Energy Tidbits

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Pemex CEO Expects to Cut Mexico Oil Exports From 1 mmb/d in 2021 to 0.4 mmb/d in 2022 and to Zero in 2023

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. Our priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector and not just a specific company results. Our target is to write on 48 to 50 weekends per year and to post by noon mountain time on Sunday.

This week's memo highlights:

1. Positive for Cdn oil, Pemex CEO expects to cut Mexico oil exports from ~1 mmb/d in 2021 to 0.4 mmb/d in 2022 and to Zero in 2023. (Click Here)
2. Continued uncertainty on Libya elections increases risk for more unplanned oil supply interruptions. (Click Here)
3. Ecuador saying oil production is being restarted post rains, force majeure on oil exports should be lifted soon. (Click Here)
4. Novak said half of Russia oil reserves work at low $20/25 oil price, didn't say what price needed for balance. (Click Here)
5. China cutting EV subsidies by 30% in 2022 vs 2021, and then down to zero in 2023. (Click Here)
6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK].

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Table of Contents

Natural Gas – Natural gas draw of 136 bcf, storage now -250 bcf YoY deficit

The EIA reported a 136 bcf draw (vs 128 bcf draw expectations) for the Dec 24 week, which was massively below the 5-yr average draw of 121 bcf, and last year's draw of 114 bcf. Storage is 3.226 tcf as of Dec 24, increasing the YoY deficit to -250 bcf, from 234 bcf last week and storage is 19 bcf above the 5-year average vs 34 bcf below last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [LINK].

YoY storage at -250 bcf YoY deficit

Figure 1: US Natural Gas Storage

	Stocks billion cubic feet (Bcf)				Historical Comparisons: Year ago (12/24/20)		Historical Comparisons: 5-year average (2016-20)	
Region	12/24/21	12/17/21	net change	implied flow	Bcf	% change	Bcf	% change
East	777	809	-32	-32	815	-4.7	758	2.5
Midwest	918	963	-45	-45	979	-6.2	913	0.5
Mountain	180	188	-8	-8	205	-12.2	187	-3.7
Pacific	235	247	-12	-12	290	-19.0	265	-11.3
South Central	1,116	1,155	-39	-39	1,186	-5.9	1,084	3.0
Salt	326	334	-8	-8	334	-2.4	315	3.5
Nonsalt	790	820	-30	-30	852	-7.3	769	2.7
Total	**3,226**	**3,362**	**-136**	**-136**	**3,476**	**-7.2**	**3,207**	**0.6**

Source: EIA

Natural Gas – US Oct gas production up 1.9 bcf/d MoM, +6.6 bcf/d YoY

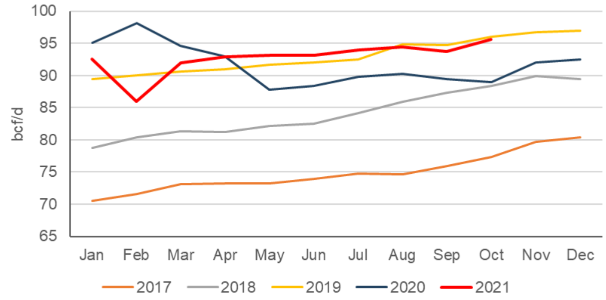
There is no change to US natural gas story that US natural gas supply from both dry shale gas and association gas from shale/tight oil continues to be up strongly YoY. EIA released its Natural Gas Monthly on Thursday, [LINK], which includes its estimates for "actuals" for October gas production. US gas production in October was 95.6 bcf/d, up MoM from September of 93.7 bcf/d and up 6.6 bcf/d YoY. Note that September's data was revised downwards by 0.1 bcf/d. August (-0.1 bcf/d) also had a revision. As expected, Hurricane Ida's landfall led to a temporary halt in production which we have now seen production start to recover from. There continues to be a YoY surplus of +6.6 bcf/d and +4.2 bc/f for the month of October and September, respectively. October production is down 0.817 bcf/d since the Dec/19 peak of 97 bcf/d and 1.0 bcf/d above March 2020 of 94.6 bcf. Our Supplemental Documents package includes excerpts from the EIA Natural Gas Monthly.

Figure 2: US Dry Natural Gas Production

bcf/d	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Jan	56.0	60.0	66.0	65.3	66.8	73.4	73.6	70.6	78.7	89.4	95.1	92.8
Feb	57.2	58.8	67.0	65.4	68.4	73.8	77.3	71.5	80.4	90.0	98.1	86.2
March	57.3	61.5	65.0	65.3	68.9	74.1	73.8	73.2	81.3	90.6	94.6	92.3
Apr	57.6	62.3	64.8	66.1	70.5	75.2	73.7	73.3	81.2	91.0	92.9	93.2
May	58.0	62.4	65.0	65.9	70.2	74.1	72.9	73.3	82.1	91.7	87.8	93.0
June	57.2	62.1	64.6	65.8	70.5	74.0	72.2	74.0	82.5	92.0	88.4	93.2
July	58.2	62.5	66.3	67.1	72.0	74.2	72.8	74.7	84.2	92.5	89.8	93.7
Aug	58.9	63.2	66.0	66.9	72.4	74.3	72.2	74.7	85.9	94.8	90.2	94.3
Sept	59.1	63.1	66.4	66.8	72.4	74.7	71.7	76.0	87.3	94.7	89.5	93.7
Oct	60.1	65.1	66.5	67.0	73.1	74.2	71.4	77.3	88.4	96.0	88.9	95.6
Nov	60.1	65.9	66.6	67.7	72.6	73.9	72.0	79.8	89.9	96.7	92.0	
Dec	61.0	65.6	66.0	66.5	73.2	73.9	71.2	80.4	89.5	97.0	92.5	
Average	58.4	62.7	65.9	66.3	70.9	74.2	72.9	74.9	84.3	93.0	91.6	

Source: EIA

Figure 3: US Dry Natural Gas Production



Source: EIA

Natural Gas – US LNG exports +2.4 bcf/d YoY in Oct to 9.6 bcf/d

US LNG exports for Oct will likely be the largest YoY increase at least until the Feb 2022 data that will be comping against the Texas cold freeze LNG drop. The big driver to stronger US natural gas prices has been the ramp up in US LNG exports, which are up ~7 bcf/d over the past 3 years. This is over 2.5 tcf a year of added gas demand for US natural gas supply. On Thursday, the EIA Natural Gas Monthly reported "actuals" for US LNG exports were 9.6 bcf/d in October, which is up +2.4 bcf/d YoY and up +0.1 bcf/d from September of 9.5 bcf/d. After recording record highs in the first half of 2021, exports decreased in September as production has also declined up slightly. The EIA expects exports will remain "at high levels" for the remaining months of 2021. Note our table rounds to one decimal and the actual is 9.616 bcf/d for October. Below is our table of EIA's monthly LNG exports.

US Oct LNG +2.4 bcf/d YoY

Figure 4: US LNG Exports (bcf/d)

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

Source: EIA

Natural Gas – US pipeline exports to Mexico flat MoM to 6.0 bcf/d in October

The EIA Natural Gas Monthly also provides its "actuals" for gas pipeline exports to Mexico, which were 6.0 bcf/d in October, which was flat YoY and flat from September of 6.0 bcf/d. Note that September's actuals were revised up 0.1 bcf/d. Mexico natural gas production remains stuck below 5 bcf/d and the completion of new pipeline infrastructure such as the Wahalajara system [LINK] increases US penetration further into Mexico. Below is our table of the EIA's monthly gas exports to Mexico. To the most part, US pipeline exports will be more

US Oct pipeline exports to Mexico flat MoM

seasonally linked as Mexico is slowing down, at least for now, its domestic natural gas infrastructure buildout.

Figure 5: US Pipeline Gas Exports To Mexico (bcf/d)

bcf/d	2014	2015	2016	2017	2018	2019	2020	2021
Jan	1.7	2.2	3.2	3.9	4.4	4.9	5.2	5.6
Feb	1.8	2.3	3.5	4.0	4.5	4.8	5.4	4.9
March	1.9	2.4	3.3	4.2	4.3	4.8	5.4	5.9
Apr	1.9	2.6	3.5	3.7	4.4	4.7	4.6	6.1
May	2.0	2.8	3.7	4.0	4.4	5.0	4.7	6.2
June	2.2	3.0	3.9	4.5	4.6	5.2	5.4	6.6
July	2.2	3.3	4.0	4.4	4.9	5.4	5.8	6.4
Aug	2.1	3.3	4.3	4.4	5.0	5.4	6.0	6.3
Sept	2.2	3.3	4.1	4.2	5.0	5.4	6.1	6.0
Oct	1.9	3.2	4.2	4.2	4.9	5.5	6.0	6.0
Nov	1.9	3.0	4.0	4.5	4.7	5.3	5.5	
Dec	2.1	3.2	3.6	4.4	4.5	4.9	5.3	
Full Year	2.0	2.9	3.8	4.2	4.6	5.1	5.5	

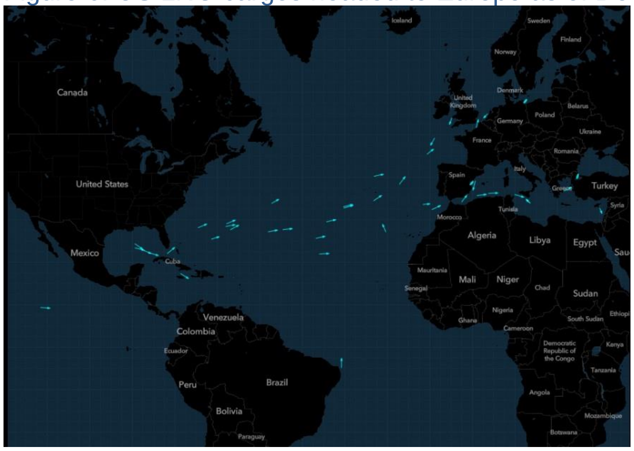
Source: EIA

Natural Gas – 44 US LNG tankers declared to or on a path to Europe

US LNG cargos off to Europe

The armada of US LNG tankers heading to Europe keeps getting bigger. Last week's (Dec 26, 2021) Energy Tidbits included our Dec 24 tweet [LINK] "*Europe #NatGas price relief, at least temporarily, from US #LNG cargoes declared destinations to Europe jumped 50% to 15 on Thurs vs 10 on Wed, Plus another 11 with undeclared destinations but heading to Europe. Thx @SergioChapa for US #LNG cargo tracking. #OOTT*." The number of LNG tankers with declared destinations to Europe and undeclared destinations but paths pointing to Europe doubled this week. On Thursday, we retweeted a Bloomberg tweet [LINK] "*U.S. LNG Update: 20 cargoes with undeclared destinations on a path to Europe. Another 24 with declared destinations: Spain 5, UK 5, France 3, Netherlands 3, Turkey 3, Malta 2, Croatia 1, Gibraltar 1, Poland 1.*" Below is Bloomberg LNG tanker tracker map that was attached to their Thursday tweet.

Figure 6: US LNG cargos headed to Europe as of Dec 29.



Source: Bloomberg

Natural Gas – Hard to see TotalEnergies lifting Mozambique LNG force majeure soon

Mozambique President on fighting terrorism

On Friday, we tweeted [LINK] "*"MZ President reportedly declares 2022 will be a decisive year in the fight against terrorism. Hard to see @TotalEnergies lift MZ #LNG force majeure in coming weeks/mths. Recall @TotalEnergies Phase 1 force majeure backs up 5 bcf/d of MZ LNG, see SAF Group 04/28 blog. #OOTT."* Mozambique President Nyusi isn't saying anything directly, but we thought his New Year's speech raised more doubt on how quickly TotalEnergies will be able to lift its force majeure on its Mozambique LNG Phase 1. When we see Nyusi call 2022 a decisive year in the battle against the terrorist groups, we don't get the feeling that the security situation will be resolved in a matter of weeks or a couple months such that TotalEnergies will be lift the force majeure. The Club of Mozambique wrote [LINK] "*Mozambican President Filipe Nyusi declared on Wednesday that 2022 will be a decisive year in the battle against the terrorist groups that have been active in the northern province of Cabo Delgado since October 2017. Speaking in his capacity as Commander-in–Chief, at the headquarters of the Northern Operational Command, in the Cabo Delgado district of Mueda, Nyusi urged the defence and security forces to step up the fight against terrorism. They should pursue the enemy relentlessly, he said, since they knew where many of the terrorists were now hiding, after they had been driven out of much of Palma. Quissanga, Muidumbe and Macomia districts. Cited by the independent television station STV, Nyusi said there was no time to lose in pursuing the terrorists. He demanded that the Mozambican forces capture or eliminate the jihadist leaders, now that they are on the run, thanks to the offensives of the Mozambican forces and their Rwandan and SADC allies. "You don't kill the snake by its tail, but by its head", he told the troops."* Part of our view is based on his Nyusi's Dec 17 comments that led to our Dec 20 tweet [LINK] ""*we were able to reduce terrorist attacks by three times" MZ President. Doesn't seem enough for @TotalEnergies to lift MZ #LNG force majeure. Throw in #Omicron wildcard, will it be enough by 02/10 yr end results? or when? #NatGas #OOTT".* In our Dec 26, 2021 Energy Tidbits we said we can't believe TotalEnergies will take the risk of restarting until there is an even better view of security. Nyusi's New Year's speech reinforce this concern. The Dec 26, 2021 Energy Tidbits memo also noted the Covid outbreak in Q3/21, which we have to believe is also a factor in any decision. It just feels that a full restart decision isn't likely to happen by the Feb 10 Q4 results. Our Supplemental Documents package includes the Club of Mozambique report.

