107.10	$93.41	$7.46	$6.89
Q3/22	$99.67	$92.38	$90.52	$71.50	$7.98	$4.17
Q4/22	$88.35	$82.63	$79.74	$54.66	$5.59	$5.02
Q1/23	$81.44	$76.17	$73.80	$56.52	$2.69	$3.10
Q1/23 YoY	-17.8%	-19.5%	-21.0%	-31.3%	-41.6%	-31.2%
Q1/23 QoQ	-7.8%	-7.8%	-7.5%	3.4%	-52.0%	-38.2%

Source: Bloomberg

Oil and Natural Gas – Expect to see increasing Cdn oil and gas shut-ins from wildfires

Cdn oil and gas shut-ins from wildfires

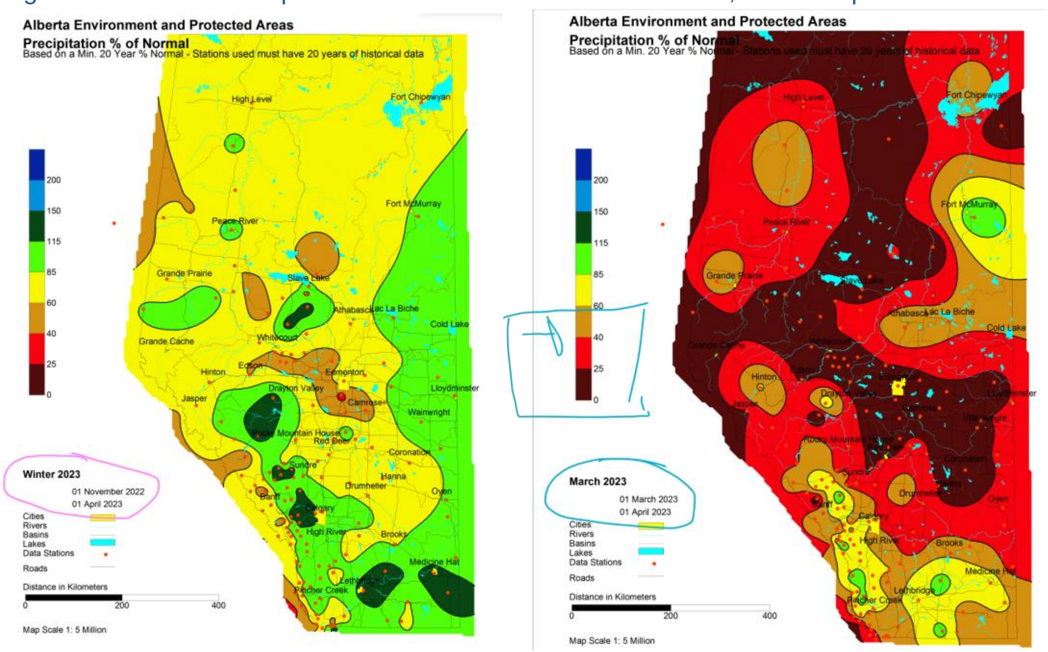
Earlier in the memo, we noted or expectation for Cdn rigs and frack crews activity will be impacted by wildfires. We have a 7am MT news cut off, but we expect to see more reports before the Cdn markets open tomorrow of shut-ins due to wildfire safety precautions. Oil and gas companies know winds are predictable so they can’t wait till the last minute to shut down a well or rig or plant. The other reality is that most of the service people live in the operating areas so evacuations mean those people are busy moving their families to safety and not staying and working. A good example is Drayton Valley, which was evacuated late Thursday night and has a number of oil and gas workers living in that community. And when a processing facility gets shut-in, it then means the oil and gas production feeding that facility gets shut in. Yesterday, Bloomberg reported “*Tamarack Valley has shut down about 220 b/d in Western Alberta because Keyera and Tidewater gas processing plants in the area are down due to wildfires, CEO Brian Schmidt says by phone.* Please note wildfires are also increasing in NE BC, the Montney focus area. Overnight, the Red Creek fire is causing evacuations of some towns NW of Fort St. John B.C. Fort St. John is the major oil and gas servicing center for the Montney in NE BC.

