

# Energy Tidbits

Nov 14, 2021

Produced by: Dan Tsubouchi

## OPEC: OECD/non-OECD Global Oil Stocks Down 938 Million Barrels Since June 2020 Peak

**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. OPEC highlights global oil stocks down 938 mmb since June 2020 peak: OECD commercial -411 mmb, OECD SPR -46 mmb, non-OECD -320 mmb, and oil at sea -160 mmb. ([Click Here](#))
2. Vitol CEO is latest to see global oil demand back to pre-Covid levels ([Click Here](#))
3. Eni CEO oil demand is rebounding yet “*those who must ensure energy are unable to maintain production at necessary pace*” ([Click Here](#))
4. COP26 President “we have kept 1.5 alive... but I would say that the pulse of 1.5 is weak” ([Click Here](#))
5. Macron says France will work with the EU to “*build a credible strategy for reducing our CO2 emissions*” ie. need a realistic plan ([Click Here](#))
6. Please follow us on Twitter at [\[LINK\]](#) for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [\[LINK\]](#).

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**Natural Gas – Natural gas injection of 7 bcf, storage now -308 bcf YoY deficit**

US natural gas storage is starting winter 282 bcf lower YoY. The EIA reported a 7 bcf injection (vs 10 bcf injection expectations) for the Nov 5 week, which was below the 5-yr average injection of 25 bcf, and above last year’s injection of 8 bcf. Storage is 3.618 tcf as of Nov 5, decreasing the YoY deficit to -308 bcf, from 313 bcf last week and storage is 119 bcf below the 5-year average vs 111 bcf below last week. The EIA STEO estimates Oct 31/21 storage at 3,646.1 bcf, which is 282 bcf lower YoY vs 3,928.5 bcf at Oct 31/20. Below is the EIA’s storage table from its Weekly Natural Gas Storage Report [\[LINK\]](#).

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

Figure 1: US Natural Gas Storage

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	11/05/21	10/29/21	net change	implied flow	Year ago (11/05/20)		5-year average (2016-20)	
					Bcf	% change	Bcf	% change
East	897	899	-2	-2	943	-4.9	915	-2.0
Midwest	1,075	1,071	4	4	1,126	-4.5	1,096	-1.9
Mountain	213	213	0	0	243	-12.3	222	-4.1
Pacific	258	256	2	2	322	-19.9	304	-15.1
South Central	1,175	1,172	3	3	1,293	-9.1	1,201	-2.2
Salt	324	320	4	4	345	-6.1	328	-1.2
Nonsalt	850	852	-2	-2	948	-10.3	873	-2.6
Total	3,618	3,611	7	7	3,926	-7.8	3,737	-3.2

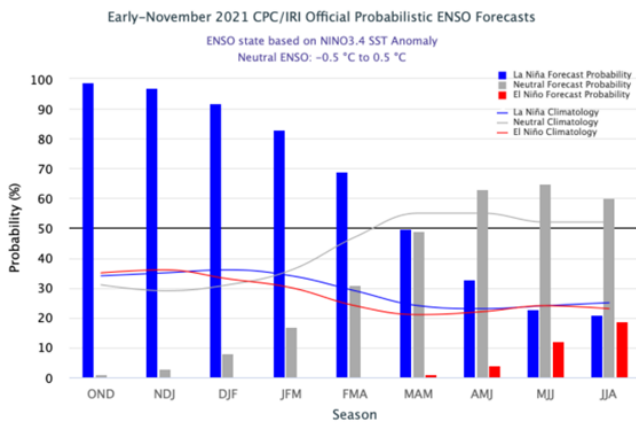
Source: EIA

**Natural Gas – 100% probability for La Nina/Neutral for winter season**

The CPC/IRI released its updated monthly El Nino/La Nina outlook, which is issued on the 2nd Thurs of every month [\[LINK\]](#). Its November and we are now close to winter and the El Nino/La Nina focus turns to the peak winter period of Dec/Jan/Feb. In the past month, La Nina conditions have emerged as indicated by below average sea surface temperatures. The concern is always if its an El Nino winter that bring the risk (not 100% though) of a warm winter. Whereas most associate La Nina winters with the probability for a colder winter, although that is also far from 100% correlations as noted in the Tidbit below. This new Dec/Jan/Feb probability forecast is 92% La Nina (was 87%), 8% Neutral (was 13%) and 0% El Nino (was 0%).

