

# Energy Tidbits

Jan 23, 2022

Produced by: Dan Tsubouchi

## BLK CEO Need to Rapidly Admit We Will Not Survive With the Society We are Accustomed Without Hydrocarbons Right now

**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. BlackRock CEO Fink "we will not survive with the society we are accustomed without hydrocarbons right now, we need to rapidly admit that" ([Click Here](#))
2. Shell CEO: EU natural gas consumption is unchanged but produces 20% less, there are only long term solutions ([Click Here](#))
3. Baker Hughes confident, and bias to high end, for 13-20 bcf/d of LNG FIDs in next 2-3 years. ([Click Here](#))
4. UAE THAAD missile defense wasn't able to stop all Houthi long range missiles and drones. ([Click Here](#))
5. CAPP forecasts Cdn oil and gas spending +22% to \$32.8b in 2022. ([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 [\[LINK\]](#).

**Dan Tsubouchi**  
Principal, Chief Market Strategist  
dtsubouchi@safgroup.ca

**Ryan Dunfield**  
Principal, CEO  
rdunfield@safgroup.ca

**Aaron Bunting**  
Principal, COO, CFO  
abunting@safgroup.ca

**Ryan Haughn**  
Principal, Energy  
rhaughn@safgroup.ca

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**Natural Gas – Natural gas draw of 206 bcf, storage now -226 bcf YoY deficit**

Gas draws increased this week after record December temperatures have subsided across the US. The reality is that if we didn't have increasing US LNG exports, US gas storage would be a lot worse. The EIA reported a 206 bcf draw (vs 197 bcf draw expectations) for the Jan 14 week, which was above the 5-yr average draw of 167 bcf, and last year's draw of 92 bcf. Storage is 2.810 tcf as of Jan 14, decreasing the YoY deficit to -226 bcf, from 199 bcf last week and storage is 33 bcf above the 5-year average vs 96 bcf above last week. Below is the EIA's storage table from its Weekly Natural Gas Storage Report [\[LINK\]](#).

**YoY storage at -226 bcf YoY deficit**

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	01/14/22	01/07/22	net change	implied flow	Year ago (01/14/21)		5-year average (2017-21)	
					Bcf	% change	Bcf	% change
East	669	730	-61	-61	686	-2.5	643	4.0
Midwest	770	835	-65	-65	835	-7.8	771	-0.1
Mountain	151	159	-8	-8	178	-15.2	159	-5.0
Pacific	201	204	-3	-3	275	-26.9	236	-14.8
South Central	1,019	1,088	-69	-69	1,062	-4.0	968	5.3
Salt	308	330	-22	-22	300	2.7	286	7.7
Nonsalt	711	759	-48	-48	761	-6.6	683	4.1
Total	2,810	3,016	-206	-206	3,036	-7.4	2,777	1.2

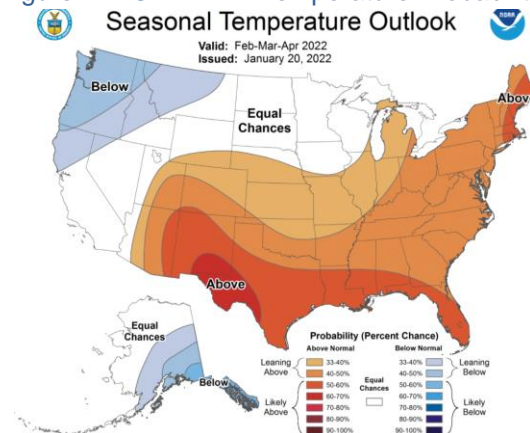
Source: EIA

**Natural Gas – Still looking for warmer than normal end to winter**

The warm weather is expected to continue for the remainder of the winter remaining unresponsive of natural gas prices. On Thursday, NOAA released its monthly update to its seasonal temperature forecasts [\[LINK\]](#). NOAA is calling for a warm end to the winter with above average temperatures for FMA with the warm temperatures forecasted to continue into the summer. NOAA ranked FMA 2021 as the 78 warmest in the last 127 years, comprised of very average temperatures across the nation. Below are the temperature probability maps for FMA.

**NOAA forecasts warm end to winter**

Figure 2: NOAA FMA Temperature Probability Forecast



Source: NOAA

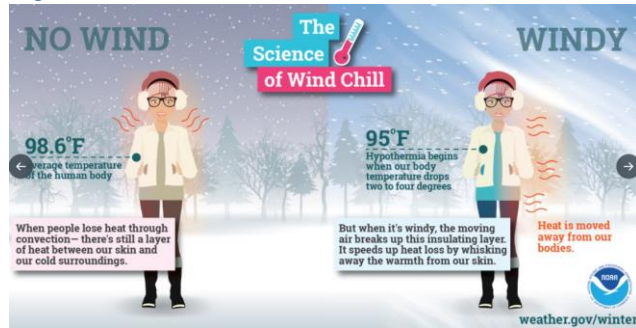
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Explaining wind chill factor

**Natural Gas – Wind chill chart and the science of wind chill**

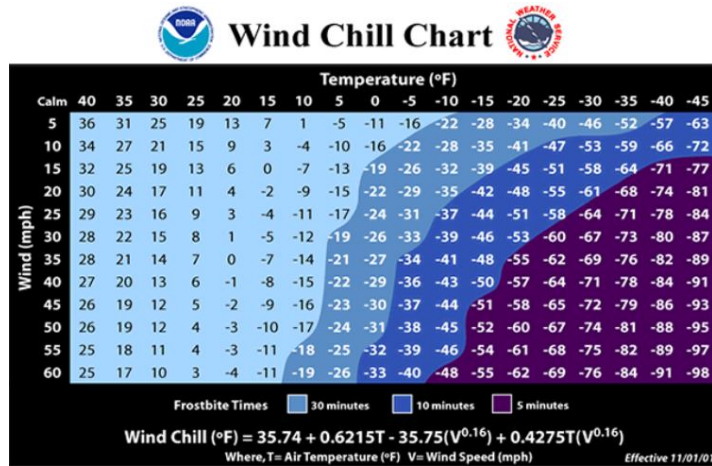
Earlier in January, NOAA tweeted [LINK](#) the below two images to explain the “Wind Chill” factor. The first explains how wind chill impacts the human body. The second is their “NWS Wind Chill Temperature (WCT) index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. The index does the following: Calculates wind speed at an average height of 5 feet, the typical height of an adult human face, based on readings from the national standard height of 33 feet, which is the typical height of an anemometer. Is based on a human face model. Incorporates heat transfer theory based on heat loss from the body to its surroundings, during cold and breezy/windy days. Lowers the calm wind threshold to 3 mph. Uses a consistent standard for skin tissue resistance, Assumes no impact from the sun, i.e., clear night sky.”

Figure 3: The science of wind chill



Source: NOAA

Figure 4: NOAA Wind Chill Chart



Source: NOAA

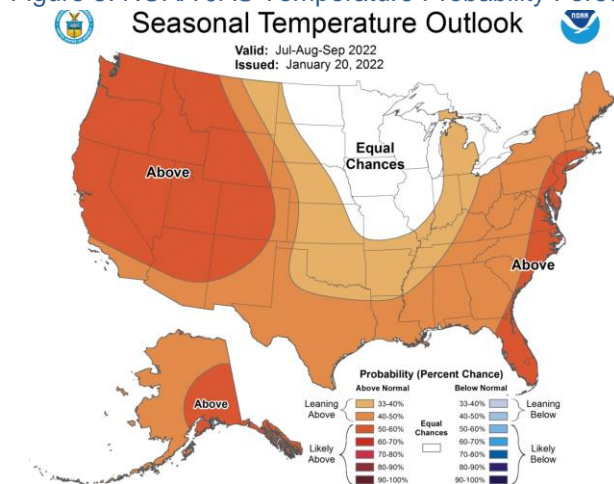
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**Natural Gas – NOAA’s early look to summer is for hot weather**

NOAA’s Thursday monthly update to its seasonal temperature forecasts [LINK](#) also includes a look ahead to the summer. It is still early but the outlook for the summer is beginning to look very hot with the MJJ forecasted temperatures expected to be well above average temperatures, this is supportive of natural gas prices as Americans look to stay cool in the summer heat. Below are the temperature probability maps for and for JAS.

**NOAA forecasts warm end to winter**

Figure 5: NOAA JAS Temperature Probability Forecast



Source: NOAA

**Natural Gas – EIA, US shale/tight natural gas shows increase D/J/F**

No one should be surprised to see the shale/tight plays are increasing production levels. On Tuesday, the EIA issued its Drilling Productivity Report January 2021 [LINK](#), which is the EIA’s forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case Jan) and the next month (in this case Feb). (i) The key takeaway remains that US shale gas continues to increase off the bottom in May. The EIA forecasts Jan at 90.215 bcf/d which is +0.387 bcf/d MoM (would have been +0.869 bcf/d MoM if not for the +0.482 bcf/d revision to January) and up +3.331 bcf/d from the Nov/19 peak of 86.884 bcf/d. (ii) This month, all basins increased except for Anadarko (-0.023 bcf/d MoM). Bakken and Eagle Niobrara showed increases, but Bakken and Niobrara were basically flat MoM. The largest increases came from Haynesville (+0.127 bcf/d MoM) and Permian (+0.122 bcf/d MoM). (iv) All basins are now up YoY, with the most notable YoY increases being Haynesville +2.844 bcf/d YoY and Permian +5.894 bcf/d YoY. Total US shale/tight natural gas production is +11.712 bcf/d YoY for Feb. (v) Remember US shale/tight gas is ~90% of total US natural gas production. So whatever the trends are for shale/tight gas are the trends for US natural gas in total. Below is our running table showing the EIA DPR data for the shale/tight gas plays, and the MoM changes in major shale/tight natural gas production. Our Supplemental Documents package includes the EIA DPR.

**Shale/tight gas continue to increase**

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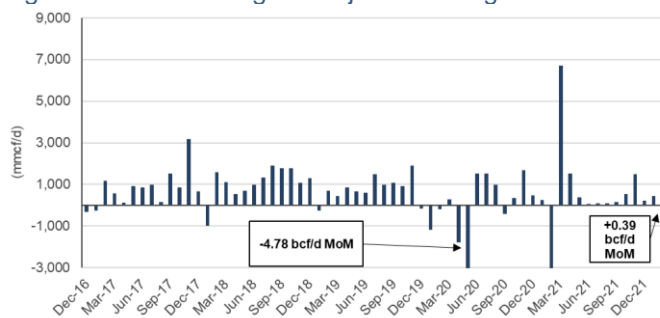


Figure 6: MoM Change – Major Shale/Tight Natural Gas Production

mmcf/d	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Feb YoY	Feb less Jan
Anadarko	6,411	5,257	6,163	6,082	5,992	5,919	6,129	6,192	6,139	6,107	6,203	6,321	6,278	6,255	998	-23
Appalachia	35,587	34,894	34,823	34,685	34,619	34,586	34,364	34,366	34,783	34,838	35,601	34,825	34,988	35,069	175	81
Bakken	2,888	2,747	2,916	2,851	2,787	2,732	2,798	3,005	3,003	3,004	3,012	3,071	3,150	3,161	414	11
Eagle Ford	5,729	5,036	5,723	5,660	5,610	5,589	5,842	5,971	5,990	5,994	5,950	6,012	6,118	6,183	1,147	65
Haynesville	12,488	11,302	12,564	12,699	12,826	12,942	13,337	13,413	13,415	13,514	13,778	13,874	14,019	14,146	2,844	127
Niobrara	5,211	5,104	5,014	4,967	4,922	4,882	4,960	5,032	5,090	5,183	5,308	5,329	5,339	5,343	239	4
Permian	17,510	14,164	17,461	17,499	17,543	17,602	18,030	17,947	18,700	19,027	19,298	19,573	19,936	20,058	5,894	122
Total	85,824	78,503	84,664	84,444	84,300	84,252	85,460	85,926	87,120	87,667	89,150	89,005	89,828	90,215	11,712	387

Source: EIA, SAF

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



Source: EIA, SAF

**Natural Gas – Venture Global’s Calcasieu Pass plant close to producing first LNG**

Reuters reported on Friday [LINK](#) that Venture Global’s Calcasieu Pass export plant is close to producing its first LNG, as feedgas to the facility increased rapidly this week. Gas flowing to the facility increased to 88 mmcf/d on Friday. The facility has been pulling gas since August while conducting equipment tests before the facility enters full commercial operations this year. Venture Global is installing 18 modular liquefaction trains configured in nine blocks at Calcasieu to produce 1.5 bcf/d of LNG. Estimates on the plant’s total cost comes in at about \$4.5 billion. Venture Global has recently entered into sale and purchase agreements with several companies around the world, including China’s CNOOC, Sinopec, Shell, and PGNiG. In total, Venture Global has 9.21 bcf/d in export capacity between their Calcasieu, Plaquemines and Delta facilities. Our Supplemental Documents package includes the Reuters report.

**Calcasieu Pass near first LNG**

**Calcasieu Pass LNG and Sabine Pass Train 6 feedgas are big to HH prices**

The startup of feedgas at Sabine Pass Train 6 and Calcasieu Pass LNG is the major upside and downside protection support to US natural gas prices. We highlighted these in our July 25, 2021 Energy Tidbits, which was titled “Big Potential Upside to 2022 HH/AECO Prices, New US LNG Export Capacity Could Reduce Gas Storage By 1 Tcf in 2022”. In July we wrote “Oil prices have been strong, but the bigger surprise to the upside in 2021 has been global LNG, HH and AECO gas prices. There was an excellent reminder from BloombergNEF’s Monday US Gas Monthly, which is why we tweeted [LINK](#) that the takeaway therefrom is that there is big potential upside to 2022 and 2023 forward strips for HH (~\$3.40 for 2022 and ~\$2.90 for 2023) and AECO (~C\$3.10 for 2022 and ~C\$2.60 for 2023). BloombergNEF’s forecast for US gas storage for Oct 31/2021 was 3.497 tcf (140 bcf lower YoY) is on

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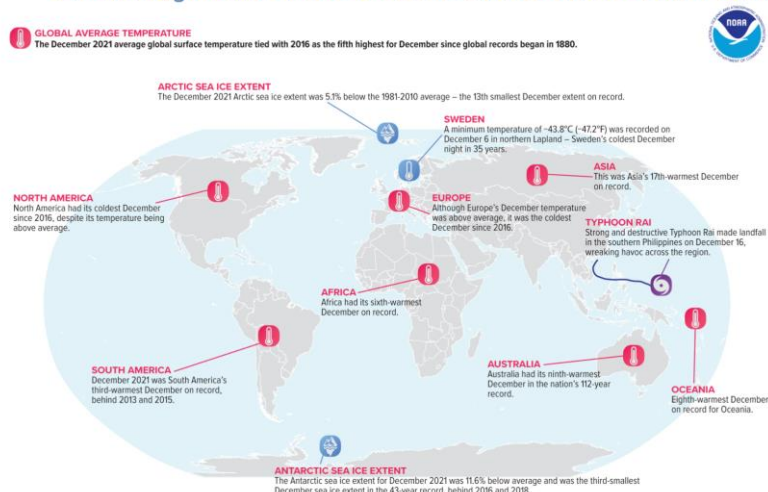
*the conservative side considering storage is currently 532 bcf lower YoY with expectations for strong US LNG exports in the summer/fall. But then BloombergNEF had a shock forecast for Oct 31/2022 for US gas storage to be 2.640 tcf. This is a hugely bullish storage number, basically at least 1 tcf less than normal and the last time Oct 31 storage was under 3 tcf was Oct 31/2000 when HH went over \$10 the winter 2000/2001. Even if storage is 3 tcf, its hugely bullish for HH and AECO gas prices. The key reason for this hugely bullish storage forecast is simple – BloombergNEF includes the start up of Calcasieu Pass LNG (1.3 bcf/d) and Sabine Pass LNG Train 6 (0.7 bcf/d) around year end 2021. This timing is consistent with Platts recent forecast [\[LINK\]](#). The assumption is that the global LNG markets will absorb this additional LNG volumes of >700 bcf. We want to reiterate even if the global LNG markets don't absorb all the added LNG volumes and BloombergNEF's 2.64 tcf storage forecast isn't met, an Oct 31/2022 US storage forecast in the low 3 tcf's is very bullish to the forward strips of HH and AECO."*

### **Natural Gas – LNG/natural gas price story this winter, Dec was hot around the world**

It's always interesting to watch how weekly moves up or down in oil, natural gas and LNG prices make either the bulls or the bears overlook the supply/demand fundamentals for the medium or long term. The big Europe natural gas and global LNG story in the past few weeks has been the crash of prices of the crazy high prices. Most forget the prices are still really high ie. Europe natural gas prices have crashed down to ~\$25/mcf or about 6 times higher than US natural gas prices. And JKM LNG prices are still pricing in the low \$20s for Feb. The reason for the "crash" is simple – it was hot in December in every major natural gas consuming region in the world. Yesterday, we tweeted [\[LINK\]](#) "Yes, #LNG prices are off the crazy high prices (EU #Natgas price still really high at ~\$25/mcf) but only because Dec was hot in every major #NatGas consuming region. US, hottest Dec ever, Asia 17th hottest ever, EU above average temps. #OOTT." Last week's (Dec 16, 2022) Energy Tidbits memo noted NOAA's recap of Dec 2021 US weather [\[LINK\]](#), which was the hottest in the last 127 years. Our tweet noted NOAA's recap of Dec 2021 global weather [\[LINK\]](#), which noted it was the 17<sup>th</sup> hottest December on record in Asia and it was above normal temperatures in Europe.