Oil and Natural Gas –Very high wildfire risk in Alberta/BC this summer

High wildfire risk this summer

Yesterday, Alberta declared a state of public emergency in Alberta because of the increasing number of wildfires and evacuations. Unfortunately for people and businesses in Alberta and BC, it’s been an early start to wildfire season and it is expected to be more active than normal wildfire season. We haven’t been caught in a wildfire, but have heard the experiences of people who have been caught in wildfires and it is a very scary situation with the unpredictability of winds. So we just hope that people can stay safe if they get caught near a wildfire. The reason for the early start and wildfire risk is that it was very low precipitation winter and then, to make it worse, it was bone dry in April. On Friday, we tweeted [LINK] “*Here's why Alberta is getting hit by wildfires - Very low precipitation Nov thru Mar 31 and then April was brutal for lack of rain. Link to Alberta live wildfire map: [LINK] Hope & pray we* *don't see Fort McMurray 2016 replay. Stay safe everyone! #OOTT."* Our tweet included the Alberta Environment maps of precipitation % of normal for Nov 1 thru Mar 31, and for the month of April. Both are posted below.

Figure 52: Alberta Precipitation % of Normal for Nov 1-Mar 31, and for April

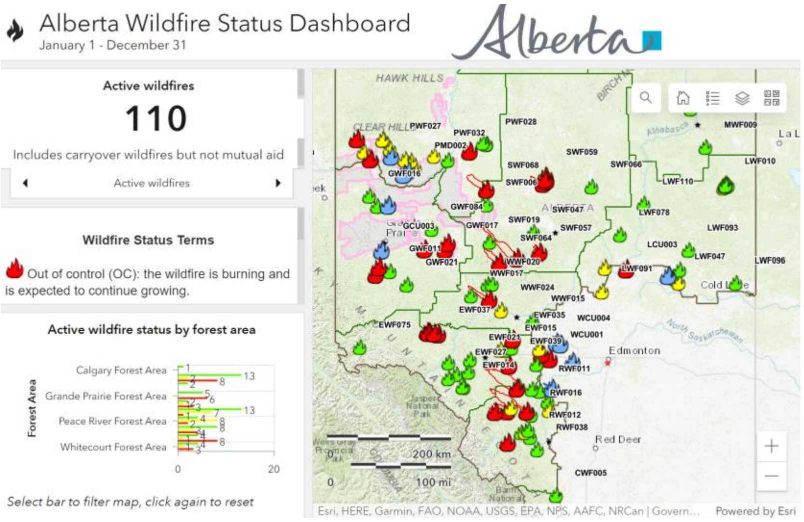


Source: Alberta Environment

Links to Alberta and BC wildfire status maps

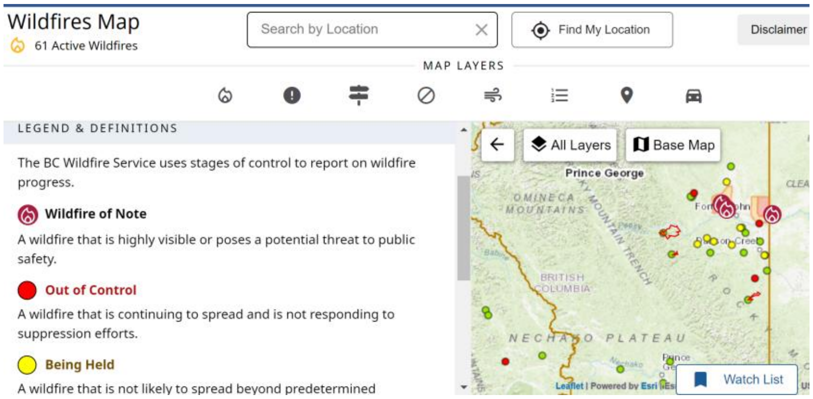
Our tweet also included the Alberta wildfire map as of 1pm MT on Friday. We recommend bookmarking the starting points for wildfire information are the Alberta Wildfire Status interactive map [LINK] and the BC Active Wildfires interactive map [LINK]. Please note these links have changed over the past few years. Both maps are interactive and open up for the information on any particular fire. Here are the wildfire maps as of 7pm MT yesterday.

Figure 53: Alberta wildfire map as of 7pm MT on May 6



Source: Alberta Wildfire Status Dashboard

Figure 54: BC wildfire map as of 7pm MT on May 6



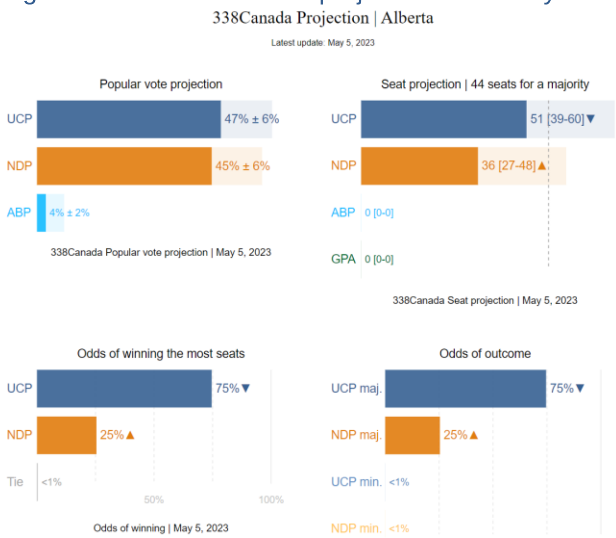
Source: Alberta Wildfire Status Dashboard, BC Wildfire Service