**100% La Nina/Neutral conditions winter season**

Figure 2: Early-Oct NOAA El Nino/La Nina Outlook



Source: NOAA

**La Nina winters are unpredictable**

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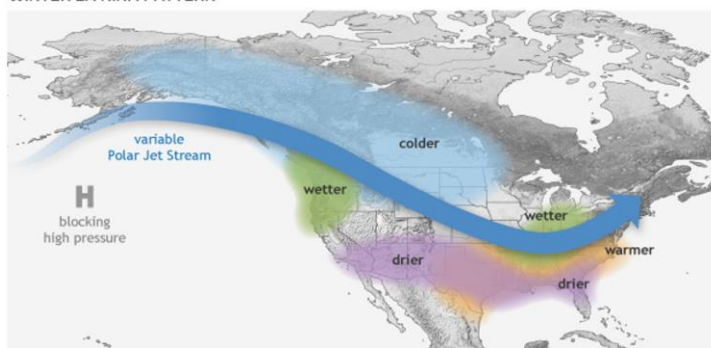
### Natural Gas – Typical La Nina winter impacts

No surprise that most of the forecasts for winter are calling for a colder than normal winter in the US Midwest, Plains and in western Canada. Its because of the La Nina conditions for the winter. That is the normal expectations. On July 27, 2021, NOAA updated its “How El Nino and La Nina affect the winter jet stream and U.S. climate” [\[LINK\]](#), which included the below graphic for a typical La Nina winter. NOAA wrote “These maps illustrate the typical impacts of El Niño and La Niña on U.S. winter weather. During La Niña, the Pacific jet stream often meanders high into the North Pacific and is less reliable across the southern tier of the United States. Southern and interior Alaska and the Pacific Northwest tend to be cooler and wetter than average, and the southern tier of U.S. states—from California to the Carolinas—tends to be warmer and drier than average. Farther north, the Ohio and Upper Mississippi River Valleys may be wetter than usual. During El Niño, these deviations from the average are approximately (but not exactly) reversed”. Our Supplemental Documents package includes the NOAA blog.