**The world was hot  
in December**

Figure 8: Selected significant climate anomalies and events: Dec 2021  
Selected Significant Climate Anomalies and Events: December 2021



Source: NOAA

### Natural Gas – Baker Hughes bias to high end of 13-20 bcf/d LNG FIDs in next 2-3 yrs

We were surprised that Baker Hughes very bullish LNG outlook comments didn't seem to get much attention. Baker Hughes is the leading services co in the LNG sector and seems to have a role in almost every new LNG FID. Baker Hughes held its Q4 call on Thursday and management had multiple very bullish LNG comments on a new LNG cycle is beginning to accelerate, LNG FIDs are being pulled forward in 2022, improving environment to secure long term offtake agreements, and they are confident, with a bias to the high end, to see 13 to 20 bcf/ of new LNG FIDs in the next 2 to 3 years. Those are very bullish comments, in particular a lot of FIDs are coming and coming soon. When we saw the comments, we tweeted [LINK](#) "1/2. #LNG cycle beginning to accelerate, projects (FIDs) beginning to be pulled forward vs prior expectations w/ strong long term LNG fundamentals & improving environment to secure long term offtake agreements says \$BKR @simonelli\_1. LT offtake are key to FID." Our Supplemental Documents includes comments from the Q4 call transcript.

**Very bullish LNG outlook**

#### **"Improving environment to secure long-term offtake agreements"**

One of the key Baker Hughes comments was in the Q&A, when CEO Simonelli replied "We've indicated over the past quarters that we're seeing an LNG cycle beginning to accelerate. And generally speaking, LNG projects are beginning to be pull forward versus previous expectations due to the strong long-term LNG fundamentals and also the improving environment to secure long-term offtake agreements." Long term offtake agreements are key to LNG FIDs. And we have been highlighting that the best validation for a LNG supply gap in the 2020s is that Asian LNG buyers have made an abrupt change to their LNG contracting and pivoted to trying to lock in long term LNG supply. On July 14, 2021 we posted our 8-pg "Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs". Here is an excerpt from the blog "The last 7 days has shown there is a sea change as Asian LNG buyers

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

#### **Updated list of new Asian LNG buyer long term contracts**

We have now seen 17 deals since July 1, 2021 where Asian LNG buyers locked up long term LNG supply past 2030. Below is the updated table of Asian LNG buyer new long term supply deals since the end of June. This table was in our July 14 blog. Note the below table is for Asian LNG long term supply deals so it excludes a Poland 20 year supply deal, a France 11 year supply deal and JERA \$2.5b investment to buy 25.7% interest in the Freeport LNG supply. Our November 21, 2021 Energy Tidbits highlighted the JERA deal.

Figure 9: Long Term Asian LNG Supply Deals since July 1, 2021

Long-Term Asian LNG Buyer Deals Since July 1, 2021					
Date	Buyer	Seller	Country	Volume	Duration
			Buyer / Seller	(bcf/d)	Years
July 7, 2021	CNOOC	Petronas	China / Canada	0.30	10.0
July 9, 2021	CPC	QatarEnergy	Taiwan / Qatar	0.16	15.0
July 9, 2021	Guangzhou Gas	BP	China / US	0.13	12.0
July 12, 2021	Korea Gas	QatarEnergy	Korea / Qatar	0.25	20.0
Sept 29, 2021	CNOOC	QatarEnergy	China / Qatar	0.50	15.0
Oct 11, 2021	ENN	Cheniere	China / US	0.12	13.0
Nov 4, 2021	Unipet	Venture Global LNG	China / US	0.46	20.0
Nov 4, 2021	Sinopec	Venture Global LNG	China / US	0.53	20.0
Nov 5, 2021	Sinochem	Cheniere	China / US	0.12	17.5
Nov 22, 2021	Foran	Cheniere	China / US	0.04	20.0
Dec 6, 2021	Guangdong Energy	QatarEnergy	China / Qatar	0.13	10.0
Dec 8, 2021	S&T International	QatarEnergy	China / Qatar	0.13	15.0
Dec 10, 2021	Suntien Green Energy	QatarEnergy	China / Qatar	0.13	15.0
Dec 15, 2021	SPIC Guangdong	BP	China / US	0.03	10.0
Dec 20, 2021	CNOOC Gas & Power	Venture Global LNG	China / US	0.26	20.0
Jan 11, 2022	ENN	Novatek	China/Russia	0.08	11.0
Jan 11, 2022	Zhejiang Energy	Novatek	China / US	0.13	15.0
<b>Total Asian LNG Buyers New Long Term Contracts Since Jul/21</b>				<b>3.50</b>	
*Excludes Asian short term/spot deals					
*Excludes non-Asian long term deals: Poland PGNiG 20-yr deal for 0.26 bcf/d w/ Venture Global					
*Excludes non-Asian long term deals: France Engie 11-yr deal for 0.16 bcf/d w/ Cheniere					
*on Dec 20, CNOOC also agreed to buy an additional 0.13 bcf/d from Venture Global for an undisclosed shorter period					
Source: Bloomberg, Company Reports					

Source: Bloomberg

### Natural Gas – How can we not wonder about LNG Canada Phase 2?

We have a stated bias towards the potential for a LNG Canada Phase 2 FID so we couldn't help wonder if there is more to the story on LNG Canada by separate Baker Hughes and Shell disclosures on Thursday. It's why we tweeted [\[LINK\]](#) "Is #Shell FID for #LNGCanada coming soon? @VanBeurdenShell 2022 progress is figure out design to get #LNG plants carbon neutral. Interview w/ Shell staff so must believe is doable & wanted this out there. \$BKR announced strategic agreement w/ Shell to reduce emissions. Hmm!". (i) 'There was a totally overlooked disclosure from the Baker Hughes Q4 results that they will be helping accelerate the move to net zero emissions by low carbon solutions for Shell. Mgmt did not discuss on the Q4 call nor were there any analyst questions. In its Q4 release, "Baker Hughes and Shell signed a broad strategic collaboration agreement to accelerate the global energy transition. Shell will provide select Baker Hughes sites in the U.S. with power and renewable energy credits, as well as negotiate renewable power for Baker Hughes sites in Europe and Singapore. The two companies will also identify opportunities to accelerate each other's transition to net-zero carbon emissions by 2050, such as Baker Hughes providing low-carbon solutions for Shell's LNG fleet through technology upgrades and compressor re-bundles. Baker Hughes will also help Shell develop digital solutions to accelerate decarbonization across Shell's global assets and operations. The two companies will also explore potential opportunities to co-invest and participate in new models to decarbonize the energy and industrial sectors." (ii) On Thursday, Shell posted a Shell CEO van Beurden interview with Shell's people asking the questions. We look at these as a layup for the CEO to signal items and concerns. There are no surprise questions and the answers are precisely

**Baker Hughes and Shell strategic agreement**

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given. This is not winging it. So when we see a question like the below one on what could progress look like in 2022 on reducing emissions, the CEO is only going to give items out there that he knows will see progress. Van Beurden says *“We also need to figure out how to design liquefied natural gas and petrochemical plants so that they can be carbon neutral from the start. These are huge technical and technological innovations that Shell will have to deliver. That’s what I mean by taking on the challenge”*. So the LNG answer is something they must believe they will accomplish or be able to message that they are there in 2022. And if so, it sets up FID and the big one for Shell is LNG Canada Phase 2. Our Supplemental Documents package includes the excerpt from the Baker Hughes Q4 release and the Shell internal interview with the CEO. [\[LINK\]](#)

#### **Mgmt teased on an award for unnamed major LNG project in North America**

We also can’t help but wonder exactly what unnamed major LNG project in North America that Baker Hughes was referring to in its Q4 call. There was an interesting tease from Baker Hughes on an unnamed major LNG project in North America. Mgmt said *“Additionally, we were awarded an order to deliver power-generation equipment for a major LNG project in North America.”* Note that this looks like a deliberate not naming of the projects. Elsewhere, mgmt had no problem disclosing the project name of another award saying *“in the fourth quarter. We announced a major LNG award for the five MTPA Pluto Train 2 project in Western Australia,”* In the scheme of things, LNG Canada Phase 2 of 1.8 bcf/d is certainly a major LNG project.

#### **Natural Gas – Looks like Tanzania LNG FID won’t be as quick as hoped**

It sounds like Tanzania Energy Minister Makamba’s confidence for a quick FID for the Tanzania LNG project won’t be as quick as he expected. Earlier this morning, The East African [\[LINK\]](#) wrote *“Tanzania LNG project talks drag on. Tanzania is moving cautiously in its lucrative natural gas deals with no end in sight of the Host Government Agreement (HGA) negotiations, which resumed recently but are set to take longer than expected.”* We checked Makamba’s Twitter and he has not tweeted anything on the LNG potential since Nov 16. He was confident in Nov on an early FID. In our Nov 14, 2021 Energy Tidbits, we wrote *“It’s hard to believe, but it may well turn out that the under the radar Tanzania LNG may be the next major FID for a LNG supply project. We haven’t wrote on Tanzania LNG in years but, Tanzania is certainly trying to get a FID on a \$30b Tanzania LNG project done very soon in response to Shell/Equinor approaches made in the spring. On Monday, Tanzania Energy Minister, January Makamba, tweeted [\[LINK\]](#) “Today, I kicked-off negotiations for the \$30bn Tanzania LNG project. The project will transform our economy. For the past two months, we’ve worked hard behind the scenes to get here. We’re confident that a Final Investment Decision will come sooner than is traditionally the case.” Tanzania is trying to get Shell & Equinor to move on an LNG project. Tanzania LNG went off the radar when Equinor wrote down its Tanzania investment in 2019. We shouldn’t have been surprised that it came back to life in April following TotalEnergies stopping its Mozambique LNG and effectively delaying 5 bcf/d of Mozambique LNG projects. In April, Platts reported “Shell, Equinor urge Tanzania to act ‘now’ to conclude LNG project talks” [\[LINK\]](#) on this potential 1.3 bcf/d project. In April, Platts wrote “Shell and Norway’s Equinor have urged the government of Tanzania to take immediate action to conclude talks on the country’s planned LNG export facility, warning that the time to develop new gas resources was “limited.” In an op-ed published April 13 in*

**Tanzania LNG  
potential**

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*Tanzanian newspaper The Citizen, the country managers from the two majors said "critical decisions" on the project were needed now." Makamba is clearly saying Tanzania wants to make this happen."* Our Supplemental Documents package includes The East African report.

### **Imagine if Tanzania got its LNG going before its neighbour Mozambique?**

We have written many times on how the force majeure delays at Mozambique LNG are the game changer to LNG markets and outlooks. Our latest update was last week (Jan 16, 2022) Energy Tidbits was still no specific end in sight to ridding the terrorists and establishing the security needed for TotalEnergies to lift its force majeure. We don't think there is any doubt that the Tanzania LNG renewed efforts are directly due to the delays for Mozambique LNG, which was counted on to start to deliver 5 bcf/d in stages starting in 2024. The TotalEnergies force majeure at Mozambique LNG was a game changer to LNG markets. And this Tanzania LNG renewal is a great example of a dead project that is coming back to life. On April 28, 2021, we posted our 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](#) because of Mozambique. We believe 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. It is being overlooked because markets were only focused on TotalEnergies announcement of the force majeure at its Mozambique Phase 1 LNG of 1.7 bcf/d, but weren't 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. 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 have been warning on Mozambique has a major LNG market impact. Our April blog reminded that even if TotalEnergies 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 or projects that are ready to go in some form. There is much more in the 7-pg blog. Our Supplemental Documents package includes our blog.

### **Natural Gas – Is Japan more worried about LNG supply/cost?**

There were interesting reports this week on an immaterial natural gas development in Japan, but there was an overlooked part of the reports suggest that this development points to an increased concern on LNG supply and cost from Japan. It felt like back to the future to see the Platts (and others similarly) report [LINK](#) "*Japan to explore 1.4 Tcf of recoverable gas reserves for 46.7 Bcf/year output. Gas shows indicate more than Japan's total 1 Tcf recoverable gas reserves. Estimated gas production equates to 1.2% of country's consumption. Gas self-sufficiency rate seen rising to 3.4%, from 2.2% currently.*" The reminder is to what Japan did post the Arab Oil Embargo on how they tried to find oil and natural gas in Japan and even moreso around the world including Canada. This is 0.13 bcf/d potential vs >10 bcf/d consumption. There is no indication of the

**Japan to drill for natural gas**

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cost of supply, but we would expect the full cycle cost of exploration, production and transportation would be much higher than LNG costs. We think there was an overlooked part of the report that suggests something has changed in the last 1 to 2 years that has Japan worried about mid/long term LNG supply and cost of LNG. Japan did this evaluation drilling in the 2019-20 (ending March 31, 2020) period. There is no way it would take almost two years to evaluate these “considerable gas shows”. But for some reason, they have picked now to proceed. This could have evaluated two years ago. We think the only reason for a changed decision almost two years later is that they are worried about LNG supply and cost. And even though this is a small amount of natural gas, a little is better than nothing. The second thought that comes to mind is that this reminds of what Japan did in the late 70s/early 80s. Post the Arab Oil Embargo in 73/74, Japan realized how vulnerable it was and started to get into oil and gas exploration and development around the world. Including in Canada oil sands and Beaufort Sea. Japan tried to drill around Japan and didn’t really find much. But the point is that they were worried about oil and gas supply and so started to try to get their own supply. The vast majority of those dollars spent chasing opportunities didn’t work. Our Supplemental Documents package includes the Platts report.

#### Natural Gas – Japan LNG Imports in Dec -8.9% YoY to 10.89 bcf/d

On Thursday, Japan’s Ministry of Finance posted its import data for Dec [\[LINK\]](#). As we highlighted last month, Japan kept its LNG storage volumes at very high levels going into the winter, which, given the warm start to winter temperatures, has given them the flexibility to redirect cargos in Dec. Japan had the advantage of a warmer than normal December. Japan’s November LNG imports were 9.38 bcf/d, down 2.6%% YoY and up 13.9%% MoM from 9.38 bcf/d in November. The high LNG price also showed up as Japan favored other cheaper fuel alternatives in November with a note that Japan is price sensitive as evidenced by thermal coal imports +7% YoY, Oil +7.1% YoY and Petroleum Products +1.5% YoY. Below is a temperature map of December and our table that tracks Japan LNG import data.

Japan Dec LNG imports -8.9% YoY

Figure 10: Japan Monthly LNG Imports

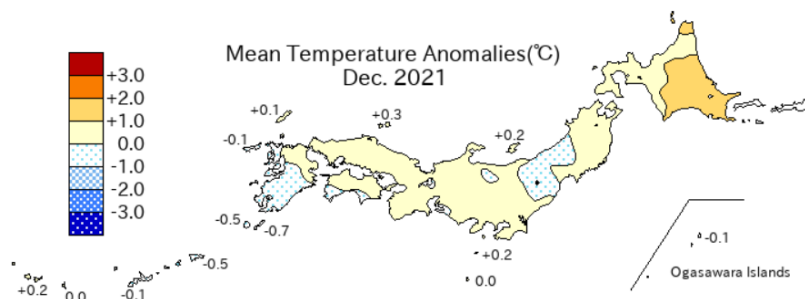
bcf/d	2015	2016	2017	2018	2019	2020	20/19	2021	21/20
Jan	13.06	11.22	12.85	12.79	11.69	11.63	-0.5%	12.48	7.3%
Feb	13.26	12.30	13.36	14.23	12.61	10.99	-12.8%	13.84	25.9%
Mar	12.60	12.62	12.61	12.28	11.30	11.16	-1.2%	11.04	-1.1%
Apr	10.56	10.21	10.52	8.97	9.00	8.31	-7.7%	7.96	-4.3%
May	8.91	8.55	9.66	9.92	8.62	7.09	-17.7%	7.67	8.1%
June	10.61	10.02	9.90	8.88	8.32	8.42	1.2%	9.13	8.5%
July	10.77	10.19	10.19	10.55	10.56	9.35	-11.5%	9.58	2.5%
Aug	10.93	11.96	11.24	11.73	9.45	9.04	-4.3%	9.75	7.8%
Sept	11.06	10.67	9.31	10.04	10.30	10.41	1.0%	8.66	-16.8%
Oct	9.38	9.73	9.50	10.12	9.75	9.20	-5.7%	7.17	-22.1%
Nov	10.71	12.07	10.26	10.15	10.03	9.63	-4.0%	9.38	-2.6%
Dec	12.51	11.69	12.31	11.23	10.54	11.96	13.4%	10.89	-8.9%

Source: Japan Ministry of Finance

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Figure 11: JMA Dec 2021 Temperature Recap



Source: Japan Meteorological Agency

**Natural Gas – China’s natural gas imports up 7.01% MoM in Dec**

There are fundamental reasons why China’s YoY LNG import growth is less than prior years - higher pipeline imports via Gazprom’s Power of Siberia and increasing domestic natural gas production. Plus it was warm in December. China customs posted China’s December natural gas imports split by pipelines vs LNG. The customs data is at [\[LINK\]](#). The customs data reports China Dec LNG imports of 11.82 bcf/d, +0.5% YoY and +7.01 MoM. And China natural gas pipeline imports of 6.2 bcf/d, +10.7% YoY and +1.84% MoM. Below are our running tables of China LNG and pipeline imports.