Mozambique was expecting a TotalEnergies decision by Dec 31

In our Nov 28, 2021 Energy Tidbits, we wrote "*On Thursday, we tweeted [LINK] on the news out of Mozambique. We tweeted "Re: @TotalEnergies Mozambique #LNG force majeure. MZ energy minister says "outlook is that before the end of the year we are going to have all the conditions for us to sit down and decide to resume the project". If so, 1st LNG in 2026. #OOTT." The Club of Mozambique (Mozambique news) reported on comments from Mozambique Energy minister Tonela. "the Minister of Mineral Resources and Energy, Max Tonela, said that there could be an imminent decision to restart work. According to Tonela, "we have recently held meetings with Total, we have had meetings with ENI, and today we met Galp [CEO Andy Brown] and Mitsui; and the outlook is that before the end of the year we are going to have all the conditions for us to sit down and decide to resume the project". A decision to restart in early 2022 would fit with TotalEnergies estimate for 1st LNG cargos in 2026 "if" there was a 2022 restart. There is no question Mozambique is keen to get TotalEnergies to restart and probably moreso with neighbouring*

Tanzania pushing hard for a FID to restart their potential LNG FID. (see Our November 14, 2021 Energy Tidbits for the Tanzania update). "

Total wants security on a sustained manner to restart Mozambique LNG

In our Nov 14, 2021 Energy Tidbits, we wrote "*We think TotalEnergies comments continue to point to the hope that it can get back to construction in mid-2022 on its Mozambique LNG ie. an effective construction pause of about 1.5 yrs so they can have first LNG in 2026. Their comments are security is getting better but not yet to the point where they can restart construction. On Tuesday, Platts reported "Mozambique security improving, but TotalEnergies seeks more stability to restart LNG project" [LINK]. Platts quoted TotalEnergies SVP of Africa, Henri-Max Ndong Nzue, on the sidelines of the Africa Oil Week conference. Nzue said "We are looking at the situation and, so far, the steps taken by the Mozambican government are going in the right direction", "Things are improving by what we can see on the ground. The African forces are doing quite a good job" and ""So things are improving. But what is key is to have security in a sustained manner, and that is very important."*

A 2022 restart would keep Mozambique LNG delays to 2 yrs behind original

The TotalEnergies construction stoppage was a game changer to LNG markets because the delays to TotalEnergies Mozambique Phase 1 are more than just a delay to the 1.7 bcf/d Phase 1, its actually a delay of 5 bcf/d. This was the reason why, on April 28 2021, we posted a 7-pg blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" [LINK] We thought, and still think, there has been a major change to the outlook for LNG supply in the 2020s and one that is still being overlooked – there is a big new LNG supply gap starting around 2025 that is hitting faster and bigger than anyone expects. We saw Total's April 27, 2021 announcement of force majeure at its Mozambique Phase 1 LNG of 1.7 bcf/d was much more significant that viewed. We just didn't see market focused on the fact that this situation backs up an additional 3.3 bcf/d of LNG supply that is also being counted on in all LNG supply forecasts. Total's Phase 2 of 1.3 bcf/d was to follow, and Exxon's Rozuma Phase 1 of 2.0 bcf/d was originally expected to go FID in 2019 but is now not expected to have a FID decision until 2022 at the earliest. Mozambique is considered a premium LNG supply region for Asia and is in LNG supply forecasts. Total's original in service for Phase 1 is 2024. We had been warning that Mozambique has a major LNG market impact and its why we posted the April 28 blog. Our blog reminds that even if Total makes a restart development decision in 12 months, it will take months just to get back to where they left off including rehiring services so any return to where they were in the construction process is at least more likely 18 months at a minimum. This is going to create a bigger and sooner LNG supply gap and the reality is that the only projects that can step up in any reasonable time frame will be brownfield LNG projects. Its why we also said what about LNG Canada Phase 2. There is much more in the 7-pg blog. Our Supplemental ocuments package includes our April blog.

Natural Gas – RBN: Qatar emphasizes scale in new LNG expansion

Qatar LNG projects favours scale

On Tuesday, RBN posted a good blog *"Three's (Not Always) A Crowd - Qatar Stresses Scale In New Round Of LNG Expansion"* [LINK], that is a great recap of Qatar's LNG expansion projects. It's a good read. It also reminds that Qatar's LNG projects are big, its LNG trains ar big, its contracts are big, and its partners are big. All the major LNG players want to be involved with Qatar. Qatar announced in Feb that it as proceeding with its major LNG expansion project, the largest by multiples of other LNG projects. RBN wrote "*The prospects for major growth in LNG supply are reinforced by Qatar's decision in February to increase its liquefaction capacity by more than 30 MMtpa to 110 MMtpa (14.6 Bcf/d) in a project that is estimated will also yield the equivalent of 67 Mb/d of ethane, 260 Mb/d of condensate, 130 Mb/d of LPG, and 20 tons/d of pure helium."* That's an add of ~4 bcf/d in LNG capacity. There is much more in the RBN blog. Our Supplemental Documents package includes the RBN blog.

Figure 7: Qatar North Field and Ras Laffan LNG Projects

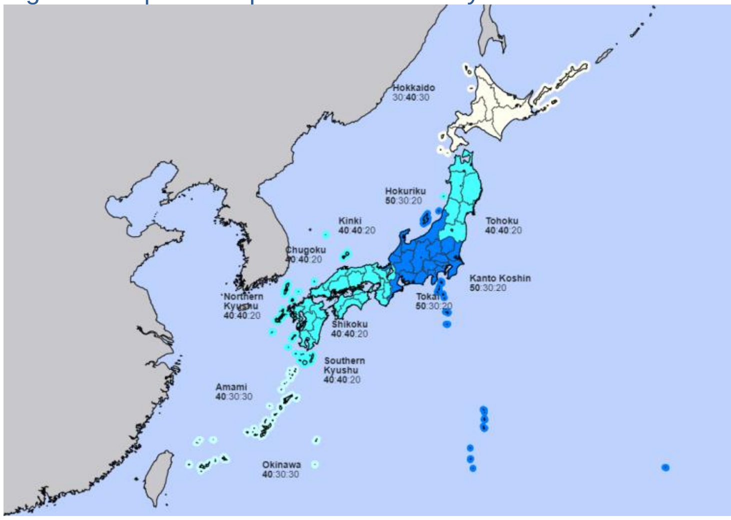
Source: RBN

Natural Gas – Japan expects normal to below normal temp for Jan/Feb

Japan cold start to the New Year

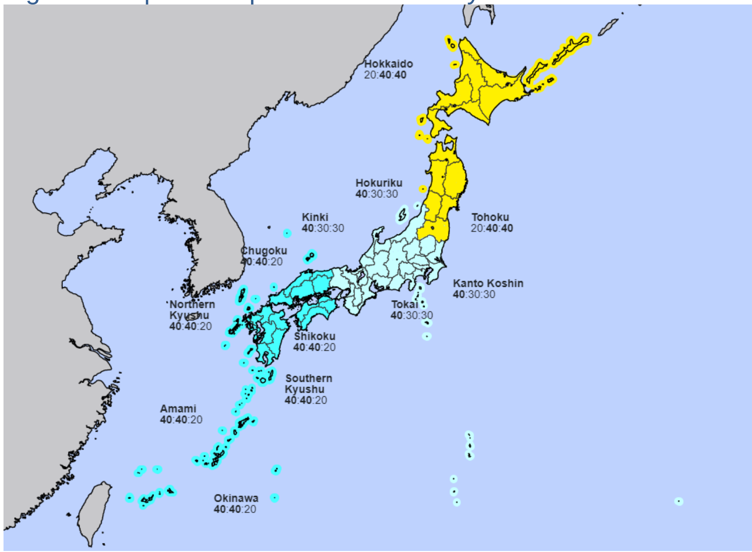
It was a warm November and first few weeks of December, but the colder weather has finally arrived. The Japan Meteorological Agency posts its weekly temperature probability forecast for the next 4 weeks on Thursday mornings. [LINK]. JMA continued to emphasize its prediction from last week in which we are going to see some colder weather this winter. The new forecast predicts cold temperatures well below the seasonal average for the first half of January, with a return to normal in the last two weeks. The February forecast shows the southern regions of Japan experiencing below average temperatures with the north likely to have normal or slightly above normal temperatures over the course of the month. Below is the JMA forecast for the next four weeks of the forecast period (Jan 1 – Jan 31) and February, which expects significantly colder temperatures in the first two weeks of January before returning to normal and slightly below average temperatures in the third week of the New Year.

Figure 8: Japan Temperature Probability Forecast Jan 1 – Jan 31



Source: Japan Meteorological Agency

Figure 9: Japan Temperature Probability Forecast Feb



Source: Japan Meteorological Agency

Natural Gas – Germany, no change to Nord Stream 2 certification timing, not in H1/22

Germany on Nord Stream 2

On Wednesday, TASS reported on comments from the head of the German regulator responsible for the Nord Stream 2 certification and that the Germany regulator indicated there was no change to the timing first reported ie. he still doesn't expect any certification decision in H1/22 (see our Dec 19, 2021 Energy Tidbits). TASS reported [LINK] "*There are currently no changes in the situation around the certification of the Nord Stream 2 operator. This was reported on Wednesday to a TASS correspondent at the Federal Network Agency of Germany. "Our November 16 press release is still the current state of [the situation]," said* *a spokeswoman for the department. She recalled that earlier at a press conference, the head of the German regulator, Jochen Homan, said that he did not expect a decision on certification of the Nord Stream 2 operator in the first half of 2022, and the operator had not yet received the necessary documents from the operator on the reorganization of the company."* Our Supplemental Documents package includes the TASS report.

Natural Gas – Putin reminds Europe Nord Stream 2 should immediate lower gas prices

Put on Nord Stream 2

On Wednesday, Putin met with Gazprom CEO Miller on how Russia is equipped to deal with this winter's heating season. There were a number of comments on both Russian and Europe natural gas markets. (i) No surprise, Putin took advantage of the public meeting to remind Europe that its in their court on Nord Stream 2. He said "*But again, now it is our European partners' turn to act, and it is up to them. We have completed a project to develop this additional gas transportation route with our partners, by the way, European companies, with five European companies. Nord Stream 2 is ready to go."* And "*As soon as they make the decision on the launch of operation, a large additional amount of Russian gas will immediately begin to flow towards Europe. Let me remind you that we are talking about 55 billion cubic metres a year. By the way, this should immediately affect the price on the market, on the spot market. And all those countries and consumers of Russian gas are bound to feel it right away. This applies to businesses and households alike."* (ii) It got cold in Russia in Dec. Miller said "*There was a steep drop in ambient temperatures in Russia from the second week of December. On December 23, the average temperature was minus 17 degrees Celsius in all regions covered by the Unified Gas Supply System. This is 9.3 degrees lower than the average seasonal level*." (iii) Miller noted Russia has drawn from storage 445 bcf so far and its storage is now at 83% of capacity. And that Europe has already drawn down 44% and Germany 47% of their storage. Europe storage is 742 bcf lower YoY. (iv) Russia has overdelivered to Ukraine. Miller said "*Gazprom has completely fulfilled its obligations under a contract to pump gas via Ukrainian territory. We were to pump 40 billion cubic metres of gas, and we have already pumped 41.5 billion cubic metres of gas via Ukraine."* Our Supplemental Documents package includes the Putin/Miller meeting transcript.

Natural Gas – Germany warns on Nord Stream 2 sanctions if Ukraine escalates

Germany warns Russia on Ukraine

It's a relief for Europe that it's been mild, windy and a lot US LNG cargos have changed direction and are enroute to Europe because Germany certainly isn't given a reason for Russia to want to increase natural gas deliveries. If anything, Germany is giving Russia a reason to make sure it can continue to deliver the minimum levels and still meet their contract obligations. On Thursday, we tweeted [LINK] "*US #LNG flow to EU will need to keep going unless its a warm Jan/Feb. Germany warns may need to impose sanctions on #NordStream2 if RUS/UKR comes to heated conflict. That won't encourage #Gazprom to deliver any extra #NatGas volumes above contract. #OOTT."* On Friday, TASS reported on comments from Germany Vice Chancellor Robert Habek on ZDF TV. TASS wrote "*Chancellor, Minister for Economic Affairs and Climate Protection of the Federal Republic of Germany Robert Habek did not rule out the imposition of sanctions against Nord Stream 2 in the event of a military conflict between Russia and Ukraine, while stressing that the government does not intend to interfere in the approval process of the project. He stated this on the air of the ZDF TV channel, excerpts from which the DPA agency cites on Thursday. "We are a rule-of-law state, and permits are issued in accordance with the law. Politicians should focus on the political* *sphere," Khabek said. However, he argued, "in light of the situation in eastern Ukraine and the build-up of the Russian army there, [it may] need to make a political decision on what sanctions to impose under certain circumstances if it comes to a heated conflict again".* Our Supplemental Documents package includes the TASS report.

Novak on Russian gas supply

Natural Gas – Novak infers not too much incremental short term Russia gas supply

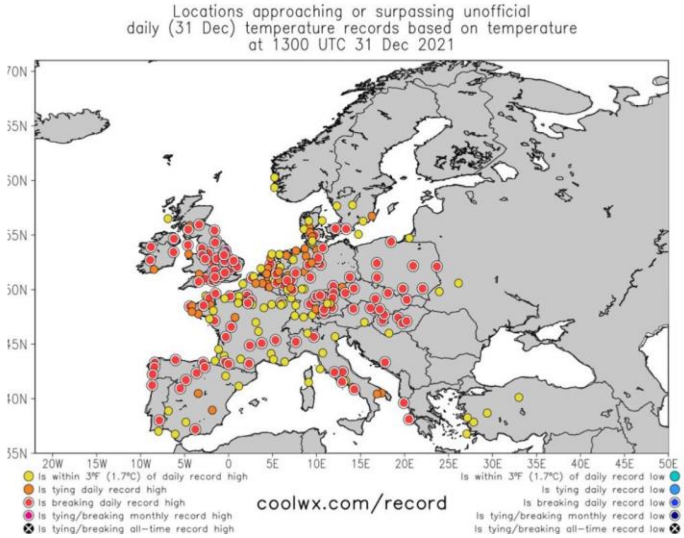
One of the items to keep in mind for whenever Nord Stream 2 starts up is that Gazprom has never said (we haven't seen) how much incremental Russian natural gas will be sent to Europe upon startup. Nord Stream 2 is 5.3 bcf/d capacity. This is a key question and not just for this winter. If as now expected Nord Stream 2 doesn't go in service until sometime after June 30, its volumes will help refill depleted Europe gas storage. So how much help it can be for the refill is critical for next winter natural gas season. But the big picture question isn't the capacity of Nord Stream 2, rather the question is will the volumes thru Nord Stream 2 be incremental to the current volumes being sent to Russia and, if so, how much more incremental natural gas be sent to Europe. Or will it basically be shifting of volumes from other pipelines to Nord Stream 2. There was an excellent Novak interview with RBC news on Wednesday. RBC posted the full interview [LINK] and it is worth a read. There is much more in the original interview than relying on the reporting on the interview. Novak made some lengthy comments on European natural gas markets. The headlines on his Europe natural gas comments was the Russia view that Europe caused its own crisis. But one item that didn't get any coverage was his views on how much of an impact Russia could have to fix the market with the start up of Nord Stream 2, whenever that might happen. We thought Novak was signaling that not too much more would be coming upon start up of Nord Stream 2. We tweeted [LINK] "*Novak doesn't seem to point to big "incremental" #NatGas coming to EU whenever the 5.3 bcf/d #NordStream2 potentially starts up? This and much more #Oil #NatGas #LNG tidbits in great @ru_rbc interview. Positive for 2022/23 #NatGas prices. #OOTT."* Novak is talking about Nord Stream 2 and the follow up question to Novak is if Russia physically ready to increase gas supplies to Europe. Novak replies "*Physically, we are ready to increase production and supply volumes. The resource base that exists in Russia makes it possible to meet the demand of European consumers in any volume. But, of course, this is not a quick process, because the policy that was carried out in the EU was aimed at reducing demand. Gazprom needs long-term contracts, because in order to increase production, large investments are required, which should pay off in the long term."* Our Supplemental Documents package includes the RBC Novak interview.