Typical La Nina winter

Figure 3: Typical Winter La Nina Pattern

WINTER LA NIÑA PATTERN



Source: CPC

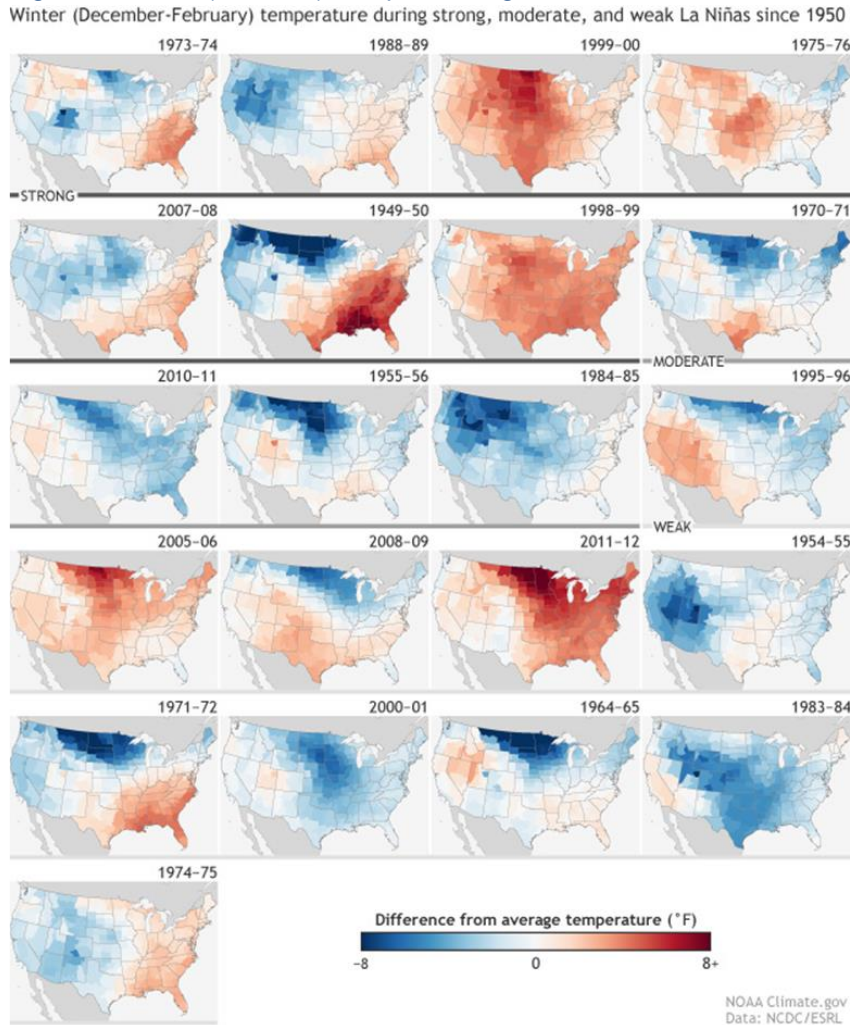
### Natural Gas – But La Nina correlations to cold winters are far from 100%

La Nina winters are more often normal to colder than normal than a warmer winter. But we remind of a Oct 6, 2017 NOAA brief “Temperature patterns during every La Niña winter since 1950”, which looked at all La Nina winters from 1950 thru 2016/17, classified them as strong, moderate or weak La Ninas, and then showed the average winter (Dec thru Feb) temperature map. We checked this weekend and the link still works [\[LINK\]](#). The bottom line is that it may slightly favor a normal to colder than normal winter, but there have some been near record high temperature La Nina winters. Below is the NOAA graphic.

La Nina winters are unpredictable



Figure 4: Winter (Dec-Feb) Temp in Strong, Moderate And Weak La Ninas 1950 - 2017



Source: CPC

**Natural Gas – More Alberta Clippers typically in La Nina winters**

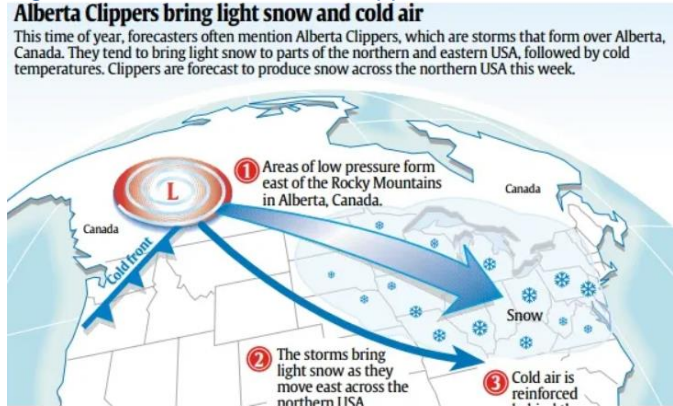
On Thursday, AccuWeather [\[LINK\]](#) reported Alberta Clipper to spread snow across the Midwest. AccuWeather wrote “Cold air will descend from Canada into the North Central states and bring another round of snowfall to the Dakotas, Minnesota and Great Lakes region this weekend,” said AccuWeather Meteorologist Alyssa Smithmyer. The storm system, known as an Alberta clipper, will move southeastward through North Dakota and into Minnesota on Saturday. To the north of where the clipper tracks, snow will fall, with a mix of rain and snow to the south. Most locations are expected to be above freezing, which will limit accumulation. However, cities such as Grand Forks and Fargo, North Dakota are likely to be near or below freezing, and 1-3 inches of snow could fall.” USA Today’s What is an Alberta Clipper? [\[LINK\]](#) writes “An Alberta Clipper is an area of low pressure that generally forms over the province of Alberta, Canada, east of the Rocky Mountains. They develop east of the Rockies because air flowing east over the mountains creates favorable conditions for these types of storms to develop. Once an Alberta Clipper forms, it usually moves very rapidly to the southeast across the USA’s northern Plains and then to the east off the mid-Atlantic