**China LNG and pipeline imports**

Figure 12: China LNG Imports

bcf/d	2016	2018	18/17	2019	19/18	2020	20/19	2021	21/20
Jan	3.84	8.03	50.0%	10.20	27.1%	10.31	1.1%	13.15	27.6%
Feb	3.10	6.84	66.9%	7.46	9.1%	7.26	-2.7%	9.52	31.1%
Mar	2.60	5.04	64.5%	6.28	24.8%	6.49	3.3%	8.74	34.6%
Apr	3.00	5.43	57.8%	7.27	34.0%	8.16	12.3%	10.77	32.0%
May	2.20	6.39	41.9%	6.87	7.6%	8.10	18.0%	10.89	34.4%
June	3.51	6.31	30.1%	7.25	14.9%	9.27	27.8%	10.76	16.1%
July	2.46	6.40	33.4%	7.56	18.1%	7.79	3.1%	8.78	12.7%
Aug	3.54	7.26	49.2%	8.04	10.8%	9.23	14.8%	10.30	11.6%
Sept	4.05	7.00	26.3%	8.16	16.7%	9.17	12.4%	10.81	17.8%
Oct	2.85	7.13	29.6%	4.09	-42.6%	7.78	90.0%	9.56	22.9%
Nov	4.26	9.59	47.5%	10.42	8.7%	10.58	1.6%	11.05	4.4%
Dec	5.80	9.75	25.0%	10.01	2.7%	11.76	17.5%	11.82	0.5%
Full Year Avg.	3.43	7.10	41.2%	7.80	9.9%	8.83	13.1%	10.51	19.1%

Source: Bloomberg, China Customs

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Figure 13: China Natural Gas Pipeline Imports

bct/d	2016	2017	17/16	2018	18/17	2019	19/18	2020	20/19	2021	21/20
Jan	4.3	3.7	-13.5%	4.0	8.2%	5.0	24.9%	5.2	3.5%	4.9	-4.5%
Feb	5.0	4.4	-12.9%	5.0	15.6%	5.5	9.0%	5.7	3.8%	6.1	7.2%
Mar	4.2	3.6	-15.6%	4.2	17.7%	4.5	6.4%	4.2	-5.2%	4.8	12.8%
Apr	4.5	4.7	4.1%	5.5	17.7%	5.0	-9.3%	4.2	-15.5%	5.5	30.1%
May	3.2	3.9	23.2%	5.1	30.4%	4.8	-4.3%	4.0	-16.6%	5.1	26.2%
Jun	3.3	4.1	22.1%	5.3	31.2%	4.8	-10.3%	4.1	-15.0%	5.6	37.4%
Jul	3.2	4.1	25.5%	4.7	14.5%	4.7	0.0%	3.6	-23.3%	5.7	58.9%
Aug	1.7	3.9	133.5%	4.7	21.3%	4.9	3.1%	5.3	7.9%	5.9	11.5%
Sep	5.1	4.0	-22.3%	5.2	30.7%	5.0	-4.2%	4.7	-6.0%	6.2	32.1%
Oct	3.1	3.5	13.2%	4.2	20.6%	3.8	-8.1%	3.9	1.0%	5.0	28.0%
Nov	3.1	4.0	27.4%	5.1	26.8%	4.7	-6.9%	4.1	-13.0%	6.1	48.9%
Dec	3.6	4.4	22.7%	4.6	2.8%	4.7	3.9%	5.6	18.9%	6.2	10.7%

Source: Bloomberg, China Customs

### Natural Gas – Makes sense why CNOOC & Sinopec are selling LNG cargoes

One of the negatives to LNG markets this week was the Bloomberg report that CNOOC was joining Sinopec in offering spot LNG cargoes for shoulder season – May to Nov. The consensus takeaway was that this shows a flooding LNG market. There is no question that two major LNG buyers turning to selling is not a positive indicator for LNG markets during shoulder season. But we think there are other aspects, which is why we tweeted [\[LINK\]](#) *“Surprise move, but makes sense. A warm Dec so less winter demand so far. Economy is slowing so reduce burden of high #LNG \$ & replace with coal. Less eyes of the world as Olympics end Feb 20 so less worry on clean skies. #Sinopec makes money selling oil linked for spot LNG. #OOTT.”* It was warm in China in Dec and not the cold Dec expected following the early snow in Nov and the expected La Nina impact so demand was less. But post the Olympics, China won't have the eyes of the world on them and their blue skies push will be less. And perhaps most importantly, China hasn't been and isn't prepared to sacrifice economic growth for emissions. And with the economy being hurt by Omicron, we believe China is reducing any pressures to use natural gas in the near term ie. can be replaced with coal. The last item would be CNOOC and Sinopec are able to make good money by selling LNG that are oil linked prices and getting spot LNG prices.

**CNOOC & Sinopec  
selling LNG  
cargoes**

### Natural Gas – Shell, Europe's natural gas crisis needs long term solutions

Once again, Shell CEO van Beurden gives a simple, but effective, warning to Europe on why it has a natural gas crisis. And that Europe needs some long term solutions as there isn't a quick fix to Europe's natural gas crisis. Europe needs more natural gas imports as its consumption is unchanged but its gas production is down 20% post pandemic. And actually said a similar warning as Putin on natural gas – Europe's move away from long term LNG or natural gas supply contracts is the key reason for today's crisis. On Friday, Le Figaro posted its interview with Shell CEO van Beurden [\[LINK\]](#). *“Ben van Beurden: “Reducing dependence on gas and oil is not feasible overnight””*. Yesterday, we tweeted [\[LINK\]](#) *“Europe produces 20% less #NatGas than before the pandemic & we consume as much. there are only long-term solutions for out of this crisis” ie. #LNG terminals but EU don't do LT supply deals. warns @VanBeurdenShell. lucky Dec was warm. Merci @guillaume\_gui @IvanLetessier #OOTT.”* Le Figaro asks *“How to get out of the energy crisis that Europe is going through?”* Van Burden replies *“On the contrary, price volatility undermines the will of committed companies in the energy transition. Reduce the dependence of our economies on gas and oil*

**Shell CEO on EU  
gas crisis**

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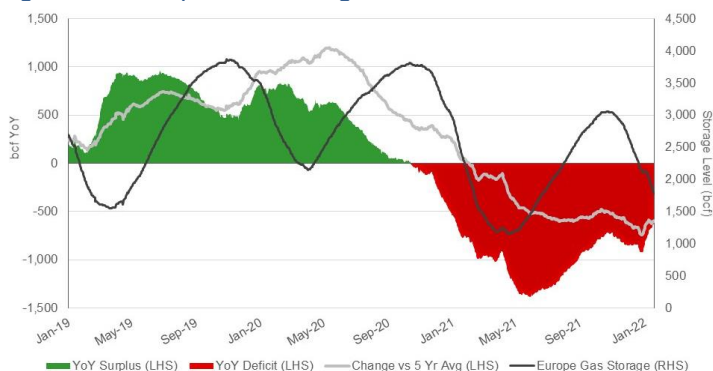
is infeasible overnight. Governments can take emergency action, but if they neglect the market, the exit of crisis will take longer. In the short and long term, we must increase energy supply. Europe produces 20% less gas than before the pandemic and we consume as much. There are only long-term solutions for out of this crisis, such as facilitating the construction of gas terminals liquefied natural to increase imports. The lack of contracts long-term gas supply is also a problem.” Our Supplemental Documents package includes the Google Translate of the Le Figaro interview.

**Natural Gas – Europe storage only 44.86% full vs last year of 59.25%**

The combination of a warm December and the massive increase in US LNG to Europe in January is having an impact on Europe gas storage. The YoY Europe storage gap has narrowed this week since the start of the winter natural gas season. Europe gas storage started down 18.52% YoY and is now down 14.39% as Europe has been experiencing warmer than normal temperatures recently. Draws to European gas storage units continued this week. It was a smaller draw due to the warmer weather. 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 tightened since Nov 1. Despite the warm weather and US LNG, storage as of Jan 14 is still only at 44.86%, which is -14.39% less than last year levels of 59.25% and are -16.32% below the 5-year average of 60.75%. 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.

**Europe storage down to 44.86% full**

Figure 14: Europe Gas Storage Level



Source: Bloomberg

**Oil – US oil rigs -1 WoW at 491 oil rigs at Jan 21**

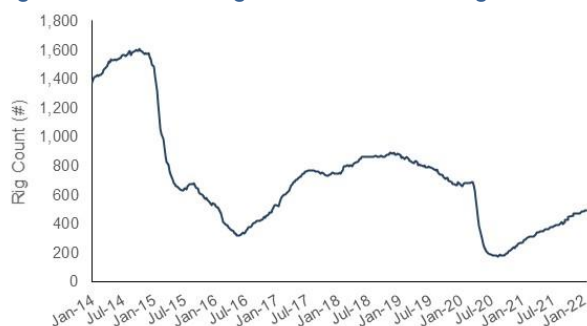
Baker Hughes released its weekly North American drilling activity data on Friday. There has been some very cold weather in the US that we expect affected rig moves this week. It was very cold in all of the key oil and gas regions, including below freezing wind chill in Texas. There is still strong oil, NGLs and natural gas prices and industry has fresh 2022 capex budgets and is still just catching up in 2021 from an extremely low 2020 activity level. This week US oil rigs were down -1 WoW at 491 oil rigs. Oil rigs are +319 off the bottom of 172 in

**US oil rigs -1 WoW**

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Aug14/2020 week. There were marginal basin changes this week; Permian was down -1 at 292 rigs this week while Bakken was flat at 27 rigs for the seventh consecutive week. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 201 to 491 oil rigs (-28%). Below is our graph of US oil rigs since January 1, 2014.

Figure 15: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

### Oil – US frac spreads +3 to 257 for week ended Jan 21

Mark Rossano (C6 Capital Holdings) was not on his week US frac spread recap for week ended Jan 21 on the Primary Vision network so Mark Johnston filled in for Mark. YouTube video at [\[LINK\]](#). For the week ended Jan 21, US frac spreads were +3 to 257. The increase was a little less than Mark was expecting but still expects to get to ~275 frac spreads in Jan. Felt like he meant the next week or two. Johnston reinforced Rossano's prior concern that there isn't a lot of equipment. Johnston reiterated the example from last week on maybe having 5 spreads in the Appalachia and wondering if they will be relocated. Then Johnston said something that surprised us while discussion the concept of a tight equipment market and that frac spreads will have to be relocated to where they are needed. Johnston said "or are we going to see 10-15 spreads in the Permian get relocated to gassier basins?" He didn't say why he used this example. Johnston also said he is hearing rumors that the Powder River Basin is heating up, but this time of year, we always hear that

**Frac spreads +3  
to 257**

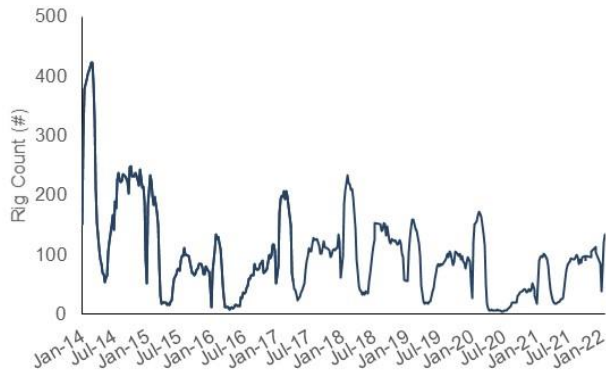
### Oil – Total Cdn rigs +21 to 212 total rigs, +39 rigs YoY

Cdn rigs have ramped up quickly after Xmas/New Year's, which is the normal big quick ramp in Canada, but the big weekly rig increases should be ending. Total Cdn rigs were up +21 this week to 212 total rigs. Cdn oil rigs were +13 at 134 rigs. Cdn gas rigs were up +8 to 78 gas rigs; no surprise as there is typically a large increase after the holidays. Total rigs are now +198 since the June 26, 2020 all-time low. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 96 and Cdn gas rigs were 76 for a total Cdn rigs of 172, meaning total Cdn rigs are +39 YoY and total rigs are -10 vs 2019.

**Cdn rigs +21  
WoW**

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Figure 16: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

### Oil – US weekly oil production flat at 11.7 mmb/d

Weekly production in the US was flat this week at 11.7 mmb/d for the week ended Jan 14. Lower 48 production drove total production and was flat from last weeks level at 11.2 this week; US oil production is up YoY at +0.700 mmb/d and is still down significantly at -1.4 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. There is no explanation for the flat oil production, but we expect that it is largely due to the continued cold stretch in the Bakken. Absent weather impacts, we would expect US oil production to inch up a little higher in Q1/22.

**US oil  
production flat  
WoW**

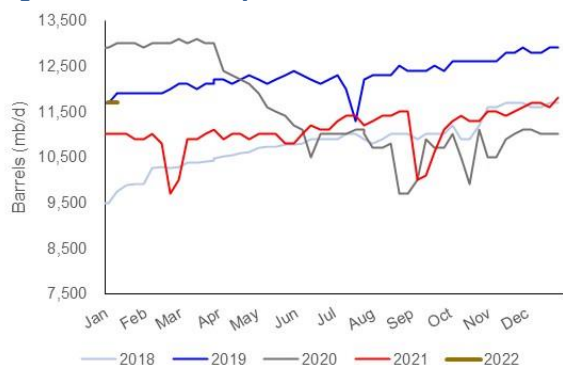
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Figure 17: EIA's Estimated Weekly US Oil Production

Year-Month	Week 1		Week 2		Week 3		Week 4		Week 5	
	End Date	Value	End Date	Value	End Date	Value	End Date	Value	End Date	Value
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	12/31	11,800
2022-Jan	01/07	11,700	01/14	11,700						

Source: EIA

Figure 18: US Weekly Oil Production



Source: EIA, SAF

**Oil – Likely some weather production impacts in next EIA weekly oil production data**

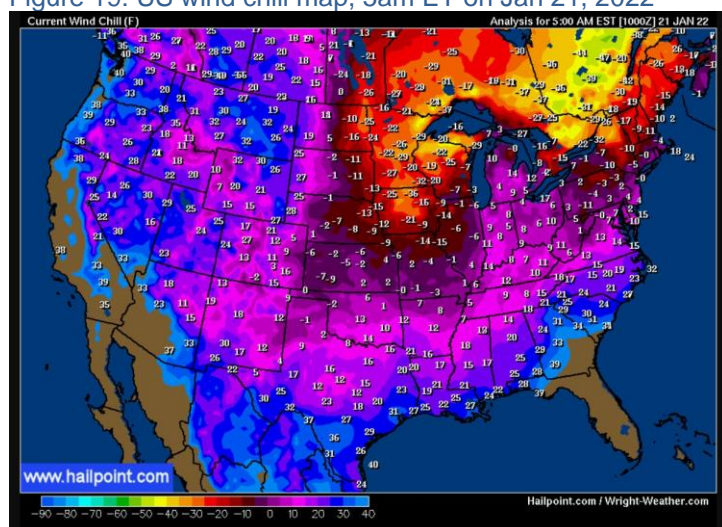
This week, we tweeted a few times on the cold weather in most of the key US oil and natural gas basins, and how this very cold weather will cause production interruptions and delays for rigs and frac spread moves. It's one of the reasons why we think the US oil rig count was down 1 rig this week. In the very cold weather, service companies will delay rigs and frac spread moves a couple days unless there is a time crunch. The service companies have learned over the years that very cold weather increases the risk to safety. We also note how

**Very cold in oil and gas basins**

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the very cold weather can cause “freeze-offs” that can cause some natural gas production to be temporarily shut down. And because there is so much associated natural gas produced in oil wells, any freeze-offs can lead to the related oil production being shut in. All it means is that we should see some impact on the EIA weekly oil production data next week. Below is one of the wind chill maps (from Friday) that we tweeted this week.

Figure 19: US wind chill map, 5am ET on Jan 21, 2022



Source Wright-Weather, LLC

### Oil – EIA DPR forecasts US shale/tight up again, Permian to hit 5 mmb/d

The EIA issued its Drilling Productivity Report Jan 2022 on Tuesday [\[LINK\]](#), which is the EIA’s forecast for oil and natural gas production from the major shale/tight oil and gas basins for the current month (in this case Jan) and the next month (in this case Feb). (i) The headline from the report is that the Permian continues to set new all time high record oil production and is forecast to exceed 5 mmb/d in Feb. (ii) The takeaway is that US shale/tight oil started to return to growth in July and that steady modest growth is expected to continue thru February. This is expected with the increase rig count, frac spread count and significantly higher than budgeted oil and gas cash flows. (iii) The EIA forecasts February at 8.540 mmb/d which is +0.104 mmb/d MoM (would have been +102,000 b/d MoM if not for revisions to January) and down 0.618 mmb/d from the Nov/19 peak of 9.158 mmb/d. (iv) In this month, all basins are basically flat except for the Permian, which saw an increase of +80,000 b/d. YoY most basins have turned to surplus, except Appalachia, but the Permian has ramped up significantly since last year, +1.53 mmb/d YoY. It continues to set new records and is now forecast to exceed 5 mmb/d in Feb. Total US shale/tight oil production is now +1.991 mmb/d YoY. (v) Even before the massive capex cuts and shut-ins, the oil shale/tight production had built a narrative for 2020 that US oil production had peaked in Nov/19 at 9.158 mmb/d, expected to plateau H1/20 and then starting to decline later in 2020. (vi) Note that shale/tight oil is approx. ~70% of total US production, so whatever the trends are for shale/tight oil are the trends for US oil in total. Below is our table of running DPR estimates

### US shale/tight oil production

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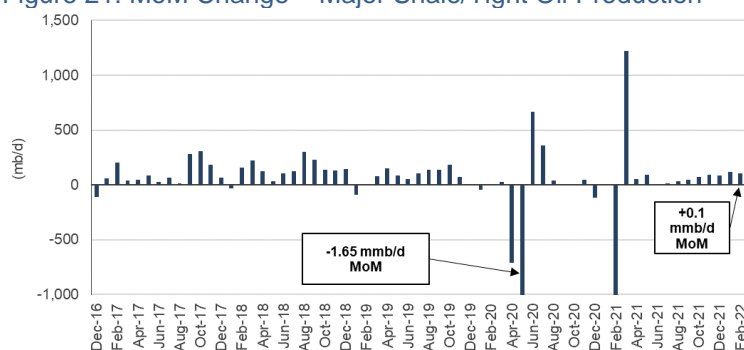
of shale/tight oil production and our graph of MoM changes in major shale/tight oil production. Our Supplemental Documents package includes the EIA DPR.