Spring temperatures in Europe

Natural Gas – Record warm temperatures across all of Europe

The last 10 days of December remind of some natural gas basics – there is a huge impact on natural gas prices in winter depending on the temperatures and there is a very strong outlook for natural gas prices in 2022. (i) Winter natural gas prices are driven by weather. Even for those who don't follow natural gas markets, it was hard to miss the record warm temperatures in Europe when the general news was showing how New Year's Eve was celebrated around the world and to see the spring temperatures in all the Europe countries. Yesterday, we tweeted [LINK] on the below MCC Collaborative Research Network map showing that basically all of Europe is in a heat wave with record warm temperatures. And no surprise, the record warmth has lead to a huge crash in Europe natural gas prices. Our tweet noted that UK National Balancing Point natural gas prices on Dec 31 were down 62% since the ridiculously high prices on Dec 21. (ii) The strong underlying natural gas fundamentals are also evident. No question the headline is on how natural gas prices have crashed since Dec 21. But in a more normal winter, if it was the end of December with spring temperatures, natural gas prices would likely be near all time lows. Rather, our tweet reminded that UK National Balancing Point Dec 31 prices are still 3x year ago prices on Dec 31, 2020. We believe this is a good reminder of the strong underlying fundamentals for natural gas in 2022.

Figure 10: Locations approaching or surpassing unofficial Dec 31 temperaturs



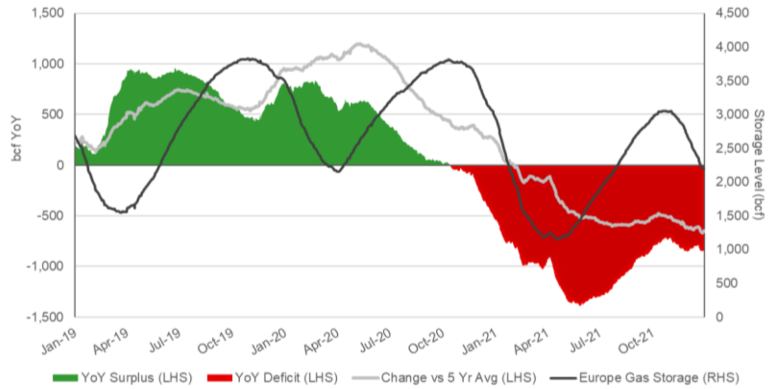
Source: MCC Collaborative Research Network

Natural Gas – Europe storage 55.7% full vs last year of 75.42%

Europe gas storage 55.7% full

The YoY Europe storage gap has widened since the start of the winter natural gas season. Europe gas storage started down 18.52% YoY and is now down 19.76%. Draws to European gas storage units continued this week. It was a larger draw and marked the eighth consecutive week of draws, indicating winter is underway. Europe inventories are at their lowest level at this time of the year in more than a decade. Europe gas storage started last winter (Nov 1/20) at basically full levels at 94.66% and had dropped by 65.77% to be 28.89% at Apr 1/21. Europe storage levels bottomed in late Apr at 29%, which was the lowest level since Apr 2018. This winter began (Nov 1/21) with gas storage at 77.14% capacity, down 18.52% YoY. The YoY deficit has widened since Nov 1. Storage as of Dec 29 is 55.7%, which is -19.76% less than last year levels of 75.42% and are -17.21% below the 5-year average of 72.87%. The set up for winter natural gas prices continues to support strong winter natural gas prices. Below is our graph of Europe Gas Storage Level.

Figure 11: Europe Gas Storage Level



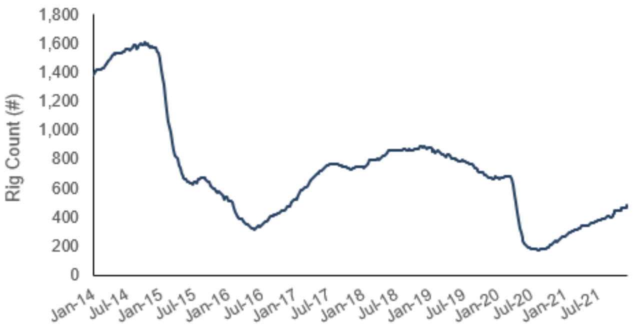
Source: Bloomberg

Oil – US oil unchanged WoW at 480 oil rigs at Dec 31

Baker Hughes released its weekly North American drilling activity data on Friday. It has not been the normal Xmas seasonal pattern for drilling rigs and frac spreads. But there are strong oil, NGLs and natural gas prices and industry is still just catching up in 2021 from an extremely low 2020 activity level. This week US oil rigs were flat WoW at 480 oil rigs. Oil rigs are +308 off the bottom of 172 in Aug14/2020 week. There were very basin changes any basin changes were +/- 1 oil rig. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 203 to 480 oil rigs (-30%). Below is our graph of US oil rigs since January 1, 2014.

US oil rigs unchanged WoW

Figure 12: Baker Hughes Total US Oil Rigs



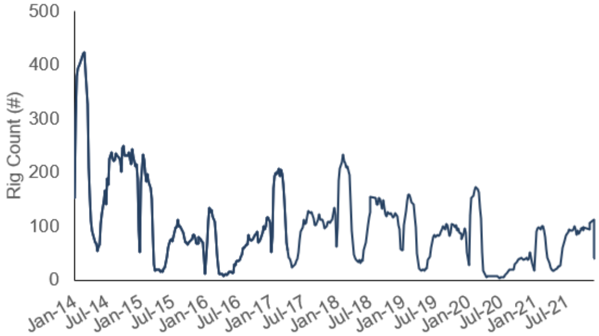
Source: Baker Hughes

Oil – Total Cdn rigs -43 to 90 total rigs, but +31 rigs YoY

Cdn rigs are moving more in line with normal Xmas seasonal patterns. Total Cdn rigs were down -43 this week to 90 total rigs. Cdn oil rigs were -45 to 39 oil rigs. Cdn gas rigs were +2 to 51 gas rigs. This big decline is in line with the normal Xmas/New Year's holiday week. Total rigs are now +73 since the June 26, 2020 all-time low. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 18 and Cdn gas rigs were 41 for a total Cdn rigs of 59, meaning total Cdn rigs are +31 YoY.

Cdn rigs -43 WoW

Figure 13: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

Oil – US weekly oil production up +0.200 mmb/d at 11.8 mmb/d

Weekly production in the US was up this week at 11.8 mmb/d for the week ended Dec 24. Lower 48 production drove total production and was up from last weeks level at 11.4 this week; US oil production is up YoY at +0.800 mmb/d and is still down significantly at -1.3 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. Unless there are weather interruptions, the expectation is that US oil production should at least stay flat if not inch up a little higher in Q1/22.

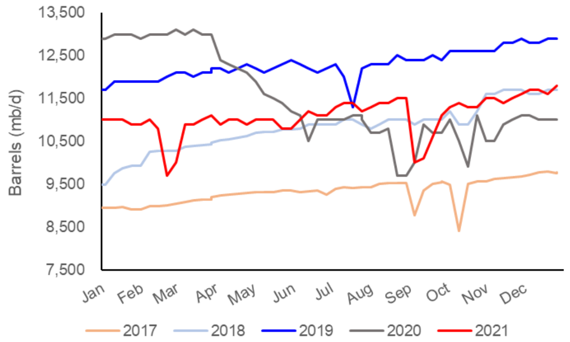
US oil production up WoW

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
2019-Jan	01/04	11,700	01/11	11,900	01/18	11,900	01/25	11,900		
2019-Feb	02/01	11,900	02/08	11,900	02/15	12,000	02/22	12,100		
2019-Mar	03/01	12,100	03/08	12,000	03/15	12,100	03/22	12,100	03/29	12,200
2019-Apr	04/05	12,200	04/12	12,100	04/19	12,200	04/26	12,300		
2019-May	05/03	12,200	05/10	12,100	05/17	12,200	05/24	12,300	05/31	12,400
2019-Jun	06/07	12,300	06/14	12,200	06/21	12,100	06/28	12,200		
2019-Jul	07/05	12,300	07/12	12,000	07/19	11,300	07/26	12,200		
2019-Aug	08/02	12,300	08/09	12,300	08/16	12,300	08/23	12,500	08/30	12,400
2019-Sep	09/06	12,400	09/13	12,400	09/20	12,500	09/27	12,400		
2019-Oct	10/04	12,600	10/11	12,600	10/18	12,600	10/25	12,600		
2019-Nov	11/01	12,600	11/08	12,800	11/15	12,800	11/22	12,900	11/29	12,900
2019-Dec	12/06	12,800	12/13	12,800	12/20	12,900	12/27	12,900		
2020-Jan	01/03	12,900	01/10	13,000	01/17	13,000	01/24	13,000	01/31	12,900
2020-Feb	02/07	13,000	02/14	13,000	02/21	13,000	02/28	13,100		
2020-Mar	03/06	13,000	03/13	13,100	03/20	13,000	03/27	13,000		
2020-Apr	04/03	12,400	04/10	12,300	04/17	12,200	04/24	12,100		
2020-May	05/01	11,900	05/08	11,600	05/15	11,500	05/22	11,400	05/29	11,200
2020-Jun	06/05	11,100	06/12	10,500	06/19	11,000	06/26	11,000		
2020-Jul	07/03	11,000	07/10	11,000	07/17	11,100	07/24	11,100	07/31	11,000
2020-Aug	08/07	10,700	08/14	10,700	08/21	10,800	08/28	9,700		
2020-Sep	09/04	10,000	09/11	10,900	09/18	10,700	09/25	10,700		
2020-Oct	10/02	11,000	10/09	10,500	10/16	9,900	10/23	11,100	10/30	10,500
2020-Nov	11/06	10,500	11/13	10,900	11/20	11,000	11/27	11,100		
2020-Dec	12/04	11,100	12/11	11,000	12/18	11,000	12/25	11,000		
2021-Jan	01/01	11,000	01/08	11,000	01/15	11,000	01/22	10,900	01/29	10,900
2021-Feb	02/05	11,000	02/12	10,800	02/19	9,700	02/26	10,000		
2021-Mar	03/05	10,900	03/12	10,900	03/19	11,000	03/26	11,100		
2021-Apr	04/02	10,900	04/09	11,000	04/16	11,000	04/23	10,900	04/30	10,900
2021-May	05/07	11,000	05/14	11,000	05/21	11,000	05/28	10,800		
2021-Jun	06/04	11,000	06/11	11,200	06/18	11,100	06/25	11,100		
2021-Jul	07/02	11,300	07/09	11,400	07/16	11,400	07/23	11,200	07/30	11,200
2021-Aug	08/06	11,300	08/13	11,400	08/20	11,400	08/27	11,500		
2021-Sep	09/03	10,000	09/10	10,100	09/17	10,600	09/24	11,100		
2021-Oct	10/01	11,300	10/08	11,400	10/15	11,300	10/22	11,300	10/29	11,500
2021-Nov	11/05	11,500	11/12	11,400	11/19	11,500	11/26	11,600		
2021-Dec	12/03	11,700	12/10	11,700	12/17	11,600	12/24	11,800		

Source: EIA

Figure 15: US Weekly Oil Production



Source: EIA, SAF

Oil – EIA Form 914 October actuals up vs weekly production estimates

EIA Form 914 October

The EIA released its Form 914 data [LINK] on Thursday, which is the EIA's "actuals" for October US oil and natural gas production. Form 914 shows October production of 11.473 mmb/d, up from September production of 10.822 mmb/d after being revised up +13,000 b/d, and up 1.060 mmb/d YoY from October 2020 of 10.868 mmb/d. Three key items to highlight. (i) The actuals for October were above the EIA weekly estimates and also a little above, 0.032 mmb/d higher, than the EIA STEO November had for October. (ii) This is the fifth consecutive month with YoY increases, and we expect to see this continue through the remainder of the year. (iii) On the back of the strengthening oil prices, we believe that Octobers increase in production was a function of the return of many offshore platforms that were knocked offline when Hurricane Ida incapacitated many facilities. Other specific state info: Federal Offshore in the Gulf of Mexico had the largest MoM increase, up +680,000 as offshore platforms recovered; Louisiana and California were up +19,000 b/d and 15,000 b/d This week. ND is still 5,000 b/d below Jan levels, meaning it has still not fully recovered from the February freeze-out. Note, that the increase reflected the temporary lower production as a result of the scheduled maintenance taking place in July. The October actuals were 113,000 b/d above the weekly estimates average of 11.360 mmb/d for October, increasing after 3 months of declines.

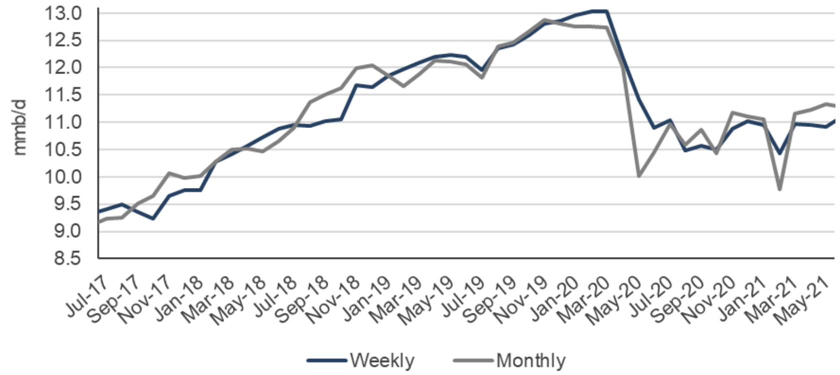
Figure 16: EIA Form 914 US Oil Production

thousand barrels per day

State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	11,056	9,773	11,160	11,230	11,334	11,288	11,330	11,206	10,822	11,473		
2020	12,785	12,826	12,816	11,911	9,711	10,420	10,956	10,558	10,868	10,413	11,121	11,084
2019	11,848	11,653	11,899	12,125	12,141	12,179	11,896	12,475	12,572	12,771	12,966	12,910
2018	9,996	10,276	10,461	10,493	10,424	10,628	10,888	11,373	11,422	11,488	11,868	11,924
2017	8,873	9,109	9,168	9,103	9,184	9,110	9,246	9,245	9,516	9,659	10,077	9,979
2016	9,201	9,063	9,088	8,871	8,832	8,672	8,660	8,688	8,542	8,802	8,901	8,814
2015	9,382	9,504	9,582	9,658	9,474	9,358	9,446	9,409	9,480	9,400	9,332	9,275

Source: EIA

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



Source: EIA

Oil – Trans Mountain, still not clear what % capacity running at or when back to 100%

Trans Mountain updated didn't provide details

As of our 7am MT news cut off , Trans Mountain has not posted any updates since its Dec 15 update that we highlighted in last week's (Dec 19, 2021) Energy Tidbits. Its not clear at what % of capacity Trans Mountain is running or when it will be back to full capacity. (i) On Dec 14, we tweeted [LINK] "*#TransMountain #Oil pipeline update: @CdnPressNews reports now moving >70% capacity but its "chief operating officer says the pipeline will likely return to full capacity in late January at "the earliest". Thx @CdnPressNews @business #OOTT."* Bloomberg posted a Canadian Press report "*Trans Mountain's chief operating officer says the pipeline will likely return to full capacity in late January at "the earliest" as work continues after fallout from torrential rains that the company says will cost tens of millions of dollars."* And "*It is now back up to more than 70 per cent capacity, he says, which allows gas rationing in southern B.C. to end today. Trans Mountain said in a Dec. 6 release it expected gasoline and crude oil supply levels would "return to normal levels within a week."* The end of January is not what the market expects. (ii) On Dec 15, Trans Mountain issued an update [LINK] and we tweeted [LINK] *"#TransMountain Dec 15 update, safely returned to service on Dec 5 at reduced volumes. No indication of current throughput or when expect back to normal volumes ie. doesn't contravene the@CdnPressNews report of >70% & likely full return in late Jan. #OOTT*". The Trans Mountain update did not give any indication of the current volume throughput or any ETA for when it would be back to full capacity. Its why our tweet said that there was nothing in the Dec 15 update to contravene the Canadian Press report.