Oil & Natural Gas – 3 weeks until Alberta's provincial May 29 election

Alberta provincial election on May 29

The 4-week sprint for the Alberta provincial election kicked off on May 1 with the election to be held on Mon May 29. It's as short an election period as can be and it started off with a bang on announcements of personal income taxes. On Monday, we tweeted [LINK] "*May 29 Alberta provincial election. Elections are unpredictable but @338Canada projection shows UCP in lead to start the 4-week sprint. Day 1 headlines: UCP to cut personal income taxes for everyone. NCP won't raise personal income taxes. #OOTT."* The ruling UCP party surprised with their Day 1 announcement they will cut personal income taxes for everyone, no matter the income level. At the same time, the NDP party posted many parts of their election platform including their pledge to not raise personal income taxes. Having a Day 1 announcement that gives every Albertan more money in their pocket is likely why the projected lead for the UCP increased this week. It's still early, it's only 1 week, but the election is only 4-weeks long so it's the campaign will be 25% finished. Our Supplemental Documents package includes the UCP and NDP personal tax announements that were attached to our tweet. Below is the 338Canada projection as of May 5.

Figure 55: Alberta election projection as of May 5



Source: 338Canada

Energy Transition – Growing % of Americans have no interest in buying an EV

Americans EV buying sentiment

We recognize that the world is being put on an accelerated pace to buy EVs. EVs adoption and, more importantly, how quickly they replace the miles driven by ICE vehicles, is probably the most important assumption for when the world reaches peak oil demand. EV purchasers have been accelerating driven by early adopters and big government subsidies. No question that is happening, but, for the purposes of trying to look at future energy markets, we believe it is important to realize that the rate of penetration with early adopters is looking like it won't be maintained by a broader penetration of EVs into middle and lower income people. And remember, it's not just EV sales, but do the EVs replace the miles driven by ICE vehicles. On Monday, we tweeted [LINK] "*1/2. #EVs buying is accelerating BUT shouldn't extrapolate early adopter pace with broader penetration. @Lebeaucarnews "the early adopters, those willing to pay up to buy an EV are becoming a smaller & smaller part of the market". #1 hurdle is price. @andrewrsorkin. #OOTT.*" Our tweet included the CNBC Squawk Box clip where Squawk Box host Andrew Ross Sorkin asked on the updated J.D. Power EV survey on EV buyer sentiment that shows a growing number of Americans have no interest in buying an EV, CNBC's Phil LeBeau (who covers auto and airlines) replied "*we've talked about this for some time. The early adopters, those willing to pay up to buy an EV are becoming a smaller & smaller part of the market. And increasingly, when you see more people who are asked about this. By the way J.D. Power tracks attitude about EV investment and EV adoption every month, it's not surprising that the latest results show 21% of those who were surveyed by J.D. Power say they are very unlikely to buy an EV…*" This 21% in March was up from

18.9% in Feb. But, on the flip side, 26.9% said they were very likely to buy, which was up from 26.3% in Feb. LeBeau referenced the Edmunds estimate that the average EV price rolling off the dealer lot was $57,495, but this doesn't include Teslas that would lower the average. LeBeaus also put up a slide of the J.D. Power survey hurdles for EV adoption were price 49%, lack of charging stations 49%, range per charge 43% and battery charging time 41%.

Early adopters for EVs are higher income millennials

We have previously highlighted how EVs purchases to date have been driven by higher income Americans, which is why we are concerned on EV sales forecasts that assume a similar rate of penetration for EV sales among middle and lower income. On Monday, our 2/2 tweet on EVs was [LINK] "2/2. *Here's why #EVs early adopters are not a good indicator for broader market penetration. @alexa_stjohn "notably, well-off millennial men have largely been leading the charge on EV purchases", Early Adopters "mean income $112,690". #OOTT."* Our tweet included a Business Insider Apr 26 report [LINK] that highlighted the early adopter role in EV sales and wrote "*Early EV adopters want the newest tech in an electric car. That's not so true for the next waves of buyers. • Men make up most early adopters of electric cars, while women account for most EV skeptics. • Higher-income consumers are more likely to adopt or consider going electric. • Those skeptical about EVs aren't willing to accept a range lower than 353 miles.. If automakers want to make their multi-billion-dollar electric car ambitions happen, they need to know who their target customers are and what buyers are looking for in an EV. Notably, well*-off millennial men have largely *been leading the charge on EV purchases*." The Business Insider report noted the below profiles, which indicate the mean income for early adopters was $112,690. Our Supplemental Documents package includes the Business Insider reporting.k