Figure 20: MoM Change – Major Shale/Tight Oil Production

Thousand b/d	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Feb YoY	Feb less Jan
Anadarko	423	309	386	373	361	353	354	370	369	363	366	378	389	391	82	2
Appalachia	128	123	126	126	127	128	131	129	125	118	122	120	115	117	-6	2
Bakken	1,166	1,106	1,129	1,118	1,108	1,102	1,116	1,139	1,139	1,131	1,137	1,146	1,184	1,192	86	8
Eagle Ford	1,054	882	1,062	1,045	1,032	1,027	1,043	1,054	1,053	1,076	1,078	1,090	1,104	1,116	234	12
Haynesville	34	28	33	33	32	32	34	34	34	34	34	33	33	33	5	0
Niobrara	571	556	544	534	524	516	540	555	576	594	608	615	615	615	59	0
Permian	4,354	3,546	4,471	4,510	4,555	4,607	4,647	4,756	4,773	4,826	4,886	4,960	4,996	5,076	1,530	80
Total	7,729	6,549	7,751	7,739	7,738	7,765	7,865	8,037	8,069	8,142	8,231	8,342	8,436	8,540	1,991	104

Source: EIA Drilling Productivity Report

Figure 21: MoM Change – Major Shale/Tight Oil Production



Source: EIA Drilling Productivity Report

**Oil – EIA DUC’s worked down by 214 in December**

The big risk to how much US oil production can grow in 2022 is the need to increase rig counts to replenish the inventory of Drilled UnCompleted wells. The biggest problem in the past with the EIA’s Drilling Productivity Report [\[LINK\]](#) estimate of Drilled UnCompleted wells was that the data had been constantly revised and sometimes significantly. However, the DUC estimates provide a clear picture of the trend since Aug 2020, which is that DUCs continue to be worked down. It’s why there is the need for drilling rigs to pick up to replenish the DUC inventory if the US to have strong oil growth in 2022. (ii) Drilled UnCompleted Wells are down another 214 MoM in December, meaning a total 4,258 DUCs were worked down since the Jun/20 peak of 8,874. The largest work downs are coming from the Permian (-1,446 YoY) and Eagle Ford (-457 YoY). With DUCs being worked down so significantly we will need to see rig counts go up to replenish DUCs in the near future. (iii) Bakken DUCs. As per the NDPA presentation on April 22, 2021, they estimate there are only 395 economic DUCs at April 30. This is 268 DUCs or ~40% lower than the EIA estimate of 663 as of April. Bakken DUCs were worked down 71 since then and in 2021 DUCs have dropped ~23 per month. This means that at this rate, the Bakken has ~14 months of economic DUC inventory. Below is our running table of the EIA Drilling Productivity Report DUCs.

**DUCs continue to work down**

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Figure 22: EIA - Estimated Drilled UnCompleted Wells

Drilled UnCompleted	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Dec YoY
Anadarko	982	965	952	932	921	901	880	863	856	838	824	812	799	787	773	-179
Appalachia	648	645	641	623	616	603	590	598	595	590	588	557	537	513	486	-155
Bakken	805	786	760	731	710	688	663	656	619	590	566	541	516	485	458	-302
Eagle Ford	1,252	1,220	1,181	1,152	1,135	1,102	1,071	1,012	954	912	869	833	796	760	724	-457
Haynesville	383	374	380	375	389	387	385	392	399	402	406	396	392	386	378	-2
Niobrara	713	663	621	575	530	489	448	402	373	380	379	375	372	362	351	-270
Pemian	3,363	3,227	3,116	2,988	2,955	2,852	2,731	2,598	2,419	2,249	1,994	1,812	1,669	1,537	1,446	-1,670
Total	8,146	7,880	7,651	7,376	7,256	7,022	6,768	6,521	6,215	5,961	5,626	5,326	5,081	4,830	4,616	-3,035

Source: EIA, SAF

### Oil – Will refracs be an overlooked reason for better US oil production in 2022?

We have to wonder if refracs will help support better US oil production in 2022. Our Jan 9, 2022 Energy Tidbits Mark Rossano's weekly frac spread commentary and we wrote "Seeing more talk on refracs but sees that more of a Q2 event. Refracs as there is low hanging fruit, mostly 2018 and 2019 fracs." The reason we ask is that we think most refracs won't show up in either wells drilled or DUCs being completed. Refracs are going into existing producing wells and refracing. We spoke to a number of oil and gas sector people to ask on this and they agreed that, to the most part, wells being refraced wouldn't have had a change in classification from production to suspended or some other status. And would still be in the records as an oil or natural gas well. The point being the refracs may not show up as DUC that is being completed or as a new oil or natural gas well. We don't think refracs will materially increase overall production but could be an overlooked reason for why US oil production ends up being a little better than expected.

Are refracs overlooked?

### Oil – Trans Mountain returns to normal operating pressure

Trans mountain has returned to normal operating pressure, after operating an undisclosed reduced capacity since the early December heavy rains and floods in British Columbia and Washington state. Trans Mountain issued a press release on January 15 [\[LINK\]](#), which stated "The return to full pressure follows the preparation of a comprehensive engineering assessment and the acceptance of Trans Mountain's plan for return to normal operations with the Canada Energy Regulator." The update still does not provide any colour on the capacity percentage in which the pipeline is operating at. We last noted the Trans Mountain pipeline status in our December 15 Energy Tidbits that noted, "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." Our Supplemental Documents package includes the Trans Mountain Jan 15 update.

Trans Mountain update didn't provide details

### Oil – Refinery inputs -0.120 mmb/d WoW at 15.453 mmb/d

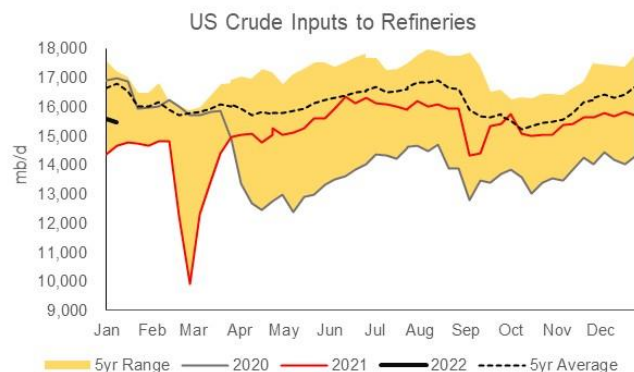
The EIA crude oil input to refinery data is for the week ended Jan 14. Refineries normally ramp up oil processing to year end and then decline in the new year. The decline appears to be underway as the EIA noted a small WoW decrease in crude inputs to refineries, down -0.120 mmb/d this week to 15.453 mmb/d and are +0.693 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 down at 88.1%, which is still +5.6% YoY as the typical seasonal decline over the holidays has continued into the new year. Total products supplied

Refinery inputs down WoW

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(i.e., demand) increased WoW, up 1.086 mmb/d to 21.915 mmb/d. Motor gasoline was up +0.317 at 8.224 mmb/d from 7.906 mmb/d last week. Gasoline supplied, a proxy for demand, was up 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 increased to 8.507 mmb/d, up from last year.

Figure 23: US Refinery Crude Oil Inputs (thousands b/d)



Source: EIA

**Oil – US “net” oil imports up +0.02 mmb/d WoW at 4.135 mmb/d**

US “NET” imports were up +0.020 mmb/d to 4.135 mmb/d for the Jan 14 week. US imports were up +0.676 mmb/d to 6.745 mmb/d. US exports were up +0.655 mmb/d to 2.610 mmb/d. The WoW increase in US oil imports was driven by US’s Top 10 imports by country were up 0.632 mmb/d from Top 10. Some items to note on the by country data. (i) Canada was up this week by +0.216 mmb/d to 3.556 mmb/d, which is now ~0.1 mmb/d above the average levels in Jan/Feb of 2020. (ii) Saudi Arabia was up 87,000 b/d to 0.381 mmb/d this week. (iii) Colombia was down +0.048 mmb/d to 0.193 mmb/d. (iv) Ecuador decreased imports this week, down 0.058 mmb/d to 0 mmb/d. (v) Iraq was up +117,000 b/d to 434,000 b/d. (v) Venezuela remained at 0 due to US sanctions. (vi) Mexico was up by 318,000 b/d to 0.902 mmb/d.

**US “net” oil up WoW**

Figure 24: US Weekly Preliminary Oil Imports by Major Countries

(thousand b/d)	Nov 5/21	Nov 12/21	Nov 19/21	Nov 26/21	Dec 3/21	Dec 10/21	Dec 17/21	Dec 24/21	Dec 31/21	Jan 7/22	Jan 14/22	WoW
Canada	3,550	3,429	3,559	3,773	3,869	3,879	3,147	4,032	3,803	3,340	3,556	216
Saudi Arabia	598	453	468	475	393	463	384	609	418	294	381	87
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	365	499	460	657	625	569	503	648	226	584	902	318
Colombia	121	302	141	214	71	232	146	184	64	241	193	-48
Iraq	51	42	131	221	248	29	359	268	226	317	434	117
Ecuador	117	103	149	112	0	265	195	308	95	58	0	-58
Nigeria	64	1	68	4	175	217	128	58	53	0	0	0
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	4,866	4,829	4,976	5,456	5,381	5,654	4,862	6,107	4,885	4,834	5,466	632
Others	1,242	1,362	1,460	1,148	1,118	817	1,332	652	779	1,235	1,279	44
Total US	6,108	6,191	6,436	6,604	6,499	6,471	6,194	6,759	5,664	6,069	6,745	676

Source: EIA, SAF

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**Oil – Colombia expects 5.4% growth in oil production to 0.800 mmb/d in 2022**

On Wednesday, Argus reported [LINK](#) on comments from Colombia Mines and Energy Minister Diego Mesa on Colombia's oil and gas production outlook for 2022. Oil output in 2021 averaged 0.74 mmb/d from Jan-Nov and was primarily impacted by the Covid-19 pandemic and the national strike that forced companies to shut in wells. Colombia is targeting a 5.4% increase in oil production to 0.800 mmb/d of production capacity in 2022, the same production goals it missed from last year. We are a little surprised that the growth wasn't more ambitious under \$70 plus oil. Don't forget Colombia was over 1 mmb/d in 2015. Argus also notes that gas output levels had climbed to pre-pandemic levels of 1.08 bcf/d throughout November with output expected to reach 1.1 bcf/d in 2022. Colombia's gas hopes are based on increased exploration in offshore blocks that are operated by Brazilian state-owned operator Petrobras. The Mines and Energy Minister commented "We currently have 10 active contracts with pending investment of up to \$3bn to execute. These contracts focus on the search for both new gas and oil reserves." The ministry hopes that 60 exploration wells will be drilled in 2022, up from the 34 wells drilled from Jan-Nov. A total of 112 upstream contracts will be in the exploration phase with agreed investments close to \$4.11bn in 2022. Colombia's presidential election will be closely monitored as leftist candidate Gustavo Petro is advocating on halting exploration contracts. Our Supplemental Documents package includes the Argus Media report.

**Colombia to increase production in 2022**

**Oil – Norway December oil production of 1.841 mmb/d, down +6.3% MoM**

The Norwegian Petroleum Directorate released its December production figures [LINK](#) of 1.841 mmb/d of oil, which is +1.5% YoY and -6.3% MoM from November of 1.732 mmb/d. December production was down slightly (-0.004 mmb/d) with the forecast amount of 1.845 mmb/d. The NPD does not provide any explanations for the MoM changes. The story for Norway has been that its oil production returned to growth in the last 3 years because of the Johan Sverdrup oil field, and tax breaks from the government allowing increased capex in the energy sector. Our Supplemental Documents package includes the NPD December release.

**Norway oil production**

Figure 25: Norway December 2021 production

		Oil	Sum liquid	Gas	Total
		mill bbl/d	mill bbl/d	MSm <sup>3</sup> /d	MSm <sup>3</sup> o.e/d
<b>Production</b>	<b>December 2021</b>	<b>1,841</b>	<b>2,108</b>	<b>353,1</b>	<b>0,688</b>
Forecast for	December 2021	1,845	2,172	334,2	0,680
Deviation from forecast	December 2021	-0,004	-0,064	18,9	0,008
Deviation from forecast in %	December 2021	-0,2 %	-2,9 %	5,7 %	1,2 %
Production	November 2021	1,732	1,972	346,3	0,660
Deviation from	November 2021	0,109	0,136	6,8	0,028
Deviation in % from	November 2021	6,3 %	6,9 %	2,0 %	4,2 %
Production	December 2020	1,814	2,129	332,0	0,670
Deviation from	December 2020	0,027	-0,021	21,1	0,018
Deviation in % from	December 2020	1,5 %	-1,0 %	6,4 %	2,7 %

Source: Norwegian Petroleum Directorate

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### Oil – Russia’s Duma Energy Committee raises doubt on near term oil growth

One of the lingering question marks is can Russia return to its pre cuts production levels? We have said before that it is inevitable that some of the marginal wells shut in by Russia would be restored to producing status and some of the lower rate wells returned to their prior production levels after a year or more being shut in. Russia’s oil production is almost all conventional oil, not unconventional shale or tight oil as in the US. This doubt was raised on Friday by Pavel Zavalny, the head of the Russian Duma Energy Committee. Bloomberg wrote “*Restoring oil production after OPEC+ cuts won’t be fast and easy amid technical challenges and prior underinvestments in upstream, Pavel Zavalny, head of the Russian Duma Energy Committee, says at online briefing.* \* “It was easy to cut output, you just halt wells and their production stops”. \* “But to restore production from halted wells, one needs to make an effort. Very often, a restored well doesn’t show the same production” due to geological challenges \* Slow production recovery will result in further growth of global oil prices.”

**Can Russia restore all oil production**

### Lukoil, Russia can’t restore all oil production & will use up all free capacity

The Zavalny comments above are in line with Lukoil’s Dec comments. Our Dec 19, 2020 Energy Tidbits memo was titled “*Lukoil Points to Limited, If Any, Spare Total Russian Oil Capacity*”. In that memo, we wrote “*On Friday, Lukoil presented its “Global Energy Perspectives to 2050”. We could not find a transcript to the presentation. But, after seeing the TASS reporting on comments from Lukoil executives, we tweeted [\[LINK\]](#) “Limited, if any, spare #Oil capacity in Russia. #Lukoil reminds marginal Russia #Oil need better prices & taxes to develop. And in April, Russia will get close to, but not back to pre-crisis oil production levels. Positive for oil in 2020s. #OOTT”. TASS reported “Lukoil vice president Leonid Fedun told reporters. “Oil production in Russia will first stagnate, and then even decline naturally,” he said, without specifying the timeframe. Fedun also believes that Russia will not be able to restore oil production under OPEC + by April, although there are geological reserves. “Financial and tax instruments are needed to develop them,” he explained.” And also reported “Vagit Alekperov, head of Lukoil, told reporters. “I think, somewhere, if at the same rate of 400 thousand b / d, then by April we will reach almost pre-crisis levels,” he said, adding that by April the company will also use all free capacities.” We saw the key takeaway being for Russia’s oil production potential for the 2020s from the Lukoil executive’s quotes. Lukoil points to little, if any, spare Russian oil production capacity and that Russia is at, or close to, its peak oil production. This is significant to the oil outlook for the 2020s. Lukoil doesn’t see much, if any, growth potential in Russia oil production capability ie. that it is close to or at peak oil production. It needs high oil prices to exploit most of its remaining reserves. Lastly, both Lukoil executives point to Russia not quite getting back to its pre-Covid oil production levels. It would make sense, they would have shut in marginal lower rate, high cost production when they had to cut and its makes sense that many of those marginal wells won’t ever be coming back on. Our Supplemental Documents package the three TASS reports.”*

### Oil – OPEC MOMR, no change to demand but oil stocks below 2015-2019 average

OPEC released its Monthly Oil Market Report at 6am MT on Mon morning. (i) We tweeted [\[LINK\]](#), “Positive for #Oil from #OPEC MOMR Jan vs Dec. Yes, no change MoM to demand

**OPEC MOMR for Dec**

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forecast. But, oil stocks deficit widened below 2015-19 average. "oil + product" at 11/30 now - 221 mmb below vs 10/31 -174 mmb below. "oil" stocks at 11/30 now -137 mmb below vs 10/31 -25 mmb below. #OOTT" (ii) There was no revision to 2019 and 2020 demand remaining at 100.10 and 90.98 mmb/d respectively. For 2021, full year average demand remained unchanged at 96.63 mmb/d but there were quarterly shifts; Q3/21 was revised down to 97.41 mmb/d from 97.66 mmb/d and Q4/21 was revised up to 99.75 mmb/d from 99.49 mmb/d. YoY demand growth is unchanged, on a rounded basis, at +5.66 mmb/d YoY from +5.65 mmb/d last month. 2021 remains down 3.47 mmb/d vs pre-covid 2019 of 100.10 mmb/d (iii) No change in oil demand growth in 2022 remaining at +4.15 mmb/d YoY. 2022 demand average was also unchanged at 100.79 mmb/d, up 0.69 mmb/d from pre-covid 2019 of 100.10 mmb/d. OPEC wrote "while the new Omicron variant may have an impact in 1H22, which is dependent on any further lockdown measures and rising hospitalizations levels impacting the workforce, projections for economic growth remain robust. This is despite the current inflation levels, which are being addressed through monetary policy by key central banks." (iv) OPEC Dec production per "secondary sources" was up +0.166 mmb/d to 27.882 mmb/d, revised from the Nov report of 27.717 mmb/d. Reminder that OPEC+ agreed to a +0.4 mmb/d MoM in Dec. OPEC's increase of +0.166 mmb/d rather than it's scheduled 0.253 mmb/d is still below the Dec quota. There were only small revisions to Nov. The biggest underperformers were Nigeria who produced 1.338 mmb/d vs a quota of 1.66 mmb/d, and Angola producing 1.166 mmb/d vs a quota of 1.392 mmb/d. We were surprised to see Saudi Arabia producing 9.932 mmb/d against their quota of 10.018 mmb/d. Venezuela was up at 0.681 mmb/d after a revision to Nov at 0/661 mmb/d, holding steady over 0.5 mmb/d in all of 2021; There were no revisions to the November report. (v) No changes to non-OPEC supply growth for 2021, +0.68 mmb/d to 63.65 mmb/d, and an immaterial rounding change to 2022 from last month at 66.66 mmb/d. Canada was revised down -0.019 mmb/d MoM after a +0.024 revision last month. Key non-OPEC supply growth areas for 2021 are Canada +0.33 mmb/d YoY, Russia +0.21 mmb/d YoY, China +0.16 mmb/d, and the US at +0.13 mmb/d YoY. Key YoY growth areas for 2022 are Russia at +0.98 mmb/d, US +1.03 mmb/d, Brazil +0.19 mmb/d, Canada +0.17 mmb/d and Kazakhstan at +0.11 mmb/d. (vi) The other big positive in the OPEC outlook is OECD commercial oil stocks for Nov estimates -221 mmb below 2015-2019 average, a decline MoM. Our Supplemental Documents package includes the OPEC MOMR.