Oil – Good RBN blog on WCS differentials

Factors affecting WCS-WTI price spreads

A shout out to our friend Marty King (former FirstEnergy oil analyst) at RBN for his blog on Monday *"We're Here For A Good Time, Part 2 - What's Driving The Wider WCS/WTI Price Spreads?"* [LINK] that analyzed the factors affecting WCS-WTI differentials. It's a good recap of WCS differentials and the key factors thereon. King starts off *"You would expect the start-up of Enbridge's Line 3 Replacement project early this fall to have eased the constraints on crude oil pipelines from Western Canada to the U.S. — and it did. You'd also expect that L3R coming online would narrow the price spread between Western Canadian Select and West Texas intermediate — but it didn't. The latest widening of the WCS-WTI spread, one of many in recent years, is another reminder that oil price differentials can be affected by many factors* *other than pipeline capacity availability."* He then goes through a good recap of all the key factors. RBN noted *"No sooner did L3R begin service than the price spread began to widen. By November 5, it had reached $21.22/bbl, a widening of $9.60/bbl since the beginning of October. Since that low point, the spread narrowed to around $15/bbl by mid-December, but still $3/bbl wider than just before L3R started up. (There was a brief spike in the price spread around the Thanksgiving holiday in the U.S., when WTI prices collapsed by about $10/bbl, spurring WCS prices to do something similar soon thereafter*)." Midwest Refinery crude runs decreased by 0.300 mmb in October and most of November, which in combination with the normal seasonal maintenance, undercut the demand for Canadian crude and widened the price spread. At the same time, Canadian producers ramped up production by 0.300 mmb in September and October, with an apparent giddiness at L3R's completion; this generated a mismatch of approx. 600 mmb/d, well in excess of the 0.370 mmb of additional pipeline capacity brought on by L3R. Other factors, such as the temporary shutdown of Trans Mountain pipeline, international production increases and the surge in North American natural gas prices are also responsible for the deterioration of heavy oil pricing. There is much more in the blog. Our Supplemental Documents package includes the RBN blog.

Figure 18: WCS-WTI Price Spread

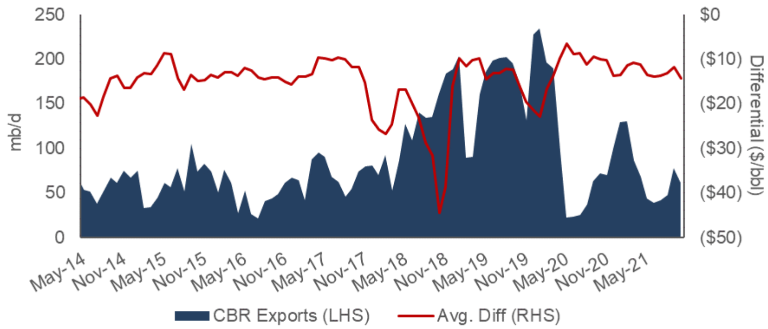
Source: RBN

Oil – Cdn crude by rail imports to Gulf Coast down 10,000 b/d YoY in October to 61,000 b/d

The EIA posted its monthly "U.S. Movements of Crude Oil by Rail" [LINK] on Thursday, which also had good insights on Cdn crude by rail. Canadian CBR volumes to PADD 3 (Gulf Coast) were 61,000 b/d in October, which is down 17,000 b/d MoM from September, and down 10,000 b/d YoY vs October 2020. There were no revisions to last months data. Tighter YoY WCS to WTI differentials were the key factor in the low crude by rail volumes since December. Below is our graph of Cdn CBR exports to the Gulf Coast.

Cdn crude by rail imports to Gulf Coast down 10,000 b/d YoY

Figure 19: Canada CBR Exports to US Gulf Coast vs WCS Differential



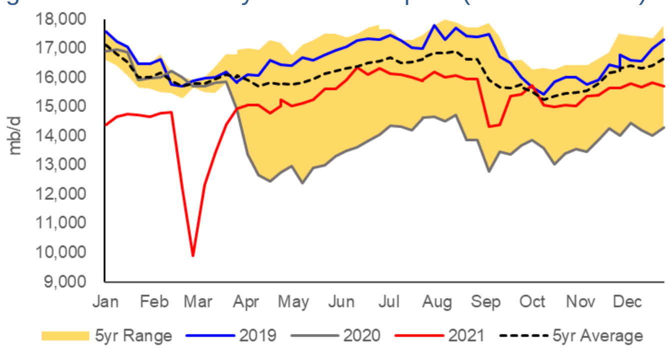
Source: EIA, Bloomberg

Oil – Refinery inputs -0.113 mmb/d WoW at 15.703 mmb/d

Refinery inputs down WoW

The EIA crude oil input to refinery data is for the week ended Dec 24. The Exxon Baytown complex fire was Dec 23 and its not clear if that had any impact on the EIA data for Dec 24 week. As noted above, Exxon still has not disclosed how much it has reduced rates at Baytown, but this will impact the next data for the week ended Dec 31. Refineries normally ramp up oil processing to year end and then decline in the new year. There was a small WoW decrease in crude inputs to refineries, down slightly -0.113 mmb/d this week to 15.703 mmb/d and are +1.416 mmb/d YoY. The normal ramp up is to still produce winter fuels before refineries go into the turnaround in Q1 to switch to more summer fuels. Refinery utilization was up slightly at 89.7%, which is still +10.3% YoY as we expect to see the typical seasonal decline over the holidays. Total products supplied (i.e., demand) was up +1.764 mmb/d to 22.218 mmb/d. Motor gasoline was up +0.739 at 9.724 mmb/d from 8.986 mmb/d last week. Gasoline supplied, a proxy for demand, was down last week. Gasoline stockpiles are at their lowest levels with demand for gasoline at a 4-week high. The four-week average of production supplied decreased to 9.286 mmb/d, up from last year.

Figure 20: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

Oil – US "net" oil imports up +0.515 mmb/d WoW at 3.830 mmb/d

US "net" oil up WoW

US "NET" imports were up +0.515 mmb/d to 3.830 mmb/d for the Dec 24 week. US imports were up +0.565 mmb/d to 6.759 mmb/d. US exports were up +0.050 mmb/d to 2.929 mmb/d.

There are always timing differences of tankers, both coming in and going out. The WoW decrease in US oil imports was driven by US's Top 10 imports by country were up +1.245 mmb/d from Top 10. Some items to note on the by country data. (i) Canada was up this week by +0.885 mmb/d to 4.032 mmb/d, which is now ~0.9 mmb/d above the average levels in Jan/Feb of 2020. (ii) Saudi Arabia was up 255,000 b/d to 0.609 mmb/d this week. (iii) Colombia was up +0.038 mmb/d to 0.184 mmb/d. (iv) Ecuador increased imports this week, up 0.113 mmb/d to 0.308 mmb/d. (v) Iraq was down -91,000 b/d to 268,000 b/d. (v) Venezuela remained at 0 due to US sanctions. (vi) Mexico was up by 145,000 b/d to 0.648 mmb/d.

Figure 21: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Oct 15/21	Oct 22/21	Oct 29/21	Nov 5/21	Nov 12/21	Nov 19/21	Nov 26/21	Dec 3/21	Dec 10/21	Dec 17/21	Dec 24/21	WoW
Canada	3,254	3,472	3,685	3,550	3,429	3,559	3,773	3,869	3,879	3,147	4,032	885
Saudi Arabia	319	336	397	598	453	468	475	393	463	384	609	225
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	462	631	439	365	499	460	657	625	569	503	648	145
Colombia	211	141	71	121	302	141	214	71	232	146	184	38
Iraq	239	155	187	51	42	131	221	248	29	359	268	-91
Ecuador	0	222	92	117	103	149	112	0	265	195	308	113
Nigeria	137	0	64	64	1	68	4	175	217	128	58	-70
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0
Angola	0	0	0	0	0	0	0	0	0	0	0	0
Top 10	4,622	4,957	4,935	4,866	4,829	4,976	5,456	5,381	5,654	4,862	6,107	1,245
Others	1,203	1,297	1,237	1,242	1,362	1,460	1,148	1,118	817	1,332	652	-680
Total US	5,825	6,254	6,172	6,108	6,191	6,436	6,604	6,499	6,471	6,194	6,759	565

Source: EIA, SAF

Mexico oil exports to zero in 2023

Oil – Pemex CEO reminds Mexico oil exports down big in 2022, and to zero in 2023

For the last year, one of the mostly ignored oil stories has been that Pemex (Mexico) expects to have its domestic refineries process all Mexican oil production such that that will no longer be oil exports and also imports of petroleum products ie. they will be self sufficient on petroleum products. On Tuesday, we tweeted [LINK] "*Pemex/MEX will stop exporting crude in 2023 after reducing exports to 435k b/d in 2022 says @Pemex CEO. vs ~1 mmb/d in 2021. PADD 3 Gulf Coast gets >50% of MEX #Oil exports. Cdn heavy/med wins when MEX oil exports go down. Thx @amystillman #OOTT.*" Pemex CEO Oropeza spoke at the National Palace before Mexican President Obrador. Pemex posted [LINK] "*He specified that it is proposed to maintain the value of proven reserves, the requirement of the National Refining System will be covered to serve the domestic market, so oil exports will stop starting in 2023.*" Bloomberg reported on the presentation adding more details "*Pemex will stop exporting crude in 2023 after reducing exports to 435k b/d in 2022, Pemex Chief Executive Officer Octavio Romero Oropeza said during a press conference in Mexico City on Tuesday. * Crude processing to reach 1.509m b/d in 2022 and 2m b/d in 2023 with the addition of the Deer Park, Texas refinery and the Dos Bocas refinery in Tabasco. * NOTE: Mexico's six refineries have capacity to process 1.627m b/d: Pemex.*" Our Supplemental Documents package includes the Pemex release.

Mexico exports about 1 mmb/d, over 50% to the PADD 3 Gulf Coast

Last week's (Dec 26, 2021) Energy Tidbits highlighted Pemex's November oi and gas data including November oil exports were 1.025 mmb/d, which was higher MoM vs October of 0.935 mmb/d, but down 12.5% YoY vs November 2020 of 1.115

mmb/d. We would have expected higher MoM oil exports given the fire at the offshore E-Ku-A2 platform in October that impacted operations. Pemex oil exports to US were 0.568 mmb/d in November, which was in line with the average of the prior few months. Below is our table of the Pemex oil export data.

Figure 22: Pemex Mexico Oil Export

Oil Exports (thousand b/d)	2016	2017	2018	2019	2020	20/19	2020	2021	21/20
Jan	1,119	1,085	1,107	1,071	1,260	17.6%	1,260	979	-22.3%
Feb	1,241	1,217	1,451	1,475	1,093	-25.9%	1,179	1,006	-8.0%
Mar	1,062	1,001	1,176	1,150	1,144	-0.5%	1,167	925	-19.1%
Apr	1,081	1,017	1,266	1,023	1,179	15.2%	1,180	923	-21.7%
May	1,204	958	1,222	1,205	1,062	-11.9%	1,156	1,031	-2.9%
June	1,098	1,157	1,110	995	1,114	12.0%	1,149	1,106	-0.7%
July	1,146	1,255	1,156	1,079	1,051	-2.6%	1,135	1,173	11.6%
Aug	1,261	1,114	1,181	1,082	1,190	10.0%	1,142	1,099	-7.6%
Sept	1,425	1,159	1,206	995	1,023	2.8%	1,132	983	-3.9%
Oct	1,312	1,342	1,027	963	908	-5.7%	1,110	935	3.0%
Nov	1,273	1,388	1,135	1,114	1,171	5.1%	1,115	1,025	-12.5%
Dec	1,115	1,401	1,198	1,115	1,243	11.5%	1,126		

Source: Pemex

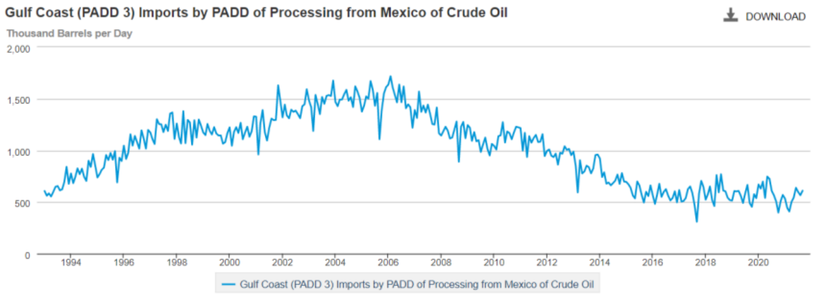
AMLO has been highlighting his plan to have no more oil exports

Mexico increasing oil refining volumes and stopping oil exports has been a key priority for AMLO. Our second tweet on Tuesday was [LINK] "*Pemex/MEX stopping crude oil exports is the only forecast that has been pretty accurate. Just noted the year ago Dec 23, 2020 AMLO tweet on this. Arguably part of it is that Pemex is much lower than their 2022/2023 production forecasts from 2020*." On Dec 23, 2020, we tweeted [LINK] "*Breaking: Positive to Cdn heavy #WCS #Oil prices post 2020. #AMLO saying new #Pemex Dos Bocas 300,000 b/d refinery on track for June 2022 finish. Along with increasing existing refineries currently operating <60% up to ~1.5 mmb/d would mean almost zero Mexico oil exports. #OOTT.*" It also just so happens that the new Dos Bocas refinery is located in AMLO's home state of Tabasco. AMLO's energy priority has been to increase existing refinery utilization and build the new Dos Bocas refinery so Mexico had refinery capacity to process all of its crude oil production. This would eliminate oil exports with the big win being that Mexico would be able to produce the gasoline, diesel, etc it needs and not have to import these petroleum products.