**More Alberta Clippers in La Nina winters**

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coast.” As noted earlier, this is a La Nina winter and Alberta Clippers tend to occur more often in La Nina winters when the Jet Stream is pushed south across the Great Lakes.

Figure 5: What is an Alberta Clipper?



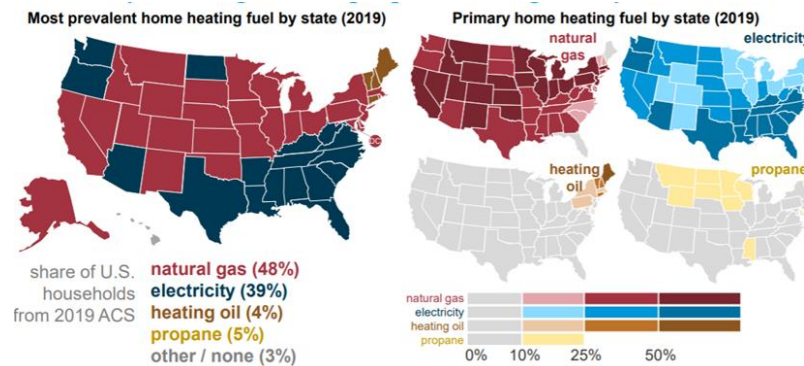
Source: USA Today

**Natural Gas – 48% of US Homes are heated with natural gas**

One other reminder on winter temperatures and natural gas is that 48% of US homes are still heated with natural gas. On Nov 8, the EIA released its Winter Fuel Outlook [\[LINK\]](#) and the headline from the report was that Americans are facing much higher home heating bills no matter where they are living. The outlook also some good reference data such as the below chart that shows home heating by fuel. The EIA estimates 48% of US homes are heated by natural gas. The EIA forecasts price increases for natural gas to increase by 50% if winter temperatures are 10% below average, 30% if temperatures are consistent with the average, and 22% if temperatures are 10% above average. Other forms of energy used for generating heat are expected to see similar price increases with the colder weather expected this winter. The 41% of households generating electricity with electricity will 6% more, 15% more in a colder winter and 4% more if warmer. The 5% of homes using heat will see 54% increase in expenses in average temperatures, 94% more in a colder winter and 29% more if warmer. The 4% of households using heating oil will spend 43% more in average temperatures, 59% more in colder weather and 30% more in warmer weather. Below is a graphic depicting the percentage of homes generating heat with a respective fuel source. Our Supplemental Documents package includes excerpts from the EIA Winter Fuels Outlook.

**48% of US homes heated with natural gas**

Figure 6: Regional Concentration of Winter Fuels in US



Source: EIA

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**Natural Gas – EIA forecasts US gas production growth in 2022**

No surprise that, with continued stronger than expected natural gas prices, the EIA increased its US natural gas production forecasts. However, what is different this time is that the increase isn't from associated natural gas from oil plays but from dry gas plays. The EIA released its monthly Short Term Energy Outlook November 2021 [\[LINK\]](#). The EIA revised upwards it's 2021 and 2022 forecasts for US natural gas production. (i) EIA forecasts that US natural gas production will be up +1.58 bcf/d from the Q4/19 peak of 96.60 in Q4/22. (ii) EIA revised up the first and the second quarter of 2021 with greater increases continuing in the second half of the year. US 2021 natural gas production forecast to average 93.29 bcf/d (up from 92.54 bcf/d previously). (iv) 2022 US natural gas is forecasted to average 96.68 bcf/d (96.4 bcf/d previously), up 3.39 bcf/d YoY. (v) The EIA wrote, "we estimate dry natural gas production averaged 94.9 bcf/d in the United States in October (up from 94.5 bcf/d in September) and 91.9 bcf/d in in the first half of 2021. Production in the forecast rises to an average of 95.2 bcf/d during the rest of this winter (November–March) and averages 96.7 bcf/d during 2022, driven by natural gas and crude oil prices, which we expect to remain at levels that will support enough drilling to sustain production growth". Our Supplemental Documents package includes excerpts from the EIA STEO.