### Oil – IEA OMR: increased oil demand forecast for 2022

The IEA released its monthly Oil Market Report for January at 2am MT Tuesday. They only release very limited public info, but Bloomberg provided tables and added color from the report. So big thanks, as usual, to the Bloomberg team. (i) The key message is that the IEA has reversed its forecast from Dec and increased its oil demand forecast for 2022 with a significantly lesser impact from Omicron. (ii) They revised up both its 2021 and 2022 demand forecasts by 0.2 mmb/d. 2021 forecast increased to 96.4 mmb/d with 2022 slightly revised upwards at 99.7 mmb/d from 99.5 mmb/d last month. The IEA wrote "We have raised our global demand estimates by 200 kb/d for 2021 and 2022 – resulting in growth of 5.5 mb/d and 3.3 mb/d, respectively – due to softer Covid restrictions." Global oil demand is now set to increase by 5.5 mmb/d in 2021 and by 3.3 mmb/d in 2022 when it returns to 99.7 mmb/d. (iii) Non-OPEC supply growth saw no changes to 2021 and a downward revision to 2022 of 0.2 mmb/d. Non-OPEC supply remained forecasted at 63.7 mmb/d in 2021 and 66.5 mmb/d in 2022 reflecting the downward revision. (iv) Global spare capacity is expected to decrease

### IEA Oil Market Report

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should OPEC implement all cuts. Last month noted that global spare capacity was to be less than 4 mmb/d by 2022 and the capacity is held primarily in Saudi Arabia, the UAE and Kuwait. The IEA wrote, “World oil supply in 2022 has the potential for a Saudi-driven gain of 6.2 mb/d if OPEC+ fully unwinds its cuts. Oil output from OPEC+ could rise this year by 4.4 mb/d, resulting in reduced effective spare capacity in 2H22 of 2.6 mb/d, held primarily by Saudi Arabia and the United Arab Emirates.” (v) OPEC December production up +0.19 mmb/d MoM. Bloomberg wrote “Saudi Arabia produced 10.01m b/d, up 120k b/d, just below its quota. The kingdom’s crude output this year could rise to an annual record of 10.7m b/d, reducing spare capacity. Nigerian production fell 80k b/d to 1.21m b/d amid force majeure on some exports; Angolan output expanded 40k b/d to 1.15m b/d.” The IEA revised November production to 27.8. The major difference in OMR at 27.99 vs OPEC MOMR at 27.88 is Venezuela which had 0.8 mmb/d in December; MOMR had Venezuela at 0.68 mmb/d (vi) On refined products draw the IEA wrote “The global refining industry ended 2021 on a high note, with both runs and margins improving. Refinery throughputs averaged 79.8 mb/d in 4Q21, up 4.6 mb/d on a year ago. In 2021, global refining capacity fell for the first time in 30 years, by 730 kb/d, as new capacity was outweighed by closures. In 2022, net additions are expected to amount to 1.2 mb/d, with runs forecast to gain 3.7 mb/d.” (vii) There was no detailed discussion on OECD stocks. The IEA saw industry stocks fall significantly in both November and December. The IEA wrote, “OECD total industry stocks declined by 6.1 mb in November, as rising crude and gasoline stocks were more than offset by draws in other products. At 2 756 mb, stocks were down 354 mb on a year ago and at their lowest level in seven years. Preliminary data for December show OECD industry stocks falling by another 45 mb while volumes of oil on the water rose.” (viii) Call on OPEC crude for 2022 was revised to 27.5 mmb/d from 27.4 mmb/d; 2021 was unrevised at 27.3 mmb/d. Our Supplemental documents package includes the IEA release and the Bloomberg report.

Figure 26: IEA Global Demand Forecast By OMR Report Month

mmb/d	2019	2020	20-19	Q1/21	Q2/21	Q3/21	Q4/21	2021	21-20	Q1/22	Q2/22	Q3/22	Q4/22	2022	22-21
Jan-22	99.7	91.0	-8.7	93.3	95.4	97.8	99	96.4	5.4	97.8	99.3	100.9	100.8	99.7	3.3
Dec-21	99.7	91.0	-8.7	93.3	95.2	97.6	98.6	96.2	5.2	97.9	99.1	100.8	100.3	99.5	3.3
Nov-21	99.7	91.0	-8.7	93.3	95.2	97.7	98.9	96.3	5.3	98.5	99.2	100.6	100.3	99.7	3.4
Oct 21	99.7	91.0	-8.7	93.4	95.2	97.8	98.9	96.3	5.3	98.6	99.1	100.5	100.2	99.6	3.3
Sep 21	99.7	91.0	-8.7	93.4	95.1	97.2	98.8	96.2	5.2	98.2	98.9	100.3	100.7	99.5	3.3
Aug 21	99.7	91.0	-8.7	93.4	94.9	97.4	98.9	96.2	5.2	98.0	98.8	100.1	100.2	99.3	3.1
July 21	99.7	91.0	-8.7	93.6	94.7	98.1	99.4	96.4	5.4	98.2	98.7	100.3	100.6	99.5	3.1
June 21	99.7	91.0	-8.7	93.3	94.9	98.0	99.3	96.4	5.4	98.3	98.6	100.3	100.6	99.5	3.1
May 21	99.7	91.0	-8.7	93.1	94.6	98.3	99.6	96.4	5.4	-	-	-	-	-	-
Apr 21	99.7	91.0	-8.7	93.7	95.1	98.3	99.5	96.7	5.7	-	-	-	-	-	-
Mar 21	99.7	91.0	-8.7	93.9	95.0	97.8	99.2	96.5	5.5	-	-	-	-	-	-
Feb 21	99.6	91.0	-8.6	93.7	94.9	97.9	99.2	96.4	5.4	-	-	-	-	-	-
Jan 21	99.9	91.2	-8.7	94.1	95.2	98.1	99.0	96.6	5.4	-	-	-	-	-	-

Source: IEA, SAF

### Oil – Bloomberg, “IEA goes hunting for 200 million missing barrels of oil”

We are very fortunate to have Bloomberg’s team for their work on the IEA’s monthly Oil Market Report. The IEA makes almost zero information publicly available for free. Fortunately, Bloomberg terminal users can get the tables and view from the Bloomberg team. On Thursday, we tweeted [LINK](#) “Looks like #Oil markets tighter than @IEA previously thought. On Wed, IEA said oservable global oil inventories plunged by >600 mmb last year. But based on its estimates of supply and demand - that the decrease should only have been 400 mmb. Thx @alexlongley1 @JleeEnergy .” Bloomberg wrote “The International Energy

**IEA had 200 mmb missing barrels**

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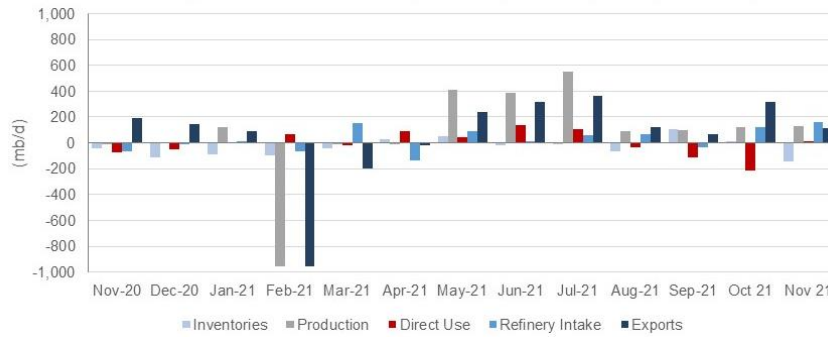
*Agency is trying to figure out where 200 million barrels of oil went. The adviser to energy-consuming nations said on Wednesday that observable global oil inventories plunged by more than 600 million barrels last year. That would be fine were it not for the fact -- based on its estimates of supply and demand -- that the decrease should only have been 400 million. There is always a gap between the two, but the 200 million barrel discrepancy means the oil market could be tighter than previously thought. The gap could be a result of underreporting of demand or over-reporting production, the IEA said. Its monthly report is a benchmark for traders trying to evaluate the balance between supply and demand the world over. "A retrospective view shows the difficulty over the past two years of reliably analyzing and forecasting supply and demand," the agency said on Wednesday. "Lessons learned will improve the work in 2022 and allow us to better understand our market." It is a big discrepancy from a large organization that would know this is the key data point. It was interesting to get inbounds on our tweet with the common view being that no surprise the IEA effectively underestimated oil demand in the run up to COP26. Our Supplemental Documents package includes the Bloomberg report.*

#### **Oil – Saudi exports +116,000 b/d MoM in November with higher production**

The JODI data for Saudi Arabia oil supply and demand for November was updated on Thursday [\[LINK\]](#). (i) There were no real surprises from the JODI data for November. The increased MoM production and draws from inventory were basically equal to increased exports and refinery intakes. There was basically no change to direct use of crude oil for electricity. (ii) Saudi used marginally more oil for electricity in Nov vs Oct which is not the norm. Normally, the use is less in Nov and Dec as temperatures are more moderate and less air conditioning demand. However, November was warmer than normal so this would have led to more oil use for electricity generation than normal. The peak summer use was July at 691,000 b/d, that declined to 323,000 b/d in Oct and now reported +11,000 b/d MoM to 339,000 b/d for Nov. Nov 2021 is up 19,000 b/d YoY from Nov 2020 of 320,000 b/d. Nov was also above the 5-yr average of 329,000 b/d. (iii) The normal seasonal decline in Saudi use of oil for electricity would see a peak to trough decline of >400,000 b/d to under 300,000 b/d. (iv) On the overall JODI data for Nov, there was an immaterial 12,000 b/d of unaccounted for demand. There was increased supply of 275,000 b/d MoM from production +132,000 b/d MoM and inventory down -143,000 b/d MoM. Vs increased demand +287,000 b/d from refinery intakes +161,000 b/d MoM, exports +116,000 b/d MoM, and direct use for electricity +11,000 b/d. ie. only leaves a minor 12,000 b/d unaccounted. (v) Inventories decreased significantly down 143,000 b/d from 136.806 mmb to 132.378 mmb. Inventories remain at historically low levels, sitting below 150 mmb. (vi) Below are the AccuWeather Temp maps for Riyadh for Nov, Dec and Jan MTD. Careful they are different scales but look for oil for electricity to decrease as we continue to move away from peak season. Below are our updated graphs for the Saudi JODI data for July.

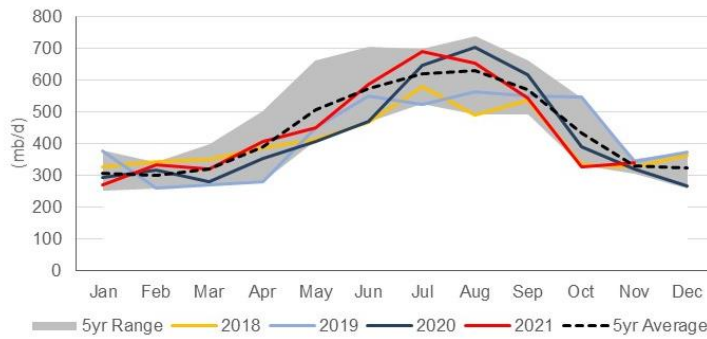
**Saudi  
increased Nov  
exports**

Figure 27: MoM Saudi Inventories, Production, Direct Use, Refinery Intake & Exports



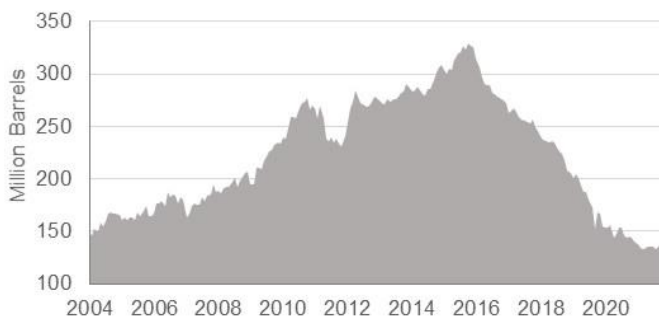
Source: JODI, Bloomberg

Figure 28: Saudi Arabia Direct Use of Crude Oil For Electric Generation



Source: JODI

Figure 29: Saudi Arabia Crude Oil Inventories (million barrels)

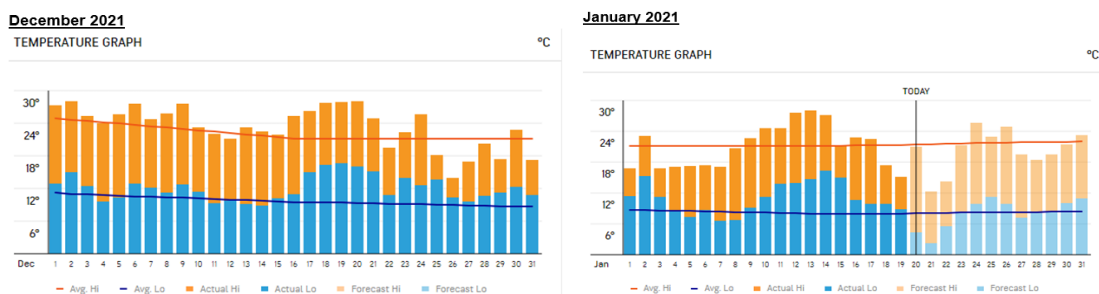


Source: JODI

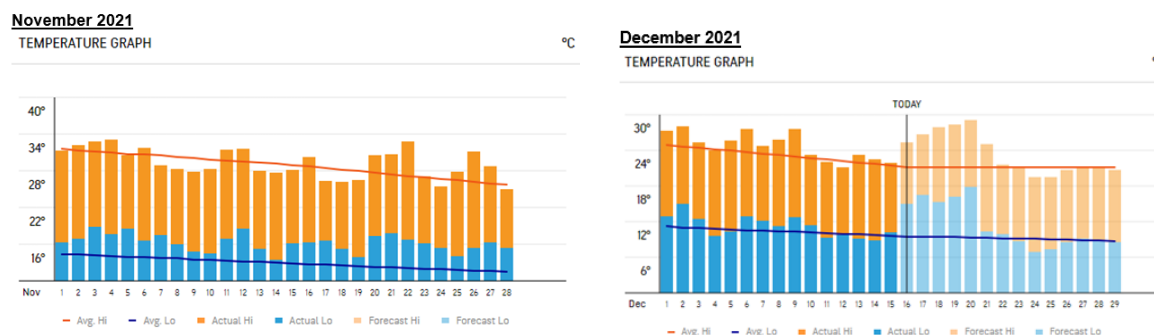
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Figure 30: Riyadh Temperature Recaps for Nov, Dec and Jan



Source: AccuWeather



Source: AccuWeather

### Oil – Houthis long range missiles/drones hits UAE ADNOC fuel depot in Abu Dhabi

We think the Houthi long range attack was more significant than the initial UAE reports. (i) Early Monday morning, we tweeted [LINK](#) on the initial Emirates News Agency (WAM) report that “Abu Dhabi Police confirmed that a fire broke out this morning, which led to the explosion of three petroleum tankers in ICAD 3, Mussafah, near ADNOC’s storage tanks” and “Preliminary investigations suggest that the cause of the fires are small flying objects, possibly belonging to drones, that fell in the two areas.” (ii) The inference from the initial reports are that tank trucks got hit. But within a day, the story became that drones hit fuel storage tanks. (iii) However on Thursday, we tweeted [LINK](#) “#Houthi long range UAE attack more significant than originally portrayed. @UAEEmbassyUS says not just drones, but also ballistic missiles & cruise missiles, “several were intercepted”. reminds THAAD/Patriots effective on ballistic, but not as much so vs cruise/drones. #OOTT.” There was a good AP report [LINK](#) comments from the Emirati ambassador to the US that clearly noted this was much more than a couple drones attacking. AP wrote “The remarks by Ambassador Yousef Al-Otaiba marked an official acknowledgement that missiles — and not just drones — were used in Monday’s attack, claimed by the Iran-backed Houthis. “Several attacks — a combination of cruise missiles, ballistic missiles, and drones — targeted civilian sites” in the United Arab Emirates, Al-Otaiba said. “Several were intercepted, a few of them didn’t and three innocent civilians unfortunately lost their lives,” he added in remarks at a virtual event hosted by the Jewish Institute for National Security of America.” (iv) What isn’t confirmed is

Houthis long range drone hits Abu Dhabi

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what got thru the UAE defense system. We suspect it was either drones or cruise missiles. Regardless, the fact that there were several missiles/drones in the attack with a combination of ballistic missiles, cruise missiles and drones that were all long range reflects a strong Houthi missile capability. (v) On Friday, Defense News posted [\[LINK\]](#) “a *multibillion-dollar missile defense system owned by the United Arab Emirates and developed by the U.S. military intercepted a ballistic missile on Monday during a deadly attack by Houthi militants in Abu Dhabi, marking the system’s first known use in a military operation, Defense News has learned. The Terminal High Altitude Area Defense System, made by Lockheed Martin, took out the midrange ballistic missile used to attack an Emirati oil facility near Al-Dhafra Air Base, according to two sources granted anonymity because they are not authorized to speak about the UAE’s activities. The Emirati base hosts U.S. and French forces.*” This is the first report, albeit unconfirmed, that THAAD was used and it is in line with our expectations that it took out a ballistic missile and not a cruise or drone. (vi) Most of all, these are long range missiles and drones. The AP story says these would have traveled a distances of some 1,800 km (1,100 miles) to reach Abu Dhabi. This reinforces our concern that the Houthis can reach anywhere in the UAE and therefore anywhere in Saudi Arabia. Our Supplemental Documents package includes the first WAM reporting, the AP Wed report and the Defense News THAAD report.