Creates >0.5 mmb/d heavy/medium supply gap in Gulf Coast PADD 3 refineries

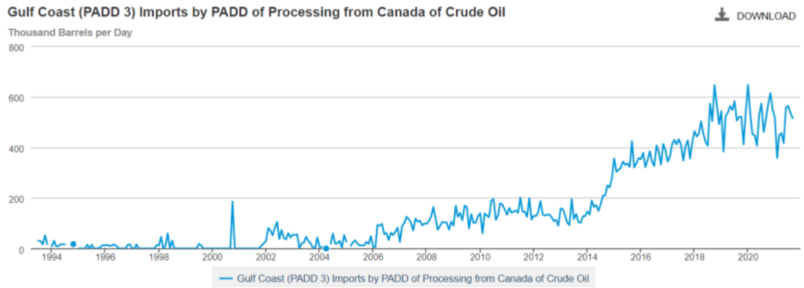
Assuming Pemex can increase its refinery utilization to go along with the new Dos Bocas refinery and Mexico can then stop oil exports in H2/22, this will create a heavy/medium oil supply gap in Gulf Coast PADD 3 refineries. We have been highlighting for years how Cdn heavy/medium crude oil has been the big winner when there are declining US Gulf Coast PADD 3 imports of heavy/medium crude oil from Mexico and Venezuela. And if Mexico stops heavy/medium oil exports in H2/22, Cdn heavy/medium crude stands to be the desired supply. The biggest risk is that the US removes Venezuela sanctions and that Venezuela then increase oil production and exports including to the US. Below are the EIA's current PADD 3 imports of crude oil from Mexico and Canada. Please note the different scales in the graphs.

Figure 23: Gulf Coast PADD 3 Crude Oil Imports From Mexico



Source: EIA

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



Source: EIA

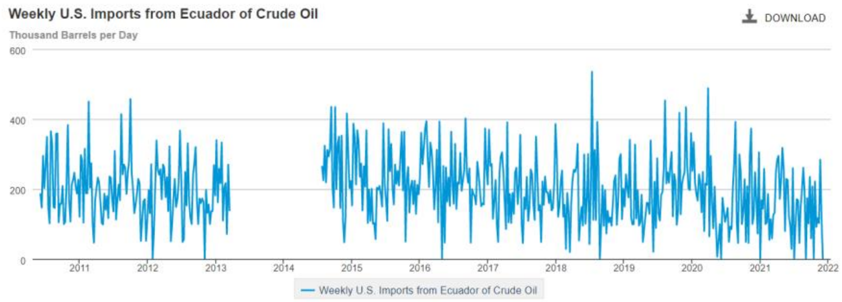
Oil – Ecuador should be lifting its force majeure on oil exports in next week or so

Ecuador force majeure on oil exports

It looks like Ecuador is meeting its expectations on restarting production. Our Dec 19, 2021 Energy Tidbits highlighted Ecuador being forced to declare force majeure on oil exports as heavy rains has forced them to cut crude production. Ecuador's energy minister had said "*If there is no more rain in the area, and the work on the seventh SOTE bypass is done on schedule without any other mishaps, we pledge to restart crude pumping in 17 days" ie.* sometime in early Jan. It looks like Ecuador is delivering. On Friday, Argus reported "*Ecuador expects oil production to return to normal levels in February, after its two main export pipelines that had been threatened by recurring land erosion resumed operations. State-owned PetroEcuador restarted the 360,000 b/d SOTE crude pipeline after a 20-day suspension caused by works designed to prevent damage from the erosion, energy minister Juan Carlos Bermeo said."* And "*Ecuador's crude production on 25 December fell to a nadir of 36,106 b/d, down by 92pc from an average of around 471,000 b/d from January-November 2021, not including storage withdrawals and internal transfers, according to regulatory data. On 27 December, output recovered to 48,829 b/d."* And "*The closure of the two strategic arteries in early December prompted Ecuador to declare force majeure on its medium and heavy sour exports on 12 December. "Crude pumping has restarted, but we have to wait until refining and exports also return to normal in order to lift the force majeure", the energy ministry told Argus."* Our Supplemental Documents package includes the Argus report.

Ecuador loss of oil exports is a positive to Cdn heavy/medium crude
When we first saw the force majeure, we tweeted [LINK] "*Timely restart of #TransMountain. Ecuador declares force majeure, exported ~345 kbd in Oct, @EIAgov est ~125 kbd to PADD 5 West Coast in Nov. CAN is #1 exporter to PADD 5 at ~20% of mkt or ~275 kbd. Positive for Cdn heavy/med #Oil. Thx @skueffner #OOTT."* Ecuador is a large exporter to the PADD 5, the US west coast, and Canada is the largest oil exporter to PADD 5 with about 20% of the total. Its why we said it was a timely return to some volumes on Trans Mountain

Figure 25: US oil imports from Ecuador of Crude Oil



Source: EIA

Oil – Colombia Nov oil production was up slightly MoM at 0.747 mmb/d
Colombia oil production in October increased slightly MoM at 0.747 mmb/d vs 0.740 mmb/d in Oct. On Wednesday, Colombia Ministry of Mines and Energy released its November oil and gas production data [LINK]. The Columbian Ministry of Mines and Energy reported "*Oil production in Colombia averaged 746,845 barrels per day in November 2021, a slight increase of 0.89% compared to the data reported during October 2021 (740,265 bpd). With respect to the production of November 2020 (760,940 bpd), a decrease of 1.85% was registered."* Colombia noted that the increase in production is mainly attributed to restarts at the La Belleza Field and slight increases in production in facilities across the country. Colombia also noted that YTD Nov 30 oil production averaged 0.735 mmb/d, down 6.1% YoY from 0.785 mmb/d in the same period 2020. Note that Colombia wants to attract more capital to its oil sector. Our Sept 26, 2021 Energy Tidbits highlighted that week's FT report [LINK], that Colombia's ANH is making changes to the production contracts for Columbia's 2021 licensing round to try to encourage more bidding. The changes are not viewed as material but are viewed as being small positives with minor changes to prequalification and contract terms. FT reported that the new tweaks include the rules for companies to prequalify and the contract terms have been reviewed to improve the 2021 process to attract new investments in both exploration and production. Below is our table of Colombia monthly oil production. Our Supplemental Documents package includes the Google Translate version of the Colombia release.

Figure 26: Colombia Oil Production

million b/d	2015	2016	2017	2018	2019	2020	20/19	2021	21/20
Jan	1.036	0.986	0.860	0.860	0.899	0.884	-1.7%	0.745	-15.7%
Feb	1.030	0.955	0.864	0.823	0.893	0.878	-1.6%	0.746	-15.1%
Mar	1.023	0.917	0.804	0.856	0.885	0.857	-3.1%	0.745	-13.0%
Apr	1.029	0.915	0.857	0.865	0.891	0.796	-10.6%	0.745	-6.4%
May	1.027	0.904	0.851	0.866	0.895	0.732	-18.2%	0.703	-3.9%
June	1.010	0.888	0.857	0.864	0.892	0.730	-18.2%	0.694	-4.9%
July	0.947	0.843	0.856	0.860	0.869	0.735	-15.4%	0.731	-0.5%
Aug	0.968	0.827	0.858	0.866	0.883	0.742	-15.9%	0.748	0.8%
Sept	1.009	0.859	0.851	0.869	0.879	0.749	-14.8%	0.744	-0.7%
Oct	1.005	0.846	0.864	0.879	0.883	0.751	-14.9%	0.740	-1.5%
Nov	0.990	0.855	0.851	0.883	0.880	0.761	-13.5%	0.747	-1.9%
Dec	0.999	0.837	0.870	0.889	0.882	0.759	-14.0%		

Source: Bloomberg, Colombia Ministry of Mines and Energy

Oil – Shell's Forcados terminal Nigeria force majeure lasted on week

Short term Nigeria force majeure is over

Last week's (Dec 26, 2021) Energy Tidbits noted Shell declared force majeure on Dec 22 on shipments from its Forcados terminal, which is one of Nigeria's largest export terminals generally over 200,000 b/d. We highlighted that these tend to be short term force majeures and that this was the 4th short term force majeure in 2021. It looks like it was a short term force majeure of 7 days. On Friday, Bloomberg reported "*Shell Says Oil Flows From Nigeria's Forcados Terminal Resume. Forcados Oil Terminal exports resumed on Dec. 29, Shell Petroleum Development Co. of Nigeria, a spokesman said.*" On Thursday, Bloomberg reported "*** The Suezmax Faithful Warrior loaded about 1m bbl of crude from Bonny and has sailed toward Jose Ignacio Terminal, Uruguay, with an ETA of Jan. 13 *** This would be the first crude shipment from Bonny since the force majeure ended on Nov. 22, following a significant drop in supplies to the terminal.*"

Oil – Russia's oil production flat MoM in Dec

Russia 9.973 mmb/d in Dec, flat MoM

Earlier this morning, Bloomberg reported "*Russia failed to boost oil output last month despite a generous ramp-up quota in its OPEC+ agreement, indicating the country has deployed all of its current available production capacity.*" And "*It's difficult to assess Russia's compliance with the OPEC+ deal, as the CDU-TEK data don't provide a breakdown between crude and condensate -- which is excluded from the agreement. If condensate output was the same as in November -- some 930,000 barrels a day -- then daily crude-only production was around 9.973 million barrels, about 37,000 barrels below its December quota.*" We recognize the challenge for Russia oil production but we also have to believe cold weather had an impact. As noted earlier, Gazprom CEO Miller highlighted the extreme cold in the last part of December. This would impact the oil company operations such as a well going down, it would probably be left down. So we think the cold weather had to have had some impact. Our Supplemental Documents package includes the Bloomberg report.

Oil – Novak expects Russia oil production maintained at 11.0-11.2 mmb/d to 2030

Novak sees Russia oil flat to 2030

Novak also reiterated his view that Russia will maintain its oil production at 11.0 to 11.2 mmb/d to 2030. Novak was asked about Abdulaziz's comment that global oil production could fall by 30% if there is continued underinvestment and then asked how Russia was positioned. Novak said there would be market collapse if Abdulaziz is write "*Probably, theoretically it is feasible, but then the market will collapse. But at the same time, it is impossible to reduce oil consumption by 30% by 2030. How can production be reduced if there is demand?"* On Russia, Novak replied "*Our companies are implementing their long-term production plans based on the forecast of oil consumption in the world market and taking into account the decrease in the share of hydrocarbons [in the energy balance]. Until 2030, we forecast that production in Russia will remain at the level of 550-560 million tons. This is spelled out in the strategy for the development of the energy sector until 2035. The distribution between the domestic market and exports will depend on the market situation.*"

Oil – Novak says half of Russia's production work at $20-25 oil

>50% of Russia works at $20-25

On Monday, we tweeted [LINK] on Novak's Dec 24 highlighting that more than half of Russia's oil reserves are low cost so are competitive at oil prices of $20-25 a barrel. He certainly tried to give the impression that Russia's oil reserves aren't at risk from oil prices. TASS [LINK] quoted Novak "*The prime cost of hydrocarbon production in Russia is one of the lowest in the world. More than 50% of Russian production remains competitive even with oil prices in the range of $ 20-25 per barrel*." Novak's comments, on the surface, seemed to contradict the recent comments from his Deputy Energy Minister Sorokin. On Sept 2, Sorokin said about half of Russia's oil reserves are unprofitable at a price of $50. But in thinking what they both said, we don't necessarily see them being contradictory. Rather they may well just be the two sides of the coin. It why we tweeted "*Novak says half of RUS #Oil production extremely low cost & work at $20-25 price. But he didn't discuss the cost of the other half. In Sept, his deputy Sorokin said half of RUS oil reserves aren't profitable at $50 ie. RUS needs stronger for longer oil prices. #OPEC+ #OOTT"*. The point is that Novak didn't say what price was needed for the other half of Russia's oil reserves. Nor in Sept did Sorokin say what price was needed for the other half of the oil reserves that were profitable at $50. Their comments aren't necessarily in conflict, rather they may well be two sides of the coin. Our Supplemental Documents package includes the TASS Dec 24 report.

Sorokin said in 10 yrs "*almost 100% of production will be hard-to-recover*"

We have been surprised that Russia Deputy Energy Minister Sorokin's comments on Russia's oil reserves really haven't had much attention. He has been pretty clear for the past year that half of Russia's oil reserves really aren't profitable at $50 oil. Our Dec 5, 2021 Energy Tidbits noted the Nov 24 comments from Russia's Deputy Energy Minister Sorokin on Russia's oil potential. At that time, we wrote "*We continue to believe that a bullish mid term support for stronger oil prices is the quality of Russia oil reserves. And this is especially so if oil demand isn't going to crash in the 2020s as many had hoped prior to COP26. Our concern on the quality of Russia's oil reserves is based on Russia's consistent clear statements that much of its oil reserves today are not profitable at $50 and the quality of oil is going to significantly deteriorate over the 2020s. Its also we are surprised that markets never seem to pay attention to comments from Russia's #2 energy minister – Pavel Sorokin, Deputy Head of Russia Ministry of Energy. On Nov 24, he made similar comments as he has in the past on the quality of Russia's oil reserves. We watched and very few gave attention to his comments. TASS reported [LINK] "The quality of oil produced in Russia will deteriorate in 10 years to such an extent that almost all of it will pass into the category of hard-to-recover, that is, the cost of its production will* *be significantly higher than traditional reserves. Pavel Sorokin, Deputy Head of the RF Ministry of Energy, said this at the conference "Technological Development of the Oil and Gas Industry of the Russian Federation". "On the horizon of ten years, almost 100% of production will be hard-to-recover," he said. Sorokin recalled that the deterioration of reserves means the need to stimulate oil production in Russia, as well as geological exploration." Our Supplemental Documents package includes the TASS report.*

On Sept 2, Sorokin said 50% of Russia oil reserves are not profitable at $50 oil

Sorokin's Nov 24 comments lined up with he said on Sept. Here is what we put in our Sept 5, 2021 Energy Tidbits memo on Sorokin's comments on Sept 2, 2021. In that memo, we wrote "*We will ask the same rhetorical question as we did in our Jan 31, 2021 Energy Tidbits – imaging what markets would say if Exxon were to come out in their year end reporting and say only 50% of its existing oil reserves are profitable at $50? On Thursday, we tweeted [LINK] "Only half of Russia's #Oil reserves are profitable at $50 says Deputy Energy Minister Sorokin. Fits Jan 27 linked tweet. Bullish for mid/long term oil prices. Detailed comment in SAF Group Jan 27, 2021 Energy Tidbits memo". There was a typo in the tweet as we should have said the Jan 31, 2021 Energy Tidbits memo that was titled "Russia Says Increasing Water Cut, Deteriorating Development, Etc Mean Only 36% of Its Oil Reserves are Profitable." This week, Russia's Deputy Energy Minister Sorokin came out with almost identical comment as he did on Jan 27, 2021 saying "even in our current structure of reserves, a significant part of it is unprofitable at a price of $50 – about half there. There is a very large layer of opportunities for working with the current resource base: with small fields, with depleted, with tailing assets, with deeper and more difficult layers. What you need to concentrate on". Sorokin's Jan 27 comments were basically overlooked as they were only in the TASS Russian news version. But we thought then and still think know that this is a significant admission from Russia as to the mid/long oil supply and we believe a bullish comment for oil in the 2020s. One difference is that Sorokin gave much more insight into the uneconomic oil reserves in his Jan 27 comment in Russia. Below is what we wrote in our Jan 31, 2021 Energy Tidbits on his comments. Our Supplemental Documents package includes the TASS Sept 2 report on Sorokin's comments."*