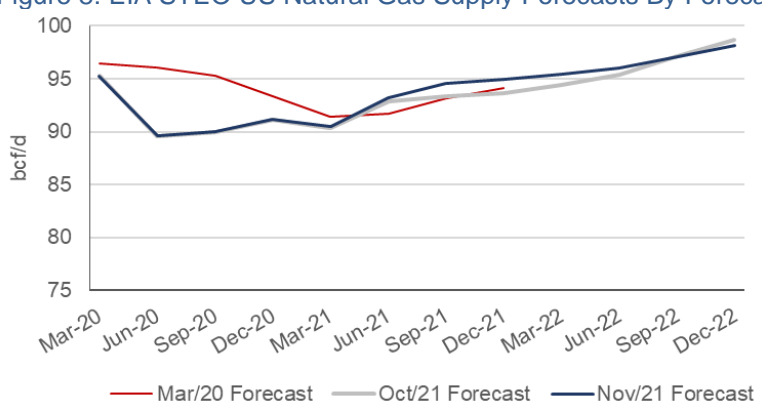
**EIA sees U.S. gas production +3.39 bcf/d YoY in 2022**

**Figure 7: EIA STEO US Natural Gas Supply Forecasts by Forecast Month**

bcf/d	Q1/19	Q2/19	Q3/19	Q4/19	2019	Q1/20	Q2/20	Q3/20	Q4/20	2020	Q1/21	Q2/21	Q3/21	Q4/21	2021	Q1/22	Q2/22	Q3/22	Q4/22	2022
Nov 2021	89.8	91.26	93.77	96.6	92.86	95.29	89.59	89.99	91.14	91.5	90.48	93.2	94.52	94.94	93.29	95.41	96	97.12	98.18	96.68
Oct 2021	89.8	91.26	93.77	96.6	92.86	95.29	89.57	89.99	91.14	91.5	90.3	92.89	93.32	93.65	92.54	94.38	95.41	97.12	98.69	96.4
Sept 2021	90.01	91.57	94.01	96.58	93.06	94.8	89.68	89.83	91.15	91.36	90.3	93.05	92.64	92.7	92.18	93.17	94.54	96.25	97.59	95.4
Aug 2021	90.01	91.57	94.01	96.58	93.06	94.79	89.68	89.83	91.15	91.35	90.29	92.49	92.67	93.11	92.15	93.34	94.15	95.51	96.47	94.88
July 2021	90.01	91.57	94.01	96.58	93.06	94.79	89.68	89.83	91.15	91.35	90.31	92.88	93.17	93.8	92.55	93.65	94.1	95.16	95.82	94.69
June 2021	90.01	91.57	94.01	96.58	93.06	94.79	89.68	89.83	91.15	91.35	90.53	92.26	92.63	93.26	92.18	93.13	93.48	94.31	94.81	93.93
May 2021	90.01	91.57	94.01	96.58	93.04	94.79	89.68	89.83	91.15	91.35	90.09	90.75	91.34	92.03	91.06	91.97	92.54	93.60	94.36	93.12
Apr 2021	90.01	91.57	94.00	96.58	93.04	94.79	89.68	89.83	91.18	91.36	90.82	90.90	91.59	92.31	91.41	92.23	92.75	93.76	94.39	93.29
Mar 2021	90.01	91.57	94.00	96.58	93.04	94.79	89.68	89.82	91.08	91.34	90.50	91.04	91.71	92.13	91.35	91.87	92.25	93.28	93.90	92.83
Feb 2021	90.01	91.57	94.00	96.58	93.04	94.79	89.68	89.82	90.89	91.29	90.88	90.17	90.40	90.54	90.50	89.95	90.18	91.41	92.26	90.96
Jan 2021	90.01	91.57	94.00	96.58	93.04	94.79	89.67	89.87	88.73	90.76	87.48	87.54	88.54	89.11	88.17	88.54	88.86	90.17	91.02	89.66
Dec 2020	90.01	91.57	94.00	96.58	93.04	94.79	89.67	89.72	89.36	90.88	87.65	87.25	88.13	88.61	87.91					
Nov 2020	90.01	91.57	94.00	96.58	93.06	94.85	89.73	90.14	89.29	90.99	87.50	87.10	88.16	88.86	87.91					
Oct 2020	90.01	91.57	94.00	96.58	93.06	94.48	89.44	89.81	88.86	90.64	86.56	86.02	87.04	87.58	86.81					
Sept 2020	89.32	90.50	92.98	95.97	92.21	94.48	89.50	88.44	87.14	89.88	85.67	85.87	87.07	87.73	86.59					
Aug 2020	89.32	90.50	92.98	95.97	92.21	94.48	89.20	86.27	84.73	88.65	83.21	82.93	84.35	85.55	84.02					
July 2020	89.32	90.50	92.89	95.97	92.21	94.50	89.91	87.27	85.37	89.24	83.48	83.25	84.53	85.63	84.23					
June 2020	89.32	90.50	92.98	95.97	92.21	94.47	90.60	87.95	85.66	89.65	83.96	84.44	85.75	87.34	85.39					