Figure 56: EV buyer profiles

Early adopters

Socio-demographics	Details
Mean age	42 years
Gender	31% female
Have children	69%
Mean income	$112,690
Live in major cities	64%
Minimum accepted range	247 miles

Source: Ipsos 2022 Mobility Navigator Module 1, Berylls

Buyers considering EVs

Socio-demographics	Details
Mean age	45 years
Gender	47% female
Have children	68%
Mean income	$106,910
Live in major cities	49%
Minimum accepted range	244 miles

Car shoppers skeptical about EVs

Socio-demographics	Details
Mean age	57 years
Gender	61% female
Have children	27%
Mean income	$86,890
Live in major cities	11%
Minimum accepted range	353 miles

Source: Business Insider

Elon blames banks tougher credit for lower car sales

Last Sunday morning, Elon Mus replied to a tweet noting it was the worst March ever for Toyota Corolla car sales. Musk blamed the banks in his tweet [LINK] "*It is becoming harder for people to get car loans in the US, even when their credit is* *good. Understandable that banks are slow to extend credit when they're trying to avoid bankruptcy themselves!"* He didn't note the other linked issue -ising interest rates causing a big increase in monthly car payments.

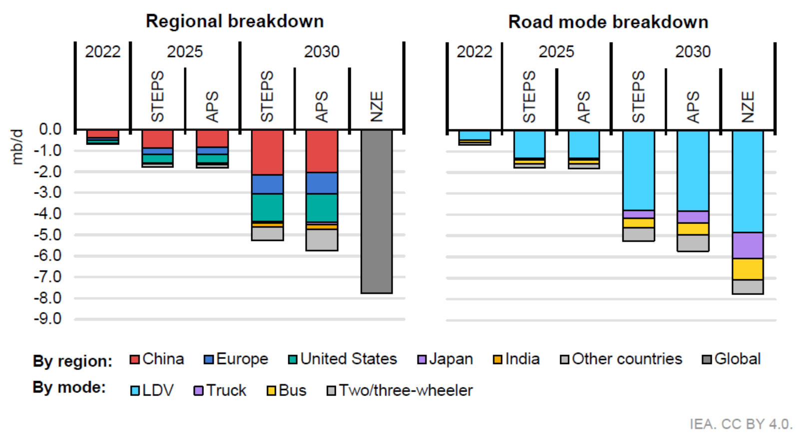
Energy Transition – Will EVs displace ~6 mmb/d of oil demand by 2030 as IEA forecast