Jan 31, 2021 Energy Tidbits, Sorokin said 64% of oil reserves not profitable

And also line up to what Sorokin said on Jan 27. Here is what we wrote in our Jan 31, 2021 Energy Tidbits memo on Sorokin's Jan 27 comments. "*Imagine what markets would say if Exxon were to come out in their year end reporting and say that 64% of its existing oil reserves are not profitable at >$50 oil. The stock would be creamed as markets would think Exxon wouldn't have oil growth potential and its oil production had likely peaked. This is what Russia said this week for their oil reserves. We were surprised by a TASS Russian news story on Wed morning and would have thought it was a fake if it wasn't on TASS as we would never have thought Russia's #2 oil official (after Novak) would be saying what he did. We tweeted [LINK] "1/2. must read, bullish for oil @tass_agency story "only 36% of oil reserves in Russia are profitable". multiple indicators of maturing oil supply ie. deeper, smaller pools, etc. Effectively says RUS has more or less reached peak oil* *supply unless #Oil prices are higher #OOTT ..." and [LINK] "2/2. surprising RUS lays this out, but fits to Novak's Dec comments and why they would want higher oil prices for 2020s sooner. see SAF Group blog Russia Says its a Price Taker at $45 in 2021, May Be the New Strategy Needed for OPEC+ to Fix Post Covid OIl Prices For 2020s. #OOTT". TASS wrote "Only 36% of 30 billion tons of oil reserves in Russia are profitable, which is associated with the deterioration of development conditions and a drop in the quality of reserves, writes the Deputy Minister of Energy of the Russian Federation Pavel Sorokin in an article for the Energy Policy magazine. "According to the data of the inventory of the economics of field development, carried out on behalf of the Russian government, out of 30 billion tons of recoverable oil reserves in Russia, only 36% is profitable in the current macroeconomic conditions. This is due to the deterioration of development opportunities: an increase in water cut, the need to permeability and compartmentalization of reservoirs, withdrawal into marginal zones and strata with small thicknesses, and so on, "Sorokin explained." This is significant, Sorokin is basically saying Russia has more or less reached peak oil supply, or at least peak oil supply unless prices are going higher. Maybe there is some growth but Russia has to first arrest declines. This is very different than what we see in the Middle East. Russia is saying its maturing oil production/reserves base needs higher oil prices as its oil base is maturing and they are going after smaller pools (higher cost per barrel), deeper zones (higher costs per barrel) and need new technology (we wonder if this means shale, although Putin has been negative). And also very different than Saudi Arabia. Their costs are going up to, but they aren't saying their oil production/reserves needs higher oil prices to be economic. Rather they and others like we saw with Kuwait this week need higher oil prices to balance their govt budget. They don't say they need higher oil prices to develop its oil reserves. One reminder, producing oil reserves isn't like drinking a glass of water, where you turn the cup down and the water flows out at the same rate until the glass is empty. As oil reserves produce more from a reservoir that is economic today, the oil recovery rate declines over time and the future barrels become more expensive to produce. This is more than food for thought. If peak oil demand isn't here until 2030, then its bullish for oil post Covid. Even if oil demand only recovers to pre Covid, its bullish or at least supportive of higher prices. Our Supplemental Documents package includes the Google Translate version of the TASS Russian story."*

Oil – Next OPEC+ ministerial meeting is Tuesday Jan 4

OPEC+ meeting is Jan 4

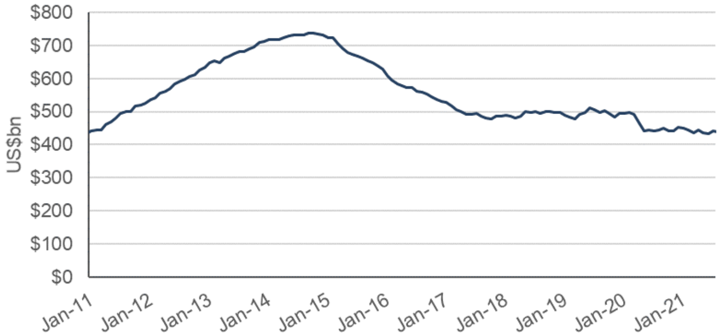
As a reminder the 23rd OPEC+ ministerial meeting from Thurs Dec 2 still "*remains in session*" so still hasn't been terminated and can be resumed at any moment. However, no one really expects it to be resumed given that it less than two weeks until the next OPEC+ ministerial meeting that is scheduled for Tues Jan 4. There hasn't been much chatter ahead of the meeting, but the expectation seems to be that continued strong oil prices allow OPEC+ to continue with their monthly +400,000 b/d quota increases, especially since a number of OPEC+ members are not delivering to quota. In other words, Saudi Energy Minister Abdulaziz looks to be right again.

Oil – Saudi nest egg, its net foreign assets up $13.8b MoM in Nov

Saudi net foreign assets up $13.8b Mom in Nov

We have to believe there were timing issues and the use of Other People's Money was a key factor in the first big increase in Saudi net foreign assets in a long time, which were +$13.8b MoM in Nov after a significant decline in October. Saudi Arabia's net foreign assets are what we call their nest egg to help them thru the Energy Transition. Saudi Arabia is far from going broke but there has been a huge decline in the last 7 years, but it is still a very big nest egg. This net foreign assets 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 is helping to stop the decline in net foreign assets. Saudi's net foreign assets at Nov 30 were $446.9b, which was up $13.8b MoM from $433.2b in Oct and down $1.1b from $447.9b in Sept. Saudi Arabia's central bank (SAMA) doesn't provide explanations for the monthly swings. But it looks like Nov, like Sept, is an outlier. Saudi net foreign assets at Nov 30 of $446.9b are down $5.1b YoY from $452b at Nov 30, 2020. The peak in Saudi net foreign assets was $737.0b on Aug 31, 2014, which means there has been a decline in the 86 months of 303.8b, or approx. $3.5b per month for that period. We believe this is why there has been such a big push in the last few use to get OPM so Saudi doesn't keep depleting its nest egg. And why we call this the #1 financial theme for Saudi Arabia in the 2020s – the increasing use of Other People's Money. And not just in Saudi Aramco, although we do expect to see more equity and bond sales from Aramco. Below is our graph of Saudi Arabia net foreign assets updated for the Nov 30 data.

Figure 27: Saudi Arabia Net Foreign Assets



Source: Bloomberg

Oil – JCPOA, 8th round broke for New Year, restarting tomorrow

JCPOA 8th round resumes tomorrow

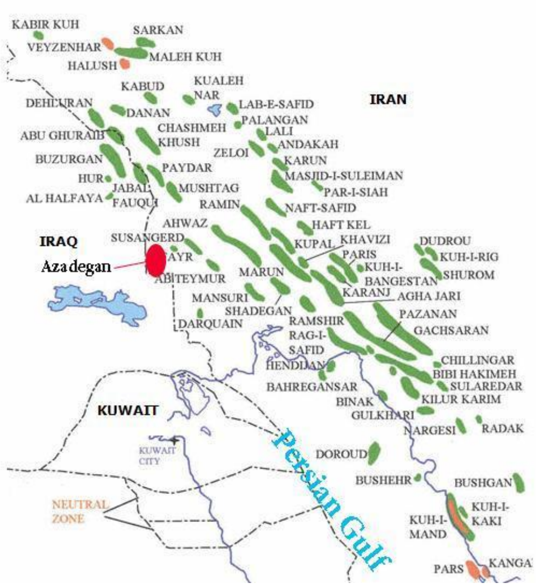
The 8th round JCPOA discussions started up on Monday. There wasn't a lot of feedback although Iran has been positive on the discussions. On Thursday, the parties decided to break for New Year and are resuming the 8th round tomorrow. Its too early to tell if the 8th round will provide a true breakthrough even if the US has been applying the pressure that time is running out on discussions. We thought that the US was also keeping in mind Biden's 1 year anniversary is on Jan 20. We are now 11 months to go until the mid-term elections and Biden needs some wins. Inflation is up, Covid isn't yet under control and his Build Back Better bill is still being held up by Manchin. A return to the JCPOA was one of his priorities for 2021, it didn't happen, and we have to believe Biden wants this soon. We still believe the US will make some gives to get this done. Don't forget that Biden's initial views was not just a return to JCPOA but also to have a bigger deal on hitting Iran's missiles and drones.

Oil – Iran's low hanging fruit, adding 180,000 b/d at Azadegan by mid-2023

Iran to add 180,000 b/d at Azadegan

We continue to believe that Iran has big oil production growth potential if sanctions are removed. Its impact on oil will not just be on the return of shut-in barrels from the Trump imposed US sanctions, but over the 2020s if capital investment returns to its neglected oil fields and potential. There was a good example this week with the reports that Iran should be increasing the Azadegan oilfield from 140,000 b/d to 320,000 b/d by mid-2023. On Tuesday, Reuters reported "*The development of Iran's largest oilfield, Azadegan, is to be completed by mid-2023 with a total production of 320,000 barrels per day (bpd), the Iranian Oil Ministry said on Tuesday. The report came as indirect talks between Iran and the United States on salvaging the 2015 Iran nuclear deal resumed on Monday with Tehran focused on lifting sanctions to allow it to sell oil without hindrance and collect its revenue. "With the completion of the development project of this field, #crude_oil production will reach 320,000 barrels per day from the field," said Mohsen Khojastehmehr, CEO of the National Iranian Oil Co. (NIOC), according to the ministry's Twitter account. In July 2020, a unit of state-run NIOC signed a deal with the local company Petropars to raise output capacity to 320,000 bpd from 140,000 bpd within 30 months at the Azadegan field, Iran's largest, which is shared with its neighbour Iraq, according to state media."* Note the Azadegan is a key project that has been delayed when Trump imposed sanctions. Five years ago, our Jan 1, 2017 Energy Tidbits noted comments from then Iran oil minister Zangeneh, who, that week, highlighted Azadegan saying "*Now in Azadegan and Yadavaran fields, where 67 billion barrels of oil have been discovered, we can only extract six percent of the oil using current technology." He added, "We have the potential for well drilling, pipelining, and pumping oil to the exploitation units; however, we can only extract six to seven percent of the oil in the fields and 93 percent of the oil is lost for good or for long period of time; even if willing to extract, it will be impossible or possible at high cost." The most important challenge facing Iran and all the Iranian technical and professional elite is high recovery of coefficient, he said, adding that raising the recovery coefficient by one percent will result in 700 billion barrels or let's say seven billion barrels; seven billion barrels with an oil sold for 50 dollars per barrel means 350 billion dollars more wealth for the country."* Our Supplemental Documents package includes the Reuters report.

Figure 28: Iran oilfields including Azadegan

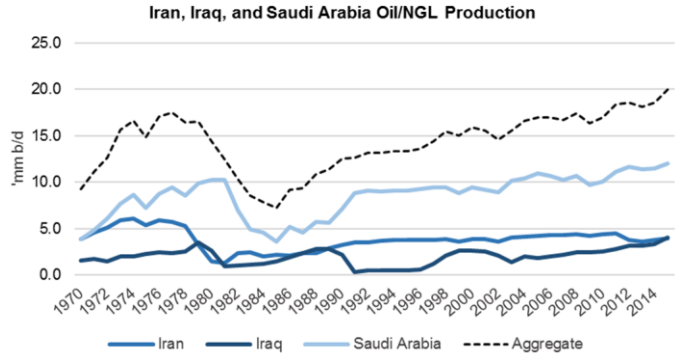


Source:ResearchGate

Remember Iran produced 6 million b/d in the early 70's

Here is an item from our Energy Tidbits memo five years ago (Jan 1, 2017) on the subject of Iran's low hanging fruit. In that memo, we wrote "*The opportunity for Iran to get capital to work on increasing recovery and rates is a big opportunity for Iran after years of being capital and technology starved. Our thesis on Iran signing the nuclear deal was that it would have the immediate lift in production, but its bigger impact is likely in the mid term with the reminder that Iran was the #2 world oil producer in the 1970's. Our Nov 14 blog "Countdown To OPEC's Nov 30 Meeting. Part 3: Better To Deal With Iran Now Before They Get Even Stronger" included our view that "Iran likely has the strongest near term oil growth potential and could likely add 2 million b/d or more over the next 4 to 7 years years, certainly by 2025. Iran's production is up 0.8 million b/d in the past year, and expected to grow to 4.2 million b/d in H1/17. This is before any significant foreign capital. In the early 70's, Iran was at 6 million b/d, Saudi Arabia was at 8.6 million b/d and Iraq at 2.0 million b/d. Iraq reminds us After 40 years of essentially zero major foreign capital in the oil and gas sector, the removal of sanctions is allowing Iran to attract foreign capital. Iraq is a perfect example of how the return of foreign capital (Iraq had about 20 years of no foreign capital) has driven oil production to 4.8 million b/d, or more than double the early 70's level. We expect that Iran has the potential to go well above the 6 million b/d seen 40 years ago." Our blog also included the below graph."*

Figure 29: Iran, Iraq and Saudi Arabia Oil/NGL Production



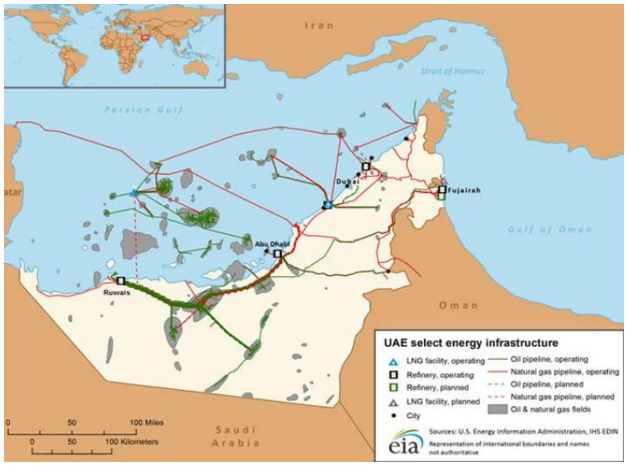
Source: BP, SAF Group

Oil – UAE adding 42 mmb oil storage at Fujairah

It was interesting to see the Platts report on Friday that UAE is moving head with a major crude oil storage capacity addition of 42 mmb to be completed in 2022. Platts wrote [LINK] "*ADNOC has a crude export terminal at Fujairah, fed from its 1.5 million b/d Habshan pipeline. Under one of the mountains, ADNOC is excavating caverns that will form the world's largest single-site underground crude oil storage reserve. ADNOC said it did not have any new information on the project when asked for an update. "The Fujairah underground oil storage project, upon completion, will strengthen ADNOC's position as a reliable crude oil suppler thanks to its strategic location. Also, it will grant ADNOC more flexibility to manage market changes and seize commercial opportunities," said Dong Wang, analyst, Middle East oil markets at S&P Global Platts Analytics."* Fujairah has a strategic location that is on the ocean side of the Strait of Hormuz. We also believe that UAE wouldn't be proceeding with the oil storage expansion if they believed oil demand has already peaked. Our Supplemental Documents package includes the Platts report.