#### **Houthis have hit Abu Dhabi before but not acknowledged by UAE**

Our July 29, 2018 Energy Tidbits highlighted the Houthis claimed long range strike on the UAE. We then wrote ‘We understand why everyone is dismissing the Houthis claims of a long range drone strike on the Abu Dhabi airport this week or the Riyadh refinery last week (see our July 22, 2018 Energy Tidbits), both denied by UAE or Saudi Arabia. To be fair, the Houthis claims have not always been true. But we believe it is a potential material development that is should be followed to see if true or not. This week, the Abu Dhabi airport denied any Houthi attack, rather, coincidentally, they had an incident with a supply vehicle at the airport. You can never tell what the real story is in the Middle East, but if you take the extra 20 seconds to read part 2 of the Abu Dhabi airport tweets, it sounds like a non-denial denial. A good example of the reporting that makes it a non event is Reuters [\[LINK\]](#), who wrote that UAE denied reports of a drone attack on the airport, and that “‘Operations at the airport are business as usual,’”. Forbes wrote [\[LINK\]](#) “*The Houthi movement – which seized the Yemeni capital Sanaa in early 2015 but whose claim to power is not recognised by most countries – said air traffic to and from Abu Dhabi airport was disrupted following the assault. Officials in the UAE. Subsequently denied there had been an attack, although Abu Dhabi Airport did tweet that there had been an incident at the airport at 4pm on Thursday, caused by a supply vehicle. The airport said it did not affect the airport’s operations or the schedule of incoming and departing flights*”. Forbes had a link to the tweet, but their link only linked to part 1 of 2 for the Abu Dhabi airport. We looked at several stories on this drone attack and Forbes was not alone in referencing only this part 1 of 2 for the tweets. It seems like everyone either didn’t read part 2/2 of the tweet or chose to ignore it. We have seen too many instances of he said/she said and thought it its such a non event, why does the Abu Dhabi airport need to “continue to monitor the situation” with “the concerned authorities” and “further updates will be made available in due course”. We wonder what do they have to monitor and who are the concerned authorities. Maybe it was

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*just a truck going on fire or something like that, but if so, what are they monitoring? It really sounds like a non-denial denial or at least it could be”.*

### **Guess UAE won't be loaning Patriots to the Saudis**

We have to believe the UAE won't be lending/allocating any Patriot missiles to Saudi Arabia in light of the Houthi attacks. Last week's (Jan 16, 2022) Energy Tidbits memo noted the FT report [\[LINK\]](#) that Saudi Arabia is running out of Patriot missiles and could run out in a matter of months unless it can replenish from regional countries such as the UAE since its normal supply from the US “has been complicated by bipartisan criticism of the conduct of its war in Yemen, as well as concerns about human rights abuses under Prince Mohammed's leadership. Our December 12, 2021 Energy Tidbits noted the WSJ Dec 7 report [\[LINK\]](#) “Saudi Arabia Pleads for Missile-Defense Resupply as Its Arsenal Runs Low. Saudi Arabia is running out of the ammunition it uses to defend against weekly drone and missile attacks on its kingdom and is urgently appealing to the U.S. and its Gulf and European allies for a resupply, U.S. and Saudi officials said.” Yesterday FT's report was similar with the added note that it will run out of missiles within “months”. FT wrote ““Saudi Arabia has appealed to regional countries for help to replenish the depleted stock of interceptor missiles for its US-made Patriot air-defence system as Yemeni rebels ramp up rocket and drone strikes on the kingdom. A senior US official said the Biden administration supported the moves to source missiles from the Gulf amid concerns that Riyadh's Patriot stocks could run out in “months” given the current rate of attacks on the kingdom by Houthi rebels. The US has to greenlight transfers of the interceptors.”

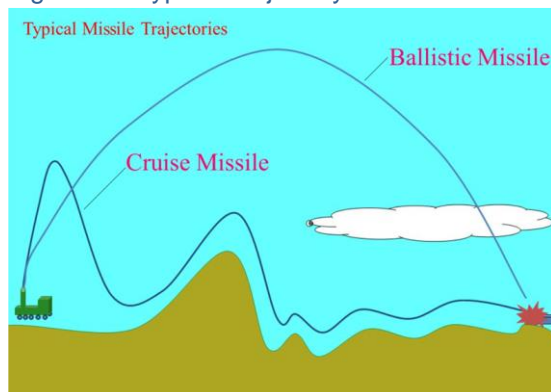
### **Saudi/UAE missile defense were primarily designed against ballistic missiles**

Our Thursday tweet also had the reminder that the THAAD and Patriot missile defense systems were designed for ballistic missiles. This is why the UAE ambassador comments were significant. He said the Houthis shot ballistic missiles, cruise missiles and drones at the UAE. We said we suspect it was either a drone or cruise missile that got thru the UAE missile defense system. And this is the issue that adds the risk. The key Saudi/UAE defense systems are either Patriot missiles or THAAD and both were designed for ballistic missile trajectory (short, mid and long range, like the infamous SCUD missiles. They weren't designed to focus on the trajectory of a cruise or drone. Our July 29, 2018 Energy Tidbits also wrote “We recognize that the drone will not have the same speed as a cruise missile, but it interesting to see some of the recent stories that Israel Patriot missiles didn't take down some Syrian drones. Its hard to know what happened this week at the Abu Dhabi airport, but it brought back reminders of the Houthis claimed cruise missile attack last year. Our Dec 3, 2017 Energy Tidbits noted the then claim by the UAE that it had shot a cruise missile at the UAE. At that time we noted that the “UAE is different than Saudi Arabia – it has a much more advanced missile defense system. It has patriot missiles and the THAAD missile defense system that should take out any ballistic missile a long way from reaching the UAE. UAE also has patriot missile defense system to destroy missiles, but closer to the final target.” “As everyone knows, there are very different flight paths for a cruise and a ballistic, and

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THAAD is designed to counter ballistic missiles. The below illustration shows the typical trajectory for a cruise vs ballistic missile.”

Figure 31: Typical Trajectory For Cruise Vs Ballistic Missile



Source: Northwestern Polytechnical University

### UAE stop all fling of drones and light sports aircrafts

There was another indicator for the risk of drones yesterday, when the Emirates New Agency (WAM) reported [\[LINK\]](#) that the Ministry of Interior “is currently stopping all flying operations for owners, practitioners and enthusiasts of drones, including drones and light sports aircrafts. This encompasses also air and sail spots. This was put in place in coordination with the General Authority for Civil Aviation and in line with the relative guidelines. The decision came after the misuse spotted recently, not limiting the practice of these sports to the areas identified in the user permits and trespassing into areas where these types of activities are prohibited. The Mol asked individuals and the community to respect the authorities directives namely issued by the Mol, and the General Authority for Civil Aviation, in order to ensure the safety of lives and property, preserving them from unsafe bad practices. Hence, air activities will be suspended as of Saturday, January 22, 2022.”

### Oil – JCPOA, no reports on specific progress but time is running short for deal/no deal

There weren't many specifics reported this week on the JCPOA progress. (i) The US continues to say there has been some progress, but still more to be done. In Biden's first year in review press conference on Wednesday, Biden was asked “If I may ask a quick one on Iran, I just wanted to get your sense of whether the Vienna talks are making any progress, if you still think it's possible to reach a deal for both sides to resume compliance with the Iran nuclear deal, or if it's time to give up on that.” Biden replied “I will do it in reverse. It's not time to give up. There is some progress being made. The P5-plus-one is on the same page. But it remains to be seen.” (ii) Seems like we are talking a matter of weeks for a deal or no deal. On Friday, Bloomberg reported “The timeline everyone has in mind in Vienna talks to revive the Iran nuclear deal is for the “first week, mid-February” and “no more than that,” a senior European Union official says in comments to reporters. \* Some delegations think by that time the 2015 deal's non-proliferation benefits will be irrelevant \* I think we're going too slowly

### JCPOA progress

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*\* We're on the right track for a final agreement \* We'll have an agreement sooner or later."*  
 (iii) Last week's (Jan 16, 2022) Energy Tidbits noted our view "*Feb 11 is more likely the target date, not Biden's 1 year anniversary on Jan 20. It looks like we picked the wrong anniversary date for the significant political data for a return to JCPOA or some sort of deal. In our Dec 12, 2021 Energy Tidbits, we thought Biden would want to push for a deal by Jan 20, which is the 1 year anniversary of his inauguration because he needs some successes to try to offset the bad news on inflation, Omicron, etc. We are probably right in thinking of an anniversary and we should have just thought there would be no way Iran would want to give Biden that satisfaction. But we probably picked the wrong anniversary, and should have picked Feb 11. It was on Feb 11, 1979 that marked the success of the revolution with the Shah overthrown and Khomeini taking control.*" (iv) Iran not for any interim agreement. Yesterday, IRNA noted Iran shot down US reports that Russia had proposed an interim deal to Iran and had done so with US approval. IRNA wrote [LINK](#) "*In reaction to a US media which has claimed that Russia has offered Iran an interim nuclear deal to help revive the JCPOA, an Iranian informed source told IRNA that this report is not confirmed and the interim agreement has never been on Iran's agenda, and Iran accepts only a reliable and lasting agreement. NBC News quoted two senior US officials, one Congressional official, one former US official, and four other people familiar with the discussions as claiming that Moscow, with the US knowledge, had offered Iran to benefit from lifting some sanctions in the face of the imposition of some nuclear restrictions under an interim nuclear deal.*"

#### **Oil – Global crude inventories are below pre-pandemic levels**

The best data point for oil markets remains global oil inventories. And global crude inventories have declined to their lowest levels since 2019. We tweeted [LINK](#) "*Positive #Oil fundamental reminder. "Global crude inventories were at 2.834b bbls as of Jan. 9, near the lowest since October 2019, according to data from analytics firm Kayrros. That compares with 3.090b bbls a year earlier" reports @iamsharoncho. #OOTT.*" On Tuesday Bloomberg released an article commenting on global crude inventories [LINK](#). Global crude inventories as of January 9 were down 266 mmb at 2.834bn bbl, near the lowest levels since October of 2019; a year ago, inventories were at 3.090bn bbl. There have been consistent draws to onshore crude stockpiles throughout all of 2021, led by declines in the US and China. China stockpiles on Jan 9 were 923 mmb vs 1.006b bbl in Jan 2021, the smallest level since 895 mmb in Feb 2020. Japan's stockpiles are at an all time low, down to 325 mmb on Jan 9 and -27 mmb YoY from 352 mmb on Jan 10, 2021. Our Supplemental Documents package includes the Bloomberg report.

**Global crude inventories near 2019 lows**

#### **Oil – Vortexa est 105.34 mmb at Jan 21, +13.02 mmb WoW vs revised up Jan 14**

Note that we are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 2pm MT yesterday and that these estimates get revised over the weekend and next week. Note we do not check daily for the revisions so our comments are compared to the Jan 14 and Jan 7 estimates that were posted on Sat Jan 15 at 1pm MT. (i) No surprise, there was a massive +19.6 mmb revision to the Jan 14 estimates. In last week's (Jan 16, 2022) Energy Tidbits, we noted that we were cautious in the Jan 14 data as it showed a massive 27.42 mmb WoW drop and that we can't rely on one week data due to revisions. It looks that was the case. Last week's estimate looked way too low and out of line with the recent trends. It looks like they missed some tankers in the floating storage for Jan 14 ie. maybe the tankers just moved a bit. (ii) When we look at the new Jan 21 floating

**Vortexa floating storage**

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storage of 105.34 mmb as of 2pm MT, it looks to fit to the trend of some creeping higher floating storage. We still think this is a trend we should watch. But keep in mind floating storage is the smallest percentage of total oil storage so it isn't a big oil risk indicator if it holds to somewhere around 100 mmb. (iii) As of 2pm MT Sat, Bloomberg has posted a build in Vortexa crude oil floating storage as of Jan 21 at 105.34 mmb, which is +13.02 mmb from the materially upwardly revised Jan 14 of 92.32 mmb. Note Jan 14 was originally estimated at 72.72 mmb as of Sat Jan 15 at 1pm MT. (iv) There was a big upward revision to Jan 14, and an immaterial revision to Jan 7 from those estimates posted last Sat Jan 15 at 1pm MT. At 1pm MT today, Jan 14 was estimated at 92.32 mmb, which is a +19.6 mmb revision to Jan 7 estimates. (v) Jan 21 estimate of 105.34 mmb is down 118.49 mmb from the June 26, 2020 peak of 223.83 mmb. (vi) Jan 21 estimate of 105.34 mmb is +44.45 mmb vs the pre-Covid Jan 20, 2020 estimate of 60.89 mmb. Below is the Bloomberg posted Vortexa crude oil floating storage data for the past two years as was posted yesterday at 2pm MT.

Figure 32: Vortexa Floating Storage Jan 21 Posted on Bloomberg 2pm MT Sat



Source: Bloomberg, Vortexa

Figure 33: Vortexa Estimates Jan 22 2pm MT vs Jan 15 1pm MT

Jan 22, 2pm MT Estimate					Jan 15, 1pm MT Estimate						
FZWWFST	VTXA	Inde	941 S	940	FZWWFST	VTXA	Inde	940	940		
01/20/2020	01/21/2022				01/13/2020	01/14/2022					
1D	3D	1M	6M	YTD	1Y	1D	3D	1M	6M	YTD	1Y
FZWWFST VT...					FZWWFST VT...						
Date	Mid Px				Date	Mid Px					
Fr 01/21/2022	105.34k				Fr 01/14/2022	72.720					
Fr 01/14/2022	92319				Fr 01/07/2022	100.139k					
Fr 01/07/2022	99648				Fr 12/31/2021	101.377k					
Fr 12/31/2021	99274				Fr 12/24/2021	99808					
Fr 12/24/2021	99329				Fr 12/17/2021	94753					
Fr 12/17/2021	97642				Fr 12/10/2021	93011					
Fr 12/10/2021	94770				Fr 12/03/2021	90672					
Fr 12/03/2021	91781				Fr 11/26/2021	100.755k					
Fr 11/26/2021	100.434k				Fr 11/19/2021	113.539k					
Fr 11/19/2021	112.382k				Fr 11/12/2021	110.236k					
Fr 11/12/2021	111.712k				Fr 11/05/2021	111.433k					

Source: Bloomberg, Vortexa

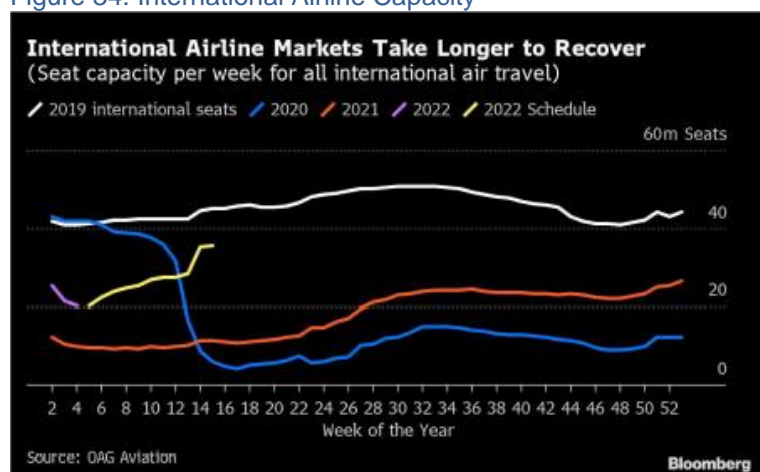
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### Oil – Bloomberg Oil Demand Monitor, Weak international flights lower curbs jet fuel

We recommend reading the weekly Bloomberg terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. Airline travel has continued to weaken since remaining relatively flat over the holiday season. Domestic flights have neared 2019 levels while broader international air travel remains down from pre pandemic levels as countries around the world approach or pass-through peak infection levels of the Omicron variant and associated restrictions. Europe flights have declined since Christmas, widening the gap from 2019 to 34% as of Jan 17; the gap averaged between 20-25% of 2019 levels for November and December. Domestic Airlines expect scheduled capacity to be within 1% of 2019 levels by March 21. Omicron is expected to delay the recovery of fuel demand in Q1/22 but should see demand begin to rally in Q2/22 to near the 5 yr average. In Asia, seat capacity remains 22% below 2019 levels despite strong domestic markets, weak international travel is responsible for the widening of the gap. Congestion levels of the 13 monitored cities were below 2019 levels, except for London, which was 10% above the equivalent week in 2019. Weakening levels in New York and Los Angeles are attributed to the holiday on Monday. The latest UK data for road fuels sales and vehicle use show an increase from last week, with gasoline sales now down just 21% from 2020 compared to 28% the week prior; fuel demand in the UK remains well below the surge in early December that was withing 5% of 2019 levels. US gas demand as of Jan 7 was down 9.5% vs 2019. Refinery utilization across the US was down 7.7% compared to 2019 for the week ended Jan 7; all refinery regions posted decreases with the largest deviation from US Midwest refineries of -3.8% vs 2019. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

### Bloomberg's Oil Demand Monitor

Figure 34: International Airline Capacity



Source: Bloomberg

### Oil – Eurocontrol update: Omicron leads to continued air travel decline in Europe

European flights have continued to drop as a result of the Omicron variant. Eurocontrol updated its Daily Traffic Variation of member states [\[LINK\]](#) and it shows that the seven day moving average for all flights in Europe was down -35.1% from 2019 levels. This marks the widest gap since July 2021. On January 13 Eurocontrol released an updated assessment of European air travel that suggested the Omicron variant has widened the gap. Our January

### Eurocontrol air traffic update

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16 Energy Tidbits memo noted, “On January 12 the 7-day moving average for air traffic was -26.3% from 2019. This is the fourth consecutive day the measure has dropped, and it is the lowest so far of the year in 2022. Intercontinental flows (flights to/from Europe) are at -31% vs 2019 on Jan 12. Domestic air traffic in Europe is down -39% vs 2019 while the US, China and the Middle East are down -21%, -24% and -13% vs 2019 respectively. The Italy posted the biggest decline in flights for the first two weeks of 2022, down 36% while the UK and Spain were down 33% and 30% respectively; Germany was down 15% from 2019.” The new variant continues to deter travel by air around the world.