IEAs on EVs displacing oil

We continue to be surprised by the reporting on then IEA's Global EVs Outlook 2023 and how it seems that no one cares about the key assumption used in their forecast that EVs would displace nearly 6 mmb/d of oil demand by 2030. There is no question it is a good report and one with a lot data/insights on EVs. No question about that. But it just seems that people focus on the summary in the front and didn't' bother to go back to Pg 132 to review the key assumptions. Here is what we wrote in last week's (Apr 30, 2023) Energy Tidbits memo. "*The most important assumption on when peak oil demand hits is how quickly the accelerating share that EVs have of all new car sales leads to a big decline in oil consumption. The IEA forecasts EVs will displace nearly 6 mmb/d of oil demand by 2030 if governments deliver on their stated policies. And says that EVs displaced 700,000 b/d of oil demand in 2022. We had a 7-tweet Twitter thread that reminded that the displacement is all about forecast assumptions. We agree that EVs have to displace some oil demand, but we question the primary assumption and therefore believe this nearly 6 mmb/d displacement is too optimistic. (i) On Wed, the IEA released its major report "Global EV Outlook 2023: Catching up with climate ambitions". [LINK]. There is no question it is an excellent report with a lot of data and global EV insights. We recommend adding to reference libraries. (ii) We tweeted [LINK] "1/7. @IEA Global EVs Outlook 2023. #Oil Bears and Bulls will both love it! Oil Bears and western leaders like headline, EVs to be 60% of total car sales in 2030, EVs to displace nearly 6 mmbd of oil by 2030, already displaced 0.7 mmbd in 2022. #OOTT." We expect western leaders will just run with the nearly 6 mmb/d displacement and not worry about the key assumption. (ii) Oil bears assume this nearly 6 mmb/d means the IEA expects oil demand to be down ~6 mmb/d by 2030. But we reminded in our tweet [LINK] "2/7. Oil bulls remember @IEA World Energy Outlook Oct/22 incl EVs to be 50% of total car sales in 2030, and IEA forecast #Oil demand to increase 0.8%/yr this decade to peak around 103 mmbd n mid 2030s." The IEA's flagship annual report World Energy Outlook in Oct 2022 assumed EVs would be 50% of total car sales in 2030, so less than its new forecast of 60% in 2030. But even including a 50% assumption, the IEA WEO forecast oil demand to keep increasing in the 2020s and not peak until the mid 2030s at ~103 mmb/d. (iii) Here is the key assumption to displacing ~6 mmb/d that most probably didn't read. We are big believers that it is important to look at the key forecast assumption on pg 132. We tweeted [LINK] "Oil bulls also note KEY assumption to @IEA #EVs replacing 6 mmbd is that distance travelled by EVs basically replaces the distance an ICE or hybrid would have driven. ie. infers a new EV is added to fleet, an ICE is effectively retired from fleet. #OOTT." The IEA wrote "How much oil really gets displaced by electric vehicles? Oil displacement through the use of EVs can be estimated by assuming that the distance (total kilometres) travelled by EVs by segment each year would have otherwise been travelled by ICE vehicles or hybrid electric vehicles (HEVs) (based on the stock shares of each)." Basically, the IEA assumes the EV effectively replaces the distance driven by an ICE vehicle. (iv) We don't believe this effective one-for-one replacement in terms of distance driven has proved out so far. We tweeted [LINK] "4/7. But for many, an EV is a 2nd or 3rd car. Norway is recognized leader in terms of EVs penetration. 03/22 tweet. Yet #EVs distance driven 22.6% in 2022. EVs were >80% of new car sales in 2022, been 60% for ~4 years. [LINK] #OOTT". (v) On March 25, Equinor highlighted this EVs* *are 2nd or 3rd cars in Norway. We tweeted [LINK] "5/7. In Norway, EVs are 2nd or 3rd cars! 03/25 Equinor explains why Norwegians #EV mileage is low relative to new car sales. "We've bought an EV instead of taking the bus, or it becomes the second or the third car" says @EWaerness [LINK] #OOTT." (vi) Absent governments mandating ICE vehicles get junked, the other key factor is that ICE vehicles are lasting longer. We tweeted [LINK] "6/7. A concept everyone has experienced - ICE vehicles are lasting longer. 03/31. @BloombergNEF. at least in China, ICE vehicles retirements are at a very low level even in the face of increasing EV and ICE sales. #OOTT." (vii) It is important to remember that the IEA forecasting a 60% EV share of total car sales means a displacement of nearly 6 mmb/d in 2030 is not an IEA forecast that says its oil demand forecast will be reduced by 6 mmb/d. It's WEO Oct 2022 assumed EVs were 50% of total car sales in 2030 and didn't see peak oil demand until the mid 2030s. So the incremental 10% EV sales penetration, by itself, isn't likely to move its peak oil demand closer by very much. Our last tweet [LINK] "7/7. #Oil Bears and western leaders will love @IEA EVs headlines on increasing EV sales and oil displacement. #Oil Bulls (Saudi Arabia) will love the IEA report and think this won't have much impact on @IEA forecast for peak oil demand around 103 mmbd in mid 2030s. #OOTT." (viii) EVs are having an impact on oil and energy, but it isn't a one-for-one replacement. Plus we wonder if it's just additive on an "energy" basis in what it does to the demand for natural gas and other forms of reliable electricity to power the new EV ecosystem. Our Supplemental Documents package includes excerpts from the IEA Global EVs Outlook report."*

Figure 57: Oil displacement by region and mode, 2022-2030

Figure 3.13. Oil displacement by region and mode, 2022-2030



Notes: STEPS = Stated Policies Scenario; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario; LDV = light-duty vehicle. Oil displacement based on internal combustion engine (ICE) vehicle fuel consumption to cover the same mileage as the EV fleet.