Shell Prelude FLNG still down

Figure 30: Fujairah's Strategic Location Outside The Strait of Hormuz



Source: EIA

Oil – Risk for continued Libya oil supply interruptions

Libya elections still in limbo

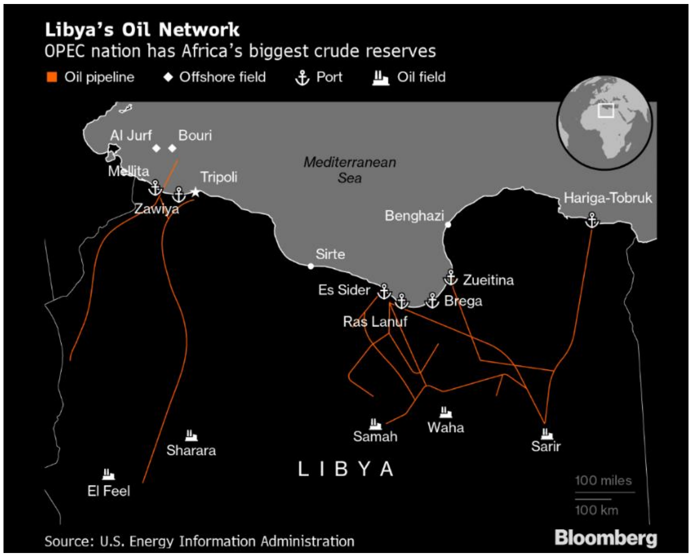
It's only been 8 days since Libya Dec 24 Presidential election was postponed, but it now looks like there will be increased risk to Libya with increased uncertainty on when the postponed Presidential election will be held. And with increased uncertainty comes the expectation that the forced shut-in production of ~300,000 b/d won't be coming back soon and there could be the risk for more oil supply interruptions. Last week's (Dec 26, 2021) Energy Tidbits memo noted the postponing of the Libya Dec 24 Presidential election and our view that its hard to see Libya returning oil production returning now that Libya is in a limbo period with the Dec 24 election postponed to an indeterminate date. We also said that as long as Libya is still planning to hold the elections in the near term, Libya is avoiding the return to chaos. But that it will be important to actually plan and hold the election in the near term. It was quiet most of the week on what will happen to the elections (the postponed Presidential election and scheduled Jan 24 parliament election) until the UNSMIL (UN support mission in Libya) posted on Thursday tweets including [LINK] "*3/4 The Mission Coordinator underlined the importance of broad consultations among all relevant Libyan entities and stakeholders towards overcoming the present challenges and charting a path to elections that would bring stability for the country, and..*>". As soon as we saw this, we tweeted [LINK] "*Risk to continued Libya #Oil interruptions. Hard to see Presidential & parliament elections happening quickly when see @UNSMILibya tweets ie. "importance of broad consultations" "charting a path to elections", etc. Geopolitical risk. #OOTT.*" Having broad consultations won't be done quickly. And charting a path to elections is signaling that the UN sees there is a lot of work to be done to get to an election. We suspect the next few weeks could very well determine if all the parties are prepared to be patient to wait for an indefinite period for elections or we see slippage. Regardless, its hard to see why the approx. 300,000 b/d of force shut in oil will come back on during this limbo period. Our Supplemental Documents package includes the UNSMIL tweets.

Oil – Libya NOC pipeline maintenance to shut in ~200,000 b/d for one week

Libya planned maintenance to shut in 200,000 b/d

Yesterday, we tweeted [LINK] on the Libya National Oil Corporation's SaturdayFacebook posting that, starting today, it was undertaking "*necessary maintenance operations for the main crude oil pumping line linking between the fields of Samah - Al Dhahra and from there to the port of ESidra. Waha Oil Company has confirmed that it has completed all the technical equipment to start reducing production until Monday and starting the operations of treating and cutting the lost pipe as of Tuesday, 04 of January 2022, for a period of one week, which means, in numbers, a loss of 200 thousand barrels per day and a loss of sales opportunities exceeding 107 Million US dollars*." Our tweet highlighted that this is planned maintenance but also, as noted earlier, we see risk of more "unplanned" oil supply interruptions if the election limbo continues for much longer. Our Supplemental Documents package include the Libya NOC Facebook posting.

Figure 31: Libya oil and gas map



Source: Bloomberg

Oil – Japan to auction off 0.629 mmb from crude reserves in Feb at US request

Japan oil reserves release

Japan has taken another step in their commitment to assist the US in combatting the increasing price of crude. On Monday, Reuters reported [LINK] that Japan is planning to hold auction for 0.629 mmb of crude oil in its part of the US led coordinated release of oil reserves to cool the rapidly increasing oil prices. Last week's (December 26) Energy Tidbit noted a similar announcement by South Korea on a release from their strategic reserves. The Japanese auction will take supply from the Shibushi tank in southwestern Japan and will be made available to the winning bidder at the end of March. The Japan government commented "*This is the first round of the planned releases and we will conduct more auctions when we are ready and while we closely watch the international energy markets.*" Since The coordinated announcement and the spread of the Omicron variant, global oil prices have fallen by more than $5/bbl. Japan's Energy minister stated that Japan's plan will remain unchanged despite the drop in prices.

Oil – Pakistan to import more fuel oil to offset LNG loss

Pakistan gas shortage pushes to fuel oil

On Monday, Energy Intelligence reported that Pakistan's natural gas short is forcing some power plants to switch to burning fuel oil to produce electricity [LINK]. The crisis was triggered as Gunvor and Eni both defaulted on LNG cargoes scheduled for delivery in November, as well as a decrease in Pakistan's own gas production. Pakistan has responded to the gas shortage by increasing the use of fuel oil for power generation and even asking people to cook on electric stoves. The government has also cut supplies to industry to make more fuel oil available for households. The report added "*Consumption of fuel oil, which had been running at around 6,000 tons per day, is likely to reach 14,000 tons per day soon. The government has imported 200,000 tons of fuel oil and is well stocked to meet demand if there are more defaults on LNG cargoes.*" A December 20 article noted [LINK] that both ENI and Gunvor have elected to incur penalties on their contracts over delivering their cargoes. The article noted *"Under the term agreements with Pakistan LNG Limited, Italy-based ENI is bound to provide LNG cargo every month at 11.95% of the Brent and GUNVOR is also in a 5 year term agreement and bound to provide a cargo at 11.6247% of the Brent. Under the contract, in case of default, PLL can impose a penalty of 30 percent of the contractual price of one cargo to each LNG Company and both the companies are ready to pay the penalty as the profit in the spot market is so huge which has prompted them to sell Pakistan's term cargo to the international market. PLL has inked the term agreements with both the companies to avoid purchasing of LNG cargoes at higher prices, but both the companies have backed out and defaulted the agreements twice."* Our Supplemental Documents package includes the Energy Intelligence report.

Vortexa floating storage

Oil – Vortexa est 86.82 mmb at Dec 31, -5.81 mmb WoW vs revised up Dec 24

Note that we are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 8:30pm MT yesterday and that these estimates often get revised over the weekend, and then again for the next week. Note we do not check daily for the revisions so our comments are compared to the Dec 24 and Dec 17 estimates that were posted on Sat Dec 25 at 3pm MT. Our takeaway is much the same as the couple months, there are weekly revisions so its hard to draw clear views based on this week's estimate but, if we look at the trends, global crude oil floating storage is roughly where it was when OPEC+ started its big production increases on July 1 ie. the extra OPEC+ oil has been absorbed by the market and there aren't a lot of extra barrels looking for homes at sea. As of 8:30pm MT Sat, Bloomberg has posted Vortexa crude oil floating storage as of Dec 31 at 86.82 mmb, which is -5.81 mmb WoW from the upwardly revised Dec 24 estimate of 92.63 mmb. Dec 24 was originally estimated at 86.32 mmb as of Sat Dec 25 at 3pm MT. Revisions to the prior two weeks as estimated last Sat Dec 25 at 3pm MT. Dec 24 was estimated 86.32 mmb vs the 92.63 mmb estimate today at 8:30pm MT. Dec 17 was estimated at 93.30 mmb vs 89.19 mmb estimated today at 8:30pm MT. Dec 31 estimate of 86.82 mmb is down 137.43 mmb from the June 26, 2020 peak of 224.25 mmb. Dec 31 estimate of 86.82 mmb is down 34.73 mmb vs the pre-Covid Dec 30, 2019 of 52.09 mmb. Below is the Bloomberg posted Vortexa crude oil floating storage data for the past two years as was posted yesterday at 8:30pm MT.

Figure 32: Vortexa Floating Storage Dec 31 Posted on Bloomberg 8:30pm MT Sat

Source: Bloomberg, Vortexa

Oil & Natural Gas – Dallas Fed Survey, cost pressures intensify as growth continues

Dallas Fed quarterly energy Survey

One of our favorite quarterly reports is the Dallas Fed quarterly energy survey posted this week [LINK]. The survey provides a good window into what the US oil and gas sector is thinking about prices, activities and issues. It's a must read. The data for this survey was collected December 8-16 from a total of 134 firms, 90 E&P and 44 oilfield services. (i) The headlines were similar to last quarters report on the expansion in oil and gas activity and cost pressures building. (ii) Activity grew slightly in Q4, the Dallas Fed wrote *"The business activity index—the survey's broadest measure of conditions facing Eleventh District energy firms—remained elevated at 42.6, essentially unchanged from its third-quarter reading."* (iii) Six-month outlooks improved, with the index remaining positive but declining from 58.9 last quarter to 53.2. After two quarters of declining uncertainty, the uncertainty index declined from 4.3 to -1.5 suggesting that uncertainty is relatively unchanged from last quarter. (iv) On average, respondents expect a West Texas Intermediate (WTI) oil price of $75 per barrel by year-end 2022; responses ranged from $50 to $125 per barrel. Survey participants expect Henry Hub natural gas prices of $4.06 per million British thermal units (MMBtu) at year-end 2022. For reference, WTI spot prices averaged $71 per barrel during the survey collection period, and Henry Hub spot prices averaged $3.76 per MMBtu. (v) One big red flag in the survey was the rising costs for the third consecutive month. The Dallas Fed wrote "*the index for input costs increased from 60.8 to 69.8—a record high and suggestive of significant cost pressures. Only one of the 44 responding oilfield services firms reported lower input costs this quarter. Among E&P firms, the index for finding and development costs advanced from 33.0 in the third quarter to 44.9 in the fourth. Additionally, the index for lease operating expenses also increased, from 29.4 to 42.0. Both of these indexes reached their highest readings in the survey's five-year history."* (vi) We are interested in the respondents answer to special survey questions. 95% of the firms participating in the survey believe that countries will be unable to meet their greenhouse gas emission reduction goals by 2030. Our Supplemental Documents package includes excerpts from the Dallas Fed survey.

Oil & Natural Gas – Russia debt & debt to GDP is ~15% of Canada

Russia vs Canada debt

On Tuesday, Kelly Ogle (former Cdn junior oil CEO) replied to our Russia Novak oil tweet with the reminder on how oil prices have a giant impact on Russia's balance of payments, GDP, exports, etc. And that "folks forget Russia's economy quite a bit smaller than Canada's." Canada and Russia are both economies with major revenues from oil, natural gas, metals and minerals. But there really is a big difference in the economic indicators. Please be clear that, although we have never lived or visited Russia, we have no desire to live there and love being a Canadian living in Canada. And there is a cost to live in a great country like Canada. But the economic comparison is stark, especially on debt and deficits. We replied "*Kelly. agreed, people do forget that. in particular one area - debt. Russia debt and debt to gdp is about 15% of Canada*." Our reply included the below table showing the key Russia vs Canada economic indicators.

Figure 33: Russia vs Canada key economic data comparisons

2020 Econopmic Comparison			
Economic Measure	**Units**	**Canada**	**Russia**
GDP	**($bn)**	$1,644	$1,479
GDP Per Capita	**($)**	$43,295	$10,115
Debt	**($bn)**	$1,985	$286
Debt % GDP	**(%)**	117.5%	19.3%
Debt Per Capita	**($)**	$1,955	$50,925
Deficit	**(%)**	-4.2%	-10.7%
Expenditure	**($bn)**	$670	$584

Source: Countryeconomy.com

Energy Transition – CalSTRS says Exxon better change or risk being a Blockbuster

CalSTRS warns Exxon to change

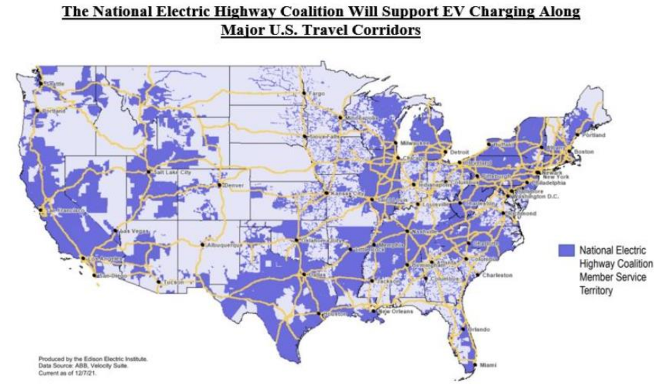
Yesterday morning, we tweeted [LINK] on the CalSTRS CIO warning to Exxon that change has to happen and they better get their act together. Our recent Energy Tidbits have noted the big shift to major pension funds (CPPIB and Norway's wealth fund) view on oil and gas stocks and that they will continue to be holders/buyers recognizing oil and gas as a strategic sector. But we also highlight that other significant, but smaller, pension funds are not giving up their push for the transition out of oil. CalSTRS (~$300b assets under management) was a supporter for Engine No. 1 in their push for a new board at Exxon. CalSTRS CIO was clear that he isn't satisfied with the way Exxon integrated their new board members and that mgmt needs to be more open as change is going to happen. And he warned that Exxon better get their act together to become energy companies not oil and gas companies or else they risk being the next Kodak or Blockbuster. On Friday, Bloomberg interviewed the CalSTRS CIO Christopher Ailman [LINK]. We created a transcript of Ailman's Exxon comments. Any items in "*italics*" are SAF Group created transcript. At 4:00 min mark. Bloomberg asks if they are satisfied with Exxon's progress since the election of new board members following that proxy fight from Engine No. 1 earlier this year? Ailman "*Tim, great question and No, I am not. I'm not satisfied with the way they have integrated our board members. They have not embraced them holistically and recognized recognizes that this is shareholders talking to them and wanting a change. Hopefully, they will put them all back up for re-election and will continue the dialogue. But I have to say, you know between you and me, I think management has been a bit stubborn and they need to be more open. And if we need to raise our voice again on ExxonMobil, we will, because change has to happen. Change is going to happen around the world. And if these companies want to survive and not be Eastman Kodak, not want to be Blockbuster Video, darn it, they better get their act together and become energy companies, not just oil and gas firms.*" Our Supplemental Documents package includes the CalSTRS May 26, 2021 release when the Engine No. 1 directors were elected to the board. –

Energy Transition – Electric co's moving on its national highway EV charging network

Electric companies form NEHC

Another step has been taken to develop the infrastructure necessary for the automobile energy transition. On December 7 [LINK] the Eddison Electric Institute (EEI) announced the formation of the National Electric Highway Coalition (NEHC) which merges the Electric Highway Coalition and the Midwest Electric Vehicle Charging Infrastructure Collaboration and now includes additional participating electric companies from across the country. The coalition currently consists of 51 investor-owned electric companies and is committed to providing electric vehicle (EV) fast charging ports that will allow the public to drive EVs along major U.S. travel corridors by the end of 2023. The release stated *"By merging and* *expanding the existing efforts underway to build fast charging infrastructure along major travel corridors, we are building a foundational EV charging network that will help to encourage more customers to purchase an electric vehicle. We owe a great deal of gratitude to the electric companies that created so much momentum at the regional level, paving the way for us to expand this effort nationally."* EEI's member companies have invested more than $3bn in customer programs and projects to deploy EV charging infrastructure and to accelerate electric transportation. As EV sales continue to grow, EEI estimates that more than 100,000 EV fast charging ports will be needed to support the projected 22 million EVs that will be on U.S. roads in 2030. Below Is a graphic depicting the member company territory in the US. Our Supplemental Documents package includes the EEI announcement.