Figure 35: Eurocontrol: Flights since Jan 2021



Source: Eurocontrol

**Oil – December truck tonnage +1% MoM, up 1.4% YoY**

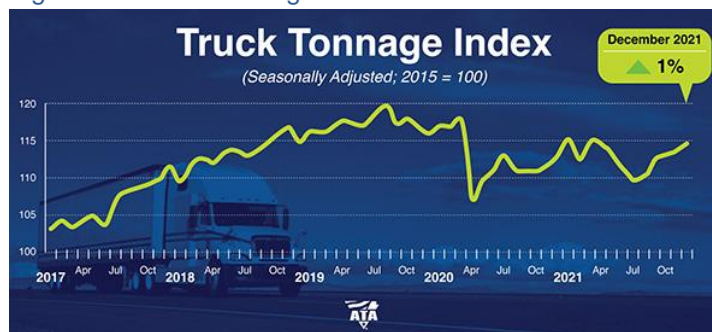
Demand for truck haulage continues to grow, but supply shortages are still an obstacle for the industry. Truck tonnage was up during December for the fifth consecutive month, but it is worth noting that the index fell by 4.6% from April to July so not quite back to the levels observed in 2020. The American Trucking Association released its seasonally adjusted Truck Tonnage Index for December on Tuesday [\[LINK\]](#). December observed a 1% increase MoM from November, after increasing 0.5% last month. It was the largest gain since May but Chief Economist Bob Costello noted, “December’s gain was the fifth straight totaling 4.4%. In December, tonnage reached the highest level since March, but it was still 2.7% below the pre-pandemic high. This is likely due to the fact ATA’s data is dominated by contract freight. Contractor truckload carriers operated fewer trucks in 2021 compared with 2020 and it is difficult to haul significantly more tonnage with fewer trucks. But overall, we have seen a nice trend up that is reflective of a still growing goods-economy.” The index is up 1.4% YoY from December 2020, with a consecutive YoY gain. Trucking serves as a barometer of the U.S. economy, representing 72.5% of tonnage carried by all modes of domestic freight transportation, including manufactured and retail goods. Trucks hauled 11.84 billion tons of freight in 2019. Motor carriers collected \$791.7 billion, or 80.4% of total revenue earned by all transport modes. Our Supplemental Documents package includes the ATA release.

**Truck tonnage index +1.4% YoY in December**

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Figure 36: Truck Tonnage Index



Source: ATA

### Oil & Natural Gas – TIPRO Texas oil natural and gas jobs up for 8<sup>th</sup> consecutive month

No one should be surprised that high oil and natural gas prices continues to drive increasing Texas oil and gas employment. The Texas Independent Producers and Royalty Owners Association (TIPRO) updated their employment figures for the Texas upstream sector for December [LINK](#). The release noted that employment for December totalled 188,700, marking an increase of 3,000 jobs from November. It was the 8<sup>th</sup> consecutive month of job growth in the industry since April. The release stated, “Texas upstream employment in December 2021 represented an increase of 27,800 positions compared to December 2020, reflecting a rise of 26,500 jobs in the services sector and increase of 1,300 jobs in oil and natural gas extraction.” There has been strong job posting data for December in upstream, midstream, and downstream sectors, showing a continued demand for talent in the Texas oil and natural gas industry. From the release “Oil and natural gas employment continues to rebound, providing quality, high-paying jobs to Texans throughout the state, and we expect that trend to continue. These employment opportunities also span across a spectrum of occupations, from laborers and roustabouts to software developers and electrical engineers,” said Ed Longanecker, president of TIPRO. “We believe increasing global demand will outpace production as economic conditions improve, and oil inventories could hit their lowest level in over two decades this summer, likely driving commodity prices higher and accelerating exploration and production activity in the state, if the market demands it.” Our Supplemental Documents package includes the TIPRO release.

**TIPRO December jobs update**

### Oil & Natural Gas – RBN releases top 10 predictions for 2022

On January 16, RBN posted a good blog, “Top 10 RBN Energy Prognostications For 2022 – Year Of The Tiger, Encore Edition” [LINK](#), that provides some great insight into RBN’s outlook for 2022. While there are 10 outlooks, we chose to highlight the predictions that we are most interested in as follows: (i) RBN forecasts that E&P’s will boost crude production more than what is expected; crude production was down in 2020 by ~0.1 mmb/d in 2021 as E&Ps sought to use their higher revenues to maintain generous rewards to shareholders and holding back on the drilling new wells. RBN believes that the EIA STEO is too conservative in their estimate that crude production in the US will remain at 11.9 mmb/d and forecasts production to average 12.2 mmb/d in 2022; 3 factors are responsible for the difference: increased drilling by private companies, increased productivity in the industry and additional drilling by all majors. (ii) RBN believes there will be natural gas capacity constraints in the

**RBN: 2022 outlook**

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Permian and Appalachia basins. Both have suffered from capacity constraints in the past and RBN predicts severe capacity constraints and wider basis differentials as production increases outpace the current pipeline capacity in both regions. (iii) Natural gas storage won't return regardless of increased renewable and LNG expansion and. Since the shale boom, gas storage build out has only made sense for companies with seasonal operating needs for winter supplies – i.e utility companies. As gas production continues to grow, the summer-winter differential remains low and there is still an overhang of gas storage capacity. Their remains many ways for LNG and renewable operators to manage their gas supplies without taking on expensive fixed costs of gas storage. (iv) Crude oil differentials will remain low following the 2021 overbuild in Permian leaving the market with excess capacity. Oil differentials were crushed with WTI-Midland averaging \$0.45/bbl over Cushing, way below the transport costs on the pipelines. While production is expected to increase, overcapacity across the nation will continue to squeeze differentials for the next year or two. (v) Waves of deals are coming to exploit public companies' energy transition optics. In the relentless effort to 'green up' their portfolios, there are likely to be many examples of companies dressing up traditional energy projects by using renewable sources; TC Energy's announcement it would power Keystone XL with only renewable sources. There is likely greater profitability for public companies in structure transitions than cleaning up the air. Our Supplemental Documents package includes the RBN blog

#### **Oil & Natural Gas – CAPP forecasts Canadian upstream capex +\$6.0 YoY to \$32.8b**

No one was surprised to see the Canadian Association of Petroleum Producers (CAPP) forecast for 2022 capital spending [\[LINK\]](#). High oil and natural gas prices and low debt are going to inevitably lead to increased capex. CAPP expects spending to increase 22% over 2021 to \$32.8b for 2022. Spending on Canadian energy is rising as U.S. oil prices surge to their highest in seven years. West Texas Intermediate futures are trading at more than \$85 a barrel and natural gas up about 60% in the last year amid an energy demand recovery from the Covid-19 pandemic. This would mark a consecutive year of significant increases in capital spending. \$21.2bn of this is expected to be invested in conventional, up from \$18.1bn in 2021 and \$11.6bn is expected for oil sands which is a large increase over \$8.7b in 2021. CAPP warns that Canada is still losing market share to other energy producing regions; Canada was formerly viewed as a top tier energy investment region, attracting 10% of total global upstream oil and natural gas upstream development. CAPP expects that Alberta will see the largest increase in spending, being up \$4.8bn to \$24.5bn. Saskatchewan and BC are expected to see \$2.7bn and \$4.1bn of investment in O&G in 2022 while offshore investment in Newfoundland is forecasted to remain relatively flat at \$1.6bn, up from \$1.5bn last year. Our Supplemental Documents package includes the CAPP release.

**CAPP 2022  
Capital Spending  
forecast**

#### **Oil & Natural Gas – Investors are happy to see Brett Herman return to run Lucero**

Canadian oil and gas investors were pleased to see the PetroShale Jan 13 release "*PetroShale Inc. Announces Appointment of New Management Team, Board Appointment, Oversubscribed \$54.5 Million Equity Financing, 2022 Capital Budget and Production Guidance and Proposed Name Change to Lucero Energy Corp*" [\[LINK\]](#). No surprise, the shares popped >50%. The key for investors is that Lucero Energy's new management team will be led by Brett Herman, who has a strong track record of successfully building quality E&P companies in Canada and in building investor trust/confidence in him to execute on his plans. Brett's most recent leadership was in building TORC Oil & Gas Ltd. from zero

**TORC's Brett  
Herman is back**

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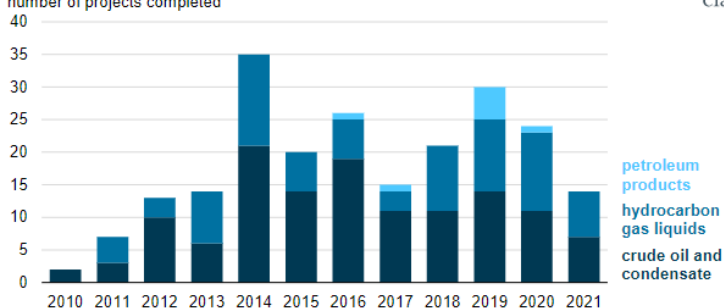
production to >28,000 boe/d of quality light oil assets. Our Supplemental Documents package includes the PetroShale release.

**Oil & Natural Gas – Multiple natural gas pipeline projects completed in 2021**

On Wednesday, the EIA posted a good reference blog titled “*In 2021, 14 petroleum liquids pipeline projects were completed in the United States*” that provides a good recap the new petroleum liquids pipeline projects both completed and announced in 2021. In 2021, 14 petroleum liquids pipelines were completed in the US; 6 projects were new pipelines, 5 were expansions of existing systems, two projects reversed the commodity flow within the pipeline and one project changed the commodity carried by the pipeline. There were 7 crude pipelines completed this year and the other 7 were hydrocarbon gas liquids pipeline projects. During 2021, 11 projects were announced, and 2 projects were listed as under construction. An additional 10 projects were permanently canceled, and 5 projects were put on temporary hold at the end of 2021. The notable completions in 2021 were Enbridge’s Line 3 and Line 61, both expansion projects that carried crude from Alberta to Illinois and Wisconsin to Illinois respectively. The Capline Reversal project reversed the pipeline direction to south flowing with the crude originating in Illinois and flows going down to Louisiana. The Dakota Access Pipeline Expansion project was completed in 2021 which increase the pipeline capacity by 0.18 mmb/d through modifications and upgrades at pump stations. Tallgrass Energy and Bridger Pipeline announced the Seahorse Pipeline; the new project stretches 700 miles from Oklahoma to Louisiana with 0.8 mmb/e capacity. Our Supplemental Documents package includes the EIA Pipeline Projects Tracker. [\[LINK\]](#)

**EIA Pipeline Projects Tracker**

Figure 37: US Petroleum Liquids Pipeline Projects 2010-2021  
number of projects completed cia'



Source: EIA

**Electricity – BC record breaking electricity demand in summer & winter**

When we saw the BC Hydro electricity recap of 2021 on Thursday [\[LINK\]](#), we couldn’t help think about Trudeau’s COP26 speech. BC Hydro noted it was a record-breaking year for electricity demand in British Columbia. BC hydro reported more record peak system loads in 2021 than ever before in both summer and winter. In Trudeau’s COP26 speech he clearly linked the fire that wiped out Lytton to climate change. He led off that speech “*Hello. I am pleased to represent Canadians in this historic meeting. In Canada, there was a town called Lytton. I say “was” because on June 30, it burned to the ground. The day before, the temperature had hit 49.6 degrees Celsius, the hottest ever recorded in our country. Canada is warming, on average, twice as quickly as the rest of the world.*” We don’t recall him ever linking or talking about the BC cold in his push to Net Zero. Back to BC Hydro, they noted

**Record electricity consumption in BC**

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that while they are traditionally a winter season peaking utility company, extreme weather is driving higher summer consumption; BC hydro experienced record summer and winter consumption, a trend that is expected to continue moving forward. Summer 2021 saw record temperatures and BC hydro experienced 19 of their top 25 all time summer daily peak records. The winter holiday season also saw extreme weather with a sustained cold and heavy snow throughout BC; overall BC hydro has experienced 11 of its top 25 all time daily peak records in the winter. The report notes that peak demand has evolved since the onset of the pandemic; in 2021 peak load has built up more gradually throughout the day that suggests shifting working patterns and colder weather than average. Climate models suggest a warming trend that will continue in the years to come, indicating demand for electricity will increase year-round. BC Hydro plans to develop an adaptive capacity to continue to meet consumer needs in the face of uncertain weather forecasts. Our Supplemental Documents package includes the BC Hydro report.

**Energy Transition – BlackRock “we will not survive with the society we are accustomed without hydrocarbons right now, we need to rapidly admit that”**

There were some bearish comments on not being ready for the energy transition and then also some very bullish comments for oil and gas from BlackRock CEO Larry Fink on Tuesday in his CNBC Squawk Box interview on his annual letter to CEOs. We recommend reading the transcript to his CNBC interview as well as his annual letter to CEOs. (i) Fink makes a clear statement that the energy transition isn't ready for prime time (not how he described it) and fit to our long standing view the Energy Transition will take longer, be a bumpy road and cost a lot more than the aspirations. But Fink's comments on CNBC were more descriptive than the annual letter. (ii) Fink says can't live without hydrocarbons. On Tuesday, we tweeted [\[LINK\]](#) *“we will not survive with the society we are accustomed without hydrocarbons right now, we need to rapidly admit that” @BlackRock CEO Fink to @AndrewSorkin @SquawkCNBC re his annual letter to CEOs. bullish for #Oil #NatGas stocks. #OOTT #MacronMoment”*. (iii) Time for leaders to get honest and tell people energy costs are going higher. One of our criticisms of pro Energy Transition leaders is that their support for the energy transition is because energy won't cost more ie. not being honest on the cost of energy during the energy transition. Fink clearly states this higher cost deception must end Fink wrote *“We need to be honest about the fact that green products often come at a higher cost today. Bringing down this green premium will be essential for an orderly and just transition.”* (iv) *“And any plan that focuses solely on limiting supply and fails to address demand for hydrocarbons will drive up energy prices for those who can least afford it, resulting in greater polarization around climate change and eroding progress.”* (v) Are not selling oil and gas stocks as a policy, *“Divesting from entire sectors – or simply passing carbon-intensive assets from public markets to private markets – will not get the world to net zero. And BlackRock does not pursue divestment from oil and gas companies as a policy.”* There is much more in the Fink letter and CNBC interview. (vi) One other specific area that needs work because it is significant to reducing emissions is carbon capture. On CNBC, Fink said *“We need to find technologies to, to so we can afford the sequestering of carbon.”* Our Supplemental Documents package includes the Fink letter and excerpts from the transcript for the CNBC interview.