Source: IEA

Equinor chief economist says Norwegians bought EVs as 2nd or 3rd cars

Here is what we wrote in our March 26, 2023 Energy Tidbits memo. "*The Equinor Chief Economist Wareness comment to the FT also supported the above item on how Norwegians aren't using their EVs as much as would be expected given the massive penetration of new car sales over the past several years. Yesterday, we* *tweeted [LINK] "Here's why Norwegians #EV mileage is low relative to new car sales. "We've bought an EV instead of taking the bus, or it becomes the second or the third car" says @EWaerness. many other reality check energy transition views in his @FT interview [LINK] #OOTT." Waerness says that Norwegians really have bought EVs as their 2nd or 3rd cars and not the principal car. Whereas historically car buyers buy new cars as a principal car other than the wealthy who have more than a couple cars. The FT wrote "Norway's experience with electric vehicles provides an example, Wærness suggested. Subsidies to buy battery-powered cars had rapidly increased their number, and Norway has been repeatedly cited as an example of how quickly customers could switch to EVs. But the overall car fleet had swollen too, Wærness said. "We've kept a lot of the diesel cars and gasoline cars, and we've added EVs, and it took 10 years before gasoline demand went down," he said. "We've bought an EV instead of taking the bus, or it becomes the second or the third car."*

Energy Transition – UAE lays out approach for COP28, climate change won't like it

UAE's vision for COP28

It would have been interesting to see how many pro-climate protestors would be show up for COP28 if UAE was more easily accessible and open to protests. So we wont' get the true social protest effect when COP28 is held in the UAE because there shouldn't be any doubt that COP28 President (UAE's Dr. Sultan al Jaber) message isn't what the pro-climate people want to hear. And he is already setting the stage for that message. (i) Earlier in the memo, we highlighted Amena Bakr's (Energy Intelligence) expectation for good news soon on a Saudi/Houthi deal. Bakr is Chief Opec Correspondent & Deputy Bureau Chief and based in Dubai, UAE. On Tuesday, we tweeted [LINK] *"#COP28 should be interesting. @Amena__Bakr always has good insight into #OPEC thinking. "what EU is facing today in terms of energy security should really be a warning sign that hydrocarbons are still relevant. They're here to stay for some time. Sure we need to invest in the transition but it can happen in parallel. And i think this message is going to be conveyed later in the year by the UAE when we have COP28". #OOTT".* (ii) Later on Tuesday, Al Jaber made a keynote speech at the St. Petersburg Climate Dialogue 2023. We tweeted [LINK] "*UAE lays out vision for #COP28. "in a pragmatic, just & well-managed energy transition" "must be laser focused on phasing out fossil fuel EMISSIONS" "scaling up viable, AFFORDABLE zero carbon alternatives". And more! Interesting debate & negotiations ahead for delegates. #OOTT."* Jaber is talking about phasing out fossil fuel emissions but not fossil fuels. And he is onside with scaling up viable, affordable zero-carbon knowing that most isn't viable on a commercial scale or affordable. And there are more. Our tweet included the transcript we made of Al Jaber's comments. [LINK] Al Jaber ""*Trust is also essential in the negotiations process. In fact, trust is a critical success factor. And as COP28UAE President-Designate, I will ensure a fair, inclusive and transparent presidency that provides space for all parties to reach consensus across the whole agenda. And here, let me assure you that, under this Presidency's leadership, the negotiations will give space for all parties to discuss, debate and agree on the role of all sources of energy. And on that point, let me say this and let me be perfectly clear. In a pragmatic, just and well-managed energy transition, we must be laser focused on phasing out fossil fuel emissions, while phasing up and scaling up viable, affordable, zero carbon alternatives. This is the approach we have been taking in the UAE for more than 20 years, where we have embraced, in practice, the energy transition. We know that the energies used today will continue to be part of the global energy mix for the foreseeable future. And, as such, we will continue to work with the world to decarbonize the* *current energy system while we build the new energy system that is capable of transitioning even the most heavy emitting industries*."

AI & Automation – IBM CEO, 30% of its workforce replaced by AI over 5-yr period

AI & Automation to hit IBM workforce

We are big believes that AI and Automation is a game changer. We find it both fascinating and scary when we see talks on AI's potential. But from a more simplistic cause and effect on companies, AI and Automation should cause huge job losses from current way businesses and governments do business. And the impact will be soon. We wonder if any politician will ever jump board for AI to redo the government bureaucracy? Back to business, early Tuesday morning, we tweeted [LINK] ""*I could easily see 30% of that [IBM's jobs] getting replaced by AI and automation over a five-year period" #IBM CEO @ArvindKrishna. #AI is going to hit every industry jobs to some degree and soon. Thx @BrodyFord_#OOTT."* Bloomberg reported "*International Business Machines Corp. Chief Executive Officer Arvind Krishna said the company expects to pause hiring for roles it thinks could be replaced with artificial intelligence in the coming years. Hiring in back-office functions — such as human resources — will be suspended or slowed, Krishna said in an interview. These non-customer-facing roles amount to roughly 26,000 workers, Krishna said. "I could easily see 30% of that getting replaced by AI and automation over a five-year period." That would mean roughly 7,800 jobs lost. Part of any reduction would include not replacing roles vacated by attrition, an IBM spokesperson said.*

"AI will change everything, but it's not clear how everything will change"

When we speak with investors, management and boards on AI and Automation, we will say how we are both fascinated and scared by what seems to be the potential for AI and Automation. As noted above from IBM, the straightforward impact will be job losses. But that is just a small part of the huge potential impact that we doubt anyone can predict in full. Our way of describing the impact is that "AI will change everything but it's not clear how everything will change". We haven't seen this impact description elsewhere so, at least for now, it is our quote.