Figure 34: NEHC Member Service Territory



Source: EEI

Energy Transition –China cuts EV subsidies by 30% in 2022, down to zero in 2023

It's hard for anyone to not accept that EVs are here and growing. We certainly do, it's a question at what rate of growth and what that means to the impact on oil consumption. There should be a good test of the resiliency of EVs growth in 2022 and 2023 in China, who is the global leader in EVs. China is reducing the subsidies on new energy vehicles in 2022 and eliminating them in 2023. This should be the test of the maturity of the market and how subsidies will impact EV sales growth. On Friday, we tweeted [LINK] "*Good test for #EVs sales in 2022 & 2023. China is the global EV leader. China Finance Ministry is reducing new energy vehicle subsidies in 2022 by 30% vs 2021, and then down to zero subsidies in 2023. #OOTT*." On Friday, China's Ministry of Finance posted "*Interpretation of the "Notice of the Development and Reform Commission of the Ministry of Industry and Information Technology of the Ministry of Finance on the Promotion and Application of New Energy Vehicles in 2022*." [LINK] that noted China's subsidy policy for new energy vehicles "*will continue to decline in an orderly manner in accordance with the established arrangements to create a stable policy environment*." The MOF then stated "*According to document No. 86 of Caijian [2020], the subsidy standard for purchase of new energy vehicles in 2022 will be reduced by 30% on the basis of 2021"* and "*the "Notice" clarifies the purchase of new energy vehicles on December 31, 2022 The subsidy policy is terminated, and vehicles with a license after December 31 will no longer be subsidized."* Our Supplemental Documents package includes the Google Translate of the MOF announcement.

China cutting EV subsidies

Energy Transition – Ford F150 electric "market adjustments" can be $30k

We recognize that EVs are the way of the future in great part because governments are putting in place deadlines after which new ICE vehicles can't be sold. But we still believe the ramp up will be slower than the Net Zero aspirations. There was a good reminder from InsideEVs on Thursday on the logic for why EVs are still being targeted to high income and not the average person. InsideEVs reported [LINK] "*The market launch of the Ford F-150 Lightning is just around the corner and the order bank will be opened in January. However, reports now are emerging about dealers' "market adjustments." According to Sam Alexander's video, the Koons Ford Falls Church dealer in Virginia sent an email to reservation holders, which says that to be among the 25 priority orders, there will be a $30,000 "market adjustments" on the MSRP price. The other customers (non-priority) will have to pay $10,000 more. Not only that, any customer who placed an order will have to agree to a $5,000 non-refundable deposit."* We know from contractor friends that cost is a limiting factor for any pickup they buy to use in their business. There is no way they would pay a markup like this and a non-refundable deposit for a truck used in their contracting work. It's one of the reasons why we tweeted [LINK] that the InsideEVs report "*Reminds #EVs buyers are high income. For #f150lightning, city slickers or as Texans call them "all hat, no cattle". Future deadlines for no more new #ICE sales means EVs are coming, buy longer ramp up vs #NetZero aspirations. #Oil needed for longer #OOTT."*

Ford F150 market adjustments to price

EV buyers are mostly higher income people

Our Friday tweet on the InsideEVs said it reminds that EV buyers are higher income people. Our Dec 12, 2021 Energy Tidbits noted this, when we wrote "*The reality is that EVs are the most visible component to reducing emissions and the assumption is that EVs will move from something higher income people own to a broad adoption from middle and even lower income groups. On Friday, we asked the question via a tweet [LINK] "Would there be any new car #EV purchases by <$50k or <$75k income if there weren't purchase incentives? what will it take and how long will it take to get these groups to increase new EV purchases and not new ICE purchases and used car puchases? #OOTT." Our tweet included the recent Hedge & Company "New Car Buyer Demographics 2022 (Updated)" data [LINK]. This is the challenge, there are economic incentives to buy EVs in all states, yet its hard for new EV sales to penetrate less than $100,000 income groups. Hedges & Company estimates 60% of the new EV buyers have household income >$100,000. There is going to have be increased regulatory/economic incentives for EVs to penetrate other income groups if EV penetration is going to grow as quickly as NetZero aspirations. And the other reality is that there will be increasing regulatory/economic costs assigned to ICE vehicles. Our Supplemental Documents package includes the Hedge & Company update*. "

Figure 35: New Battery Electric Vehicle Buyers by Household Income

Under $50,000	20%
$50,000 to $74,999	16%
$75,000 to $99,000	4%
$100,000 and up	60%

Source: Hedges & Company

Energy Transition – Winnipeg test has Tesla Model 3 at 109 miles vs EPA 263 miles

It was probably not a good week for EV drivers who had to do more than just do a little bit of inner city driving to and from work. But we suspect not many EV drivers would have done a relatively short 2 hour trek to mom & dad's place for an Xmas visit unless they could recharge their vehicle at mom & dad's. Its was cold this week in Alberta with highs around -20c and lows below -30c in southern Alberta, and much colder in northern Alberta. We saw a number of tweets about the cold weather and EVs. So we tweeted [LINK] an InsideEvs April 4, 2021 report "*Tesla Model 3 Highway Range Test In One Of The Coldest Cities"* [LINK]. And of course, they had to pick Winnipeg. We tweeted "*Current Alberta -30c cold spell reminds of how EV ranges gets hammered when its cold. On 04/04/21 @Writer_StevenL noted #TeslaModel3 range test in Winnipeg was >110 miles vs EPA rated range of 263 miles. #OOTT #EVs."* InsideEVs wrote "*The Tesla Model 3 Standard Range Plus has an EPA-estimated 263 miles of range. However, that's not the case in the cold. In fact, some Model 3 cold-weather range tests have proven that the car struggles to exceed 200 miles in the cold"* and "*We hate to give out spoilers since we want you to check out the video and all the details. However, we will say that at the end of the drive, the Model 3 has traveled just 175.8 km (109.2 miles) before stopping with 3% battery remaining*." That wouldn't have been enough to make it there and back on the 1 hour (105 km) Calgary to Canmore drive.

Tesla Model 3 in Winnipeg cold

Energy Transition – Speed limiters in new cars coming to Europe in late 2022

We read a lot of UK press and one item in the look ahead to 2022 was the reminder of the European Commission 2019 changes that will see all new cars after July 2022 must be outfitted with speed limiters. On Wednesday, Edinburgh Live reported [LINK] "*Speed limiters in vehicles. New cars will be fitted with speed limiters from July 6, 2022 to improve road safety. The Intelligent Speed Assistance (ISA) black boxes will use GPS to work out what the speed limit is and will then ensure the car doesn't break it. A new regulation will be imposed by the European Commission in the General Safety Regulation having been approved by the European Parliament in 2019. ISAs will be mandatory for all new models given 'type approval' from 6 July. This means any new car brought to market from that date, rather than new cars already in production."* We must have missed this back in December 2019, when the EC announced a basket of new transport proposals that were to create a green and efficient network while improving road safety. We have to believe there will be some fast ICE vehicles being stored away for a future sale.

Speed limiters coming to cars

Energy Transition – Denmark PM says all domestic flights to be green by 2030

Denmark PM Frederiksen's new year's speech [LINK] said that Denmark would be making all domestic air flights be green by 2030. Note that she said this would be difficult but possible.

Denmark air flights to be green by 2030

And then she said "*If we succeed. Then it will be a green breakthrough. Not just for Denmark. But for the whole world.*" After reading her speech, we tweeted [LINK] "*Denmark domestic air flights to be green by 2030. PM says difficult but possible & "it will be a green breakthrough. Not just for Denmark. But for the whole world." Really? DK tip to tip max is 400 km N/S, 350 km E/W. Will take decades to replace global #JetFuel #OOTT #NetZero.*" We don't see how this will be a breakthrough for the whole world as Denmark is a small country in area. That is unless she means to include the >6 hour flight to Greenland. For perspective, Denmark's area is ~44,000 km2, which is roughly 80% of the area of Nova Scotia. Our tweet noted that the maximum distance tip-to-tip is 400 km north to south, and 350 km east to west. These are short flights so we don't see how this is a breakthrough for the world. Our Supplemental Documents package includes excerpts from the PM's speech.

Demographics – Covid has led to slowing growth in US and global population

Slowing US & world population growth

On Thursday, the US Census Bureau posted its bi-annual projection for US population on New Year's Day. [LINK] The Census Bureau doesn't provide reasons for the estimates, but we believe the slowing growth rates in population are due to Covid driving a higher death rate and less immigration. We went back to the prior two projections to see the different trends. (i) The Census Bureau projects US population will be 332,403,650 on Jan. 1, 2022, +0.21% or +706,899 YoY. And "*the combination of births, deaths and net international migration increases the U.S. population by one person every 40 seconds*". This growth rate is down significantly vs Dec 30, 2019 projection of one person every 19 seconds, and vs the Dec 28, 2017 projection of one person every 18 seconds. The Census Bureau expects one death every 11 seconds in Jan 2022, the same as in the Dec 30, 2019 projection but higher than the one death every 10 seconds in Dec 28, 2017 projection. (ii) The Census Bureau projects world population will be 7,868,872,451 on Jan 1, 2022, +0.95% or +74,235,487 YoY. The Census Bureau projects during January 2022, 4.3 births and 2.0 deaths are expected worldwide every second. The prior two projections had the same 4.3 birth rate, but lower death rates of 1.9 in Dec 30, 2019 and 1.8 in Dec 28, 2017. (iii) The Census Bureau doesn't project age distributions, but we would expect that Covid deaths likely hit the older age groups the hardest. If so, there might be a slightly lower percentage of dependent adults. Our Supplemental Documents package includes the US Census Bureau population projections.

Demographics – Putin's greatest concern is Russia's shrinking population

Russia's shrinking population

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 populati". 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."

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.

Deserved Guardian Footballer of the Year – Denmark's Simon Kjaer

On Friday, The Guardian announced it's the Guardian Footballer of the Year was awarded to Denmark national team captain Simon Kjaer [LINK]. The Guardian said the award "*is an award given to a player who has done something remarkable, whether by overcoming adversity, helping others or setting a sporting example by acting with exceptional honesty*." Any football fan remembers the Denmark-Finland Euro 2020 match in June and how Christian Eriksen collapsed on the field. Kjaer, the Denmark captain, bolted almost the full length of the pitch to get there right away, took Eriksen's pulse, made sure Eriksen's tongue wasn't blocking his air intake and put Eriksen in an upright position while waiting for the medics. The Guardian wrote Kjaer said ""*I appreciate all the positive words and gratitude," he says. "I'm honoured. But as I've always said, my reaction was impulsive and so was everyone's. What we did, we did as a team. I would not have been able to keep my shit together if I didn't have anyone to lean against. "It was our friend: not a colleague, a friend. That made it so much more intense, and what we did was instinctive. I don't believe you can* *prepare yourself for anything like it. I know, for myself, that I wouldn't have been able to do any of this without my team by my side. At the end of the day everything was only for one purpose and that was for Christian, his wellbeing at the time and his family."*

Figure 36: Denmark's Simon Kjaer helping tend to Christian Eriksen

Source: The Mirror

Desmond Tutu passes away at the age of 90

Talk about a bad week for beloved people, Archbishop Desmond Tutu passed away on Dec 26 at the age of 90. Its hard to imagine how brave Tutu was in leading the anti-apartheid movement but always while doing so in a peaceful manner. He was a leader in the anti-apartheid fight and he always did so while only favoring a peaceful approach. We just can't comprehend how tough it was to fight for equal rights. He was someone that was admired worldwide and deservedly so.

Betty White passes away less than 3 weeks from her 100th birthday.

It was a sad end to 2021 to hear Betty White passed away on Friday less than 3 weeks before her 100Th birthday on Jan 17, 2022. Who didn't love Betty White? She is best known for her role in the hit TV series The Golden Girls from 1985-92, but she had many other major roles. And talk about impressive, still starring in a major role in the TV series "*Hot in Cleveland*" as late as 2015. And still occasional roles as late as 2019. Wow. People Magazine featured Betty White on the cover of their latest magazine that hit newsstands on Wed with the caption "*Betty White Turns 100!*".

Kraken fan saves Canucks assistant equipment manager

Prior to our 7am MT news cut off, I will flip among the news channels in the background as I check for last minute news to add to the memo. There was a great story this morning on CTV News [LINK] that is worth a view. In the first Vancouver Canucks visit to play the new Seattle Kraken in late October, a Kraken fan, Nadia Popovici, sitting behind the Canucks bench kept noticing what she thought was a cancerous growth on the neck of Canucks assistant equipment manager Brian "Red" Hamilton. Popovici is going to med school and clearly has the doctor's gene in here. She kept seeing the growth and got worried and got his attention showing her cell phone in large font that said "the mole on the back of your neck is cancer". CTV wrote "*"It threw me off, so I kind of just shrugged and kept going," Hamilton said. "I felt like I really didn't give her the time of day." But her message stuck with him. The* *following morning, back in Vancouver after an extended road trip, Hamilton asked his wife if he had a mole on his neck. Later, he asked the team doctor. Within a week, the mole had been removed and sent for a biopsy. It turned out that Popovici was right. The mole was a malignant melanoma, and because it had been caught early, Hamilton was cancer-free. "She extended my life," he said."* Hamilton didn't know she was so the Vancouver Canucks tweeted a letter [LINK] from Red thanking the person and asking for help on finding her so he could thank her. Popovici was told of this by her mom and they met at the New Year's Day game in Seattle. Our Supplemental Documents package includes the Canucks tweet.

Figure 38: Nadia Popovici & Brian Hamilton

Source: Vancouver Canucks

Zamboni driver on the way to work in Canmore on Jan 1 morning

The more common sight in the Town of Canmore is to see wildlife roaming around, in particular elk, coyotes and the occasional bear. But what isn't common is to be running an errand and look up to see the it's not a car or truck in front, but to see a Zamboni driving around Canmore as we did yesterday morning. We tweeted a short video of him [LINK] saying "*wonder what the #zamboni driver did on New Year's Eve that he is driving the zamboni to work at the rink this morning in #Canmore? luckily it's only -15c and he can enjoy the view of the Cdn Rockies*."

Figure 37: Zamboni driver in Canmore on Jan 1, 2022

Source: SAF Group