**BlackRock, can's survive without hydrocarbons**

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### **Fits our 2022 Prediction #1, leaders admit energy transition isn't working**

In our Dec 12, 2021 Energy Tidbits, we noted what we called our 2022 Prediction #1. At that time we wrote *"Its December and so analysts will soon be coming out with 2022 predictions, so we thought we would beat them with one of our main 2022 predictions. On Thursday, we tweeted [LINK](#) "Time for #2022Predictions. My #1 is more #EnergyTransition #NetZero leaders come out of closet, have a #MacronMoment ie. have "transition" not self inflicted shortage so 2021 energy crisis isn't every year. A return to #EnergySecurity = #Oil #NatGas #LNG strong thru 2030. #OOTT." This should not surprise readers as we have been noting the start of energy transition leaders starting to admit, in a politician's manner, that the energy transition isn't working as per aspirations and energy costs will be a lot higher than aspired. We have said for years that the energy transition will happen, but it will take longer, be bumpy road and cost more than the aspirations. Last week's (Dec 5, 2021) Energy Tidbits wrote on the ADNOC CEO speech There was much more in the speech, which is why we tweeted [LINK](#) "If more leaders have a "Macron Moment" in 2022, maybe COP28 UAE in 2023 can be catalyst for getting down to work on practical, commercial, sustainable energy solutions: pro climate/pro growth? See SAF Group transcript of @SultanAhmedalj8 #ADIPEC keynote. #EnergyTransition #OOTT." We do wonder if we will see more world leaders accept that the energy transition isn't working according to their aspirations and that there is an increasing risk of a decade of energy crisis like seen in Europe in H2/21 unless the world puts in an achievable energy transition plan." We think COP26 will turn out to be turning point, but a turning point to force energy transition leaders into changing their plan. It why we think we will more of the energy transition leaders come out of the closet and admit this in 2022. But what got us to tweet this week was after seeing Saudi Aramco CEO Nasser speech at the WPC in Houston. Nasser said "There is one more thing that can no longer remain unsaid. A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private. They should say it publicly too. I understand their dilemma. Publicly admitting that oil and gas will play an essential and significant role, during the transition and beyond, will be hard for some." So our #1 2022 Prediction is that we will see leaders come out of the closet and admit, in a politician's way, that the energy transition plan needs to be changed. The key result will be that fossil fuels are needed for way longer and the outlook for oil, natural gas and LNG will be stronger thru 2030 and beyond.*

### **Fink changed his tune in June to "we do not have the technology to do all this"**

Fink was likely the most vocal and biggest investor pusher of companies and client investor capital to the energy transition since his annual letter in Jan 2020. Our Jan 19, 2020 Energy Tidbits memo was titled *"BlackRock's New ESG Investing Approach Is A Game Changer To Capital Flows"*. However, he did finally change his tune in June 2021. In our June 6, 2021 Energy Tidbits memo, we wrote *"Our longstanding view is unchanged - we believe the world is being put on a path and that energy transition is happening but that it will take longer, be a bumpy road and cost more than the aspirations. It also means the demise of oil and natural gas will not be as fast as hoped for by the energy transition and policymakers aspirations. On Wed, BlackRock CEO Larry Fink spoke at a US sellside conference and he made several*

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*comments that are in line with our thesis. Don't forget Fink has been one of the global financial leaders supporting and pushing the energy transition view. Fink isn't talking about anything new, but hopefully the policymakers will listen. Fink says several comments on this thesis, but concluded "The last thing I just want to say and to link in ESG&E with the question on inflation, let's be clear. If we rush this and if our solution is entirely just to get a green world, we're going to have much higher inflation, because we do not have the technology to do all this yet to have it equivalent to the cheapness of hydrocarbons. And so that's going to be a big policy issue going forward too. Are we going to be willing to accept more inflation if the inflation is to accelerate our green footprint? And that's going to be a big policy question". Note there are numerous other relevant Fink comments. Our Supplemental Documents package includes Fink's numerous comments on the energy transition.*

### **Kerry, 50% of emissions cuts to come from future technology**

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

### **Fink sounds like Putin warns we'll back in caves if abandon natural gas**

*One of our first thoughts was that Fink sounds like Putin, when Fink said "'we will not survive with the society we are accustomed without hydrocarbons right now.' It reminded us of an item from our Nov 24, 2019 Energy Tidbits on Putin's comments on trying to get rid of oil and natural gas. In that memo, we wrote "Last week's (Nov 17, 2019) Energy Tidbits memo noted the FT report [\[LINK\]](#) the European Investment Bank was phasing out lending to fossil fuel projects by 2021 including natural gas. We tend to agree with Putin that if the environmental push means puts natural gas at risk along with coal, then there is a real risk to the future reliability of the electricity supply around the world. We just wouldn't describe the way he did. On Wed, we tweeted [\[LINK\]](#) "How could i not note Putin's comments "discarding the purest hydrocarbon like gas seems utterly bizarre", re the complete abandonment of*

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*hydrocarbons "it seems to me that the human race may find itself again in caves". Hope not!" Putin had a lengthy Q&A at the Russian Investment Forum on Wed. And he jumped in on the potential abandonment of natural gas. Putin said "In this sense, neglecting a pure hydrocarbon such as natural gas is, in my opinion, uncalled for, because it is the purest hydrocarbon out there. When ideas like this are promoted, it sounds like humanity will once again end up in caves, but this time because it will consume nothing, if all energy is reduced to zero, or if we rely solely on solar energy or wind energy or tidal energy. Today's technology is such that without hydrocarbons, nuclear energy or hydropower, humanity will not be able to survive or preserve its civilisation. This must be taken seriously or, as people say, in an adult-like manner."*

### Energy Transition – EIA reminds hydrogen is an energy carrier, not an energy source

On Friday, we tweeted [\[LINK\]](#) *"takes more energy to produce #hydrogen (by separating it from other elements in molecules) than hydrogen provides when it is converted to useful energy" "an energy carrier that must be produced from another substance". nice to see @EIAgov give facts not fiction. #OOTT #NatGas.*" This follows the new Jan 20 update from the EIA "Hydrogen explained". Hydrogen is considered one of the must be a significant contributor to any and all plans to get to Net Zero. Our view is unchanged, we understand why the Net Zero side pushes it for items like heavy industry, but it seems to get overlooked that hydrogen is not an energy sources like natural gas or solar. Rather it is an energy carrier. The EIA stuck to the basics on hydrogen and didn't politicize their message in their Jan 20 update on hydrogen. The EIA explained this concept clearly. *"Hydrogen is an energy carrier Energy carriers allow the transport of energy in a usable form from one place to another. Hydrogen, like electricity, is an energy carrier that must be produced from another substance. Hydrogen can be produced—separated—from a variety of sources including water, fossil fuels, or biomass and used as a source of energy or fuel. Hydrogen has the highest energy content of any common fuel by weight (about three times more than gasoline), but it has the lowest energy content by volume (about four times less than gasoline). It takes more energy to produce hydrogen (by separating it from other elements in molecules) than hydrogen provides when it is converted to useful energy. However, hydrogen is useful as an energy source/fuel because it has a high energy content per unit of weight, which is why it is used as a rocket fuel and in fuel cells to produce electricity on some spacecraft. Hydrogen is not widely used as a fuel now, but it has the potential for greater use in the future".* Our Supplemental Documents package includes the EIA Jan 20 update Hydrogen explained. [\[LINK\]](#)

**Hydrogen is an energy carrier not a source**

### Energy Transition – 1<sup>st</sup> hydrogen carrier is from brown coal

The big hydrogen news this week is a good example of the EIA reminder that hydrogen is an energy carrier, not an energy source. This first liquefied hydrogen carrier is using hydrogen from brown coal ie its coal fired. This is only a pilot at this stage, but they say they get to clean hydrogen at the commercial stage when they will put in carbon capture and storage. On Friday, the Hydrogen Energy Supply Chain (HESC) announced [\[LINK\]](#) *"Dawn of Australia's Hydrogen Industry" "Today's arrival of the world's first liquefied hydrogen carrier, the Suiso Frontier, in Victoria marks the success of the Hydrogen Energy Supply Chain (HESC) Pilot Project and the dawn of Australia's hydrogen industry. HESC's vision is to produce carbon neutral hydrogen through extraction from a mix of Latrobe Valley coal and biomass, capturing and storing CO2 via the CarbonNet Project and optimising energy*

**Hydrogen from brown coal**

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efficiency in the HESC supply chain. The 225,000 tonnes of carbon neutral liquefied hydrogen (LH2) produced by HESC in a commercial phase will contribute to reducing global CO2 emissions by some 1.8 million tonnes per year (equivalent to the emission of about 350,000 petrol-driven cars), while providing valuable infrastructure for other hydrogen projects in the region.” HESC also wrote “The project has the potential to be a game-changer – providing an innovative, economically viable and environmentally conscious solution to producing clean hydrogen safely, through gasification of coal with carbon capture and storage (CCS).” Our Supplemental Documents package includes the HESC announcement.

### Brown coal has about 2x CO2 emissions as natural gas

The EIA FAQ “How much carbon dioxide is produced when different fuels are burned?” [LINK](#) notes “The amount of CO2 produced when a fuel is burned is a function of the carbon content of the fuel. The heat content, or the amount of energy produced when a fuel is burned, is mainly determined by the carbon (C) and hydrogen (H) content of the fuel. Heat is produced when C and H combine with oxygen (O) during combustion. Natural gas is primarily methane (CH4), which has a higher energy content relative to other fuels, and thus, it has a relatively lower CO2-to-energy content. Water and various elements, such as sulfur and noncombustible elements in some fuels, reduce their heating values and increase their CO2-to-heat contents.”

Figure 38: Pounds of CO2 emitted per million BTU of energy for various fuels

Coal (anthracite)	228.60
Coal (bituminous)	205.40
Coal (lignite)	216.24
Coal (subbituminous)	214.13
Diesel fuel and heating oil	163.45
Gasoline (without ethanol)	155.77
Propane	138.63
Natural gas	116.65

Source: EIA

### Energy Transition – Shell CEO biofuels for airplanes is 2-3x more costly

We have to believe the post-Covid long term air travel growth projections will be reduced as air travel becomes more expensive. Airfares will be going higher as airlines incorporate sustainable air fuel (SAF). And that is before any expected carbon or other taxes on regular jet fuel, or other penalties on air travel emissions. The incremental cost impact of SAF won't be material as long as the blending requirement is very low. The biggest booms in air travel have come from lower airfares and opening up major new markets like China. It likely won't have a huge impact given how there are super cheap airfares in places like Europe. But airfares will be higher with SAF. This was clear from Shell CEO van Beurden in his Le Figaro interview on Friday. [LINK](#). Yesterday, we tweeted [LINK](#) “Airfares are going higher for 2020s. “Biofuel for aviation pollutes much less, but it costs 2 to 3 times more than fossil kerosene. It is not competitive, but can become so with public support” @VanBeurdenShell. Big govt subsidies needed. Merci @guillaume\_gui @IvanLetessier #OOTT”. Le Figaro asks if governments are too cautious when it comes to supporting the energy transition? Van Beurden replies “It is up to them to create the energy markets of the future, not to groups

**Biofuels cost 2-3x more than jet fuel**

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*private. Oil and gas have an incredible success, it is very difficult to get away from it. to pass. Biofuel for aviation pollutes much less, but it costs two to three times more than fossil kerosene. It is not competitive, but can become so with public support, as for wind and solar power, who have seen their costs fall drastically in 25 years. The French government is at the forefront, forcing companies airlines to include 1% biofuel from 2022. The European Union is aiming for 5% in 2030, but it would take twice that.”*

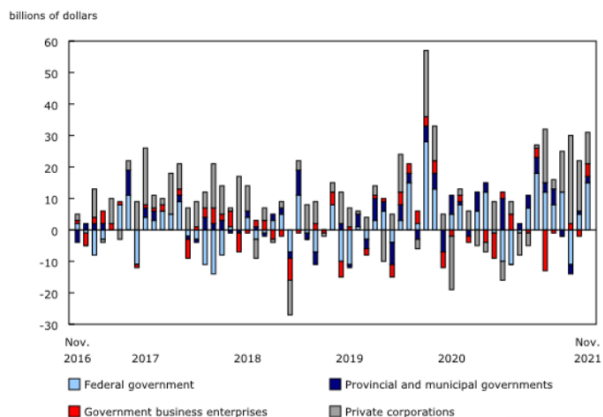
### Capital Markets – Cdn investors passed on Cdn stocks in favor of foreign stocks

We know its not a direct correlation, but the Statistics Canada data is showing Cdn equity investors didn't buy into the oil and natural gas story in 2021 otherwise, they would have been putting more equity into domestic oil and gas stocks and not moved so much money into foreign securities. As a reminder for YTD Nov 30, 2021, the TSX oil & gas E&P index was +88% vs Nasdaq +21%, TSX Composite +19%, and Dow Jones +13%. Statistics Canada released Canada's international transactions in securities for November 2021 on Jan 17 [\[LINK\]](#). For the YTD Nov 30, 2021, Canadian investment in foreign equity and investment fund shares were \$98 bn, this compares to foreign investment in Cdn equity and investment fund shares of \$29 bn. Foreign investors acquired \$30.1 bn of Canadian securities in November with corporate debt securities and government bonds leading purchases. This marks the largest investment since April 2020 when a record investment was incurred at the outset of Covid. Non-residents added \$31.4 bn of Canadian debt securities to their portfolios in November. Non-resident investors acquired \$8.6 bn of Canadian government debt securities in November, the eighth consecutive month of investment. Over the month, foreign investors reduced their investment in Canadian equity securities by \$1.3 bn following a \$3.5 bn investment in October. Long term interest rates continued their upward trend this month. Canadian investors reached \$17.4 bn of foreign securities in November, up from \$16.6 bn in October. Investment activity was led by acquisitions of US shares and a \$6.1 bn investment in foreign debt securities. The report stated, “Canadian investors added \$7.4 billion of US shares to their holdings in November, following an investment of \$652 million in October. The activity in November focused on shares of large capitalization technology firms and investment fund shares tracking broad market indices. US stock prices, as measured by the Standard and Poor's 500 composite index, were down by 0.8% in November. In addition, Canadian investors purchased \$4.0 billion of non-US foreign shares, after a divestment of \$2.5 billion in October.” Below is a graph illustrating foreign investment in Canadian debt securities.

### International transactions in Cdn securities

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Figure 39: Foreign Investment in Canadian debt securities



Source: Statistics Canada

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

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

@Energy\_Tidbits  
on Twitter

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

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

Look for energy  
items on LinkedIn

### Misc Facts and Figures.

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

#### Canada's star goalkeeper, Stephanie Labbe, is retiring

On Wednesday, Canadian goalkeeper from the Olympic Gold medal Women's Soccer team, Stephanie Labbe, announced she will be retiring from professional sports in April. She tweeted a great 5:39min video [LINK](#) on her thoughts "*it's time to talk about an ending ... but where to begin...*". She is leaving some big boots to fill. Who can forget her performance last summer at the Tokyo Olympics including the nailbiter gold medal shout-out with Sweden. It was tied 2-2, when Labbe stopped the 5<sup>th</sup> Sweden penalty kick. This set the stage for the clutch game winning penalty kick by Julia Grosso. Below is the picture of Labbe stopping the Sweden 5<sup>th</sup> kick.

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Figure 40: Canada/Sweden Gold Medal Shoutout – Stephanie Labbe saves Sweden 5<sup>th</sup> shot



Source: Toronto Star

### Most popular passwords in Russia vs US

We check out TASS for news twice a day and couldn't help see if Russian passwords are different than in the US when we saw the TASS Wednesday report "*Izvestia: the most popular passwords in 2021 are named*". [LINK](#) TASS the most common passwords in 2021 on the Runet were, in order, "qwerty123", "qwerty1", "123456", "a11111", and "123456789". TASS reported "*The service analyzed 35.5 billion unique pairs of logins and passwords, including 250 million shared in 2021. According to the results of the analysis, only 3.5% of passwords turned out to be complex (contained letters, numbers and special characters) and only 16.5% were longer than ten characters.*" There are differences to the most common US passwords [LINK](#) are "123456", "password", "12345", "123456789" and "password1".

### Another NY based TV series, Billions, has a character heart attack on a Peloton

Its been a tough market for many stocks including Peleton that is down 41% since the Dec 9 reboot of Sex and the City, the new "And Just Like That" that had premier include the Big having a heart attack while on his Peloton and dying. The on-air season 6 premiere of "Billions" scheduled for tonight was given an early release on Friday. And surprise, there was another major character getting a heart attack while riding a Peloton. The New York Times reported [LINK](#) "*Another Peloton Heart Attack on TV? 'Billions' Says It's a Coincidence. Peloton's stock dropped last month after the premiere of the 'Sex and the City' reboot, which ended with Mr. Big dying after riding one of the company's bikes. Mr. Big wasn't the only one. In an early scene of the Season 6 premiere of the Showtime white-collar crime drama 'Billions,' a main character on the show, Mike Wagner (played by David Costabile), has a heart attack while riding a Peloton, the high-end stationary bike. Television viewers may well experience déjà vu after seeing the character dismount his Peloton and react to a wave of chest pain amid luxury furnishings. In the premiere episode last month of HBO Max's 'Sex and the City' revival, 'And Just Like That ...,' Carrie's husband, known as Mr. Big (Chris Noth), dies of a heart attack after finishing his 1,000th Peloton ride. One difference in the bizarrely similar plot points is that Costabile's character, an executive at the hedge fund at the center of the show, survives. And when he returns to the office after his heart attack, the show took a chance to address the plot parallel head on. 'I'm not going out like Mr. Big,' Wagner, better*

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*known as Wags, says triumphantly to his employees. Peloton said in a statement that the company had not agreed to the use of its brand or intellectual property on the show, and that it had not provided equipment for the episode. "As referenced by the show itself," the statement said, "there are strong benefits of cardiovascular exercise to help people lead long, happy lives."*

Figure 41: David Costabile as Wags in the Season 6 premiere of "Billions."



Source: New York Times, Showtime

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