Capital Markets – Americans are watching their restaurant spending says Dine Brands

Dine Brands CEO on restaurant spending

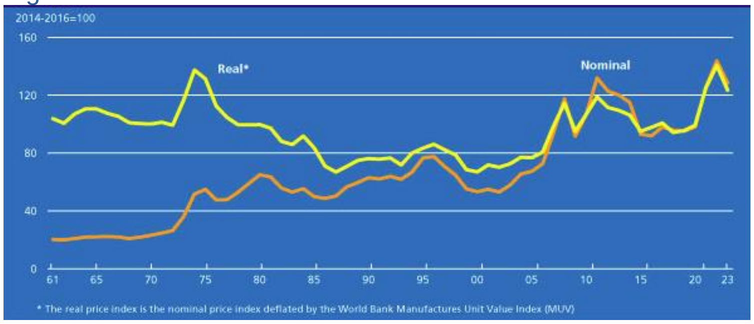
There was some good restaurant comments this week on how Americans are watching their restaurant spending ie. tightening their belts on their food. Dine Brands two big restaurant chains are Applebee's and IHOP. On Thursday morning, Dine Brands CEO John Peyton was on CNBC Squawk Box following the Q1 release. We tweeted [LINK] "*Americans feeling or worried about economic pinch. #DineBrands CEO with @MelissaLeeCNBC @JoeSquawk. #Applebee's "now have a higher % of household guests over $100,000 income vs pre-Covid". "average check remains the same despite prices increasing", +10% vs pre-Covid. #OOTT."* Applebee's did a big survey and found out they have a lot more higher income customers. And he also noted how prices have gone up >10% but the average check is unchanged ie. people are buying cheaper or more value items. Peyton gave a little more color on the Q1 call. Peyton said "*We recently completed an extensive research effort to update our understanding of our Applebee's guest profile, and we learned that we are now serving more of the (Inaudible) 18 to 34 year old guests versus pre-pandemic, as well as more guests with children. We're seeing more higher income guests than in 2019 in the $100,000 plus household income category. Our guests are increasingly diverse compared to 2019, and our deal based dining is highly motivating to our target guests and drives both* *acquisition and retention."* Peyton later said in the Q&A "*But for both brands, the majority of their guests are below $100,000 in household income, and for both brands, about half their guests are at the $50,000-ish household income. And that has been generally stable over time. Although as I mentioned, we are seeing now that the $100,000 plus segment for Applebee's seems to have grown since 2019.*"

Capital Markets – UN FAO Food Price Index increases in April and is down YoY

UN Food Price Index up MoM

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 and, as we note below from Loblaw, there are added costs pushed thru the supply chain to grocery shoppers. So the commodity price changes in the UN food price index then have to go thru the supply chain before they get to the grocery stores. The UN global food price index for April 2023 increased for the first time in 12 consecutive months. The UN wrote, *"The slight rebound in the FFPI in April was led by a steep increase in the sugar price index, along with an upturn in the meat price index, while the cereals, dairy and vegetable oil price indices continued to drop".* The FFPI fell to -19.7% YoY in April, and that is down huge from the record high YoY increase of +33.6% seen in March 2022 when the Index averaged 159.8. On May 5, the UN posted its monthly update of its FAO Food Price Index [LINK] titled "*The FAO Food Price Index rebounded slightly in April".* Note that the index is calculated on a Real price basis. The FFPI averaged 127.2 points for April, which was an increase of 0.6% MoM from 126.5 in March and is down -19.7% YoY. The FFPI also reported MoM declines for most of its sub-indices in April. The Meat Price Index was up +1.33% MoM and is now -6.1% YoY while the Sugar Price Index was also up +17.6% MoM and is +22.9% YoY. In contrast, the Vegetable Oil, Dairy, and Cereal Price Indices were all down from last month by -1.4% (-45.3% YoY), -1.7% (-15.1% YoY), and -1.8% (-19.8% YoY), respectively. Below is the all time FFPI graph.

Figure 58: UN FAO Food Price Index



Source:UN

Capital Markets – Loblaw on why grocery prices go up higher than commodity prices

Loblaw on grocery vs commodity prices

As we keep saying there is a big difference between what the UN and USDA say is the inflation on commodity food prices because there is a big supply chain by the time a commodity gets turned into the price someone pays when they go to the grocery store. Loblaw had their Q1 call on Wednesday and mgmt. noted how the prices they pay for product to put on their grocery store shelves keeps going higher than the underlying food commodity price increase. In their prepared remarks, mgmt said "*We are continuing to see* *elevated cost increase from our food suppliers. This includes small and medium-sized Canadian vendors catching up on costs and we're doing our best to expedite those. More concerning, we're still seeing outsized cost increases rolling in from large global consumer goods companies, exceeding what we would be expecting at this point."* And then in the Q&A, mgmt. was a little more specific confirming it was relative to the commodity price increases. Mgmt replied "*We wanted to call it out because it is one of the big drivers of cost inflation that we are seeing. You also heard Richard mention the small Canadian mid-sized manufacturers. So, we're kind of catching up to the inflationary costs. But yes, we are definitely seeing more inflationary cost pressure from the large multinational CPGs than we would have expected at this time based on what's happening in the commodity cost environment."*

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

@Energy_Tidbits on Twitter

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

LinkedIn – Look for quick energy items from me on LinkedIn

Look for energy items on LinkedIn

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

Misc Facts and Figures

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

Oshawa Generals hockey team say they are moving to nearby Pickering

One of the well-known Ontario junior hockey franchises is the Oshawa Generals, who started up in 1937. That almost 90 years ago so most don't know the history of the name Generals. At that time, Oshawa was a small town whose economy was driven by the General Motors factory, which is why the franchise was called the Oshawa Generals. On Friday, Oshawa This Week reported [LINK] "*Oshawa Generals owner Rocco Tullio said he's "done" with negotiations with the City of Oshawa and is ready to move the team. It won't happen in the near future, but the longtime owner of the Ontario Hockey League team said he will play out his lease at the Tribute Communities Centre through 2031 and then plans to move down the 401 to Pickering."* The reason the Oshawa Generals got on the map was as the recognized greatest defenseman in the history of the NHL, Bobby Orr, played three years for the Generals in the 60s. So everyone knew Bobby Orr and therefore they knew the Oshawa Generals.

Sherry Bassin coached both the Oshawa Generals & Pickering Panthers

Can't help give a shout out to Sherry Bassin. Our first thought in seeing the Oshawa Generals move to Pickering report was of Junior hockey coach/GM great, Sherry Bassin, who was likely the only person to have coached both the Pickering Panthers (then a Junior B team) and then the Oshawa Generals. Bassin went on to great fame for his three years as Asst Coach and Asst General Manager with the Team Canada Juniors in the 80s, and then later as Ass General Manager with the then NHL team, Quebec Nordiques in the 90s. Sherry is a good friend and what many not know about a hockey man – Sherry had the big IQ to go along with his smarts and he has three degrees: a Ph.D. in hospital pharmacy, a Masters in hospital administration, and a Juris Doctor.

Canadian singing great Gordon Lightfoot passed away at age of 84

On Monday, Canadian singing great, Gordon Lightfoot, passed away at the age of 84 in Toronto. Lightfoot was a great singer andy many of his sons were sung by the most famous singers of their era like Elvis singing Early Mornin' Rain, Barbara Streisand singing If You Could Read My Mind, Harry Belafonte singing Oh Linda, Johnny Cash singing For Lovin' Me, etc. Perhaps the song that most remember is his 1976 hit "The Wreck of the Edmund Fitzgerald", which was the story of the final voyage of the SS Edmund Fitzgerald, a freighter that sank with a load of iron ore pellets when caught in a severe storm in Lake Superior enroute to a steel mill near Detroit. If you haven't heard of the song, one of the YouTube recordings that shows the lyrics is at [LINK] Many baby boomers in Toronto were lucky enough to see Lightfoot perform in the coffee houses that were the big folk music scene in Yorkville in the last 60s/early 70s. That is where many of the great Cdn folk artists performed in front of 100 or so in that era.

Cinco de Mayo was Friday

Too bad, we weren't in Mexico on Friday, which was Cinco de Mayo that big holiday celebration that celebrates Mexico's battle victory at the Battle of Puebla in 1862 over the Second French Empire. We have to believe very few care why the holiday other than it is a huge celebration and definitely memorable when in Mexico. Never been in Ireland for St. Patrick's Day but have to believe Cinco de Mayo is as crazy. Hopefully next year will be in Mexico for Cinco de Mayo.