Source: EIA STEO

**Figure 8: EIA STEO US Natural Gas Supply Forecasts By Forecast Month**



Source: EIA STEO

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**Natural Gas – EIA forecasts Nov 1/22 storage to only be -70 bcf YoY**

The one item that surprised us was the EIA STEO forecast for gas storage in 2022. The EIA used Oct 31/21 gas storage at 3,646 bcf. The EIA forecasts end of winter March 31/22 storage at 1,623 bcf, which is -178 bcf lower YoY vs 1,801 bcf. And the EIA forecasts Oct 31/22 storage at 3,576 bcf, which is only -70 bcf YoY. The big reason why the YoY deficit isn't larger is the EIA forecasts dry gas production to be 96.69 bcf/d in 2022, vs 93.34 bcf/d. This is a difference of 3.35 bcf/d or 1,223 bcf over the year.

**EIA STEO storage forecast**

Figure 9: EIA STEO forecast US gas storage

	U.S. working natural gas in storage (billion cubic feet)					
	Storage Level	2016 - 2020				
		Low	High	Range	Average	Deviation*
Mar 2016	2486.3	1184.9	2486.3	1301.4	1830.7	35.8%
Oct 2016	4012.7	3236.3	4012.7	776.5	3751.2	7.0%
Mar 2017	2062.5	1184.9	2486.3	1301.4	1830.7	12.7%
Oct 2017	3816.5	3236.3	4012.7	776.5	3751.2	1.7%
Mar 2018	1390.3	1184.9	2486.3	1301.4	1830.7	-24.1%
Oct 2018	3236.3	3236.3	4012.7	776.5	3751.2	-13.7%
Mar 2019	1184.9	1184.9	2486.3	1301.4	1830.7	-35.3%
Oct 2019	3762.0	3236.3	4012.7	776.5	3751.2	0.3%
Mar 2020	2029.4	1184.9	2486.3	1301.4	1830.7	10.9%
Oct 2020	3928.5	3236.3	4012.7	776.5	3751.2	4.7%
Mar 2021	1800.6	1184.9	2486.3	1301.4	1830.7	-1.6%
Oct 2021	3646.1	3236.3	4012.7	776.5	3751.2	-2.8%
Mar 2022	1623.4	1184.9	2486.3	1301.4	1830.7	-11.3%
Oct 2022	3576.4	3236.3	4012.7	776.5	3751.2	-4.7%

Source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2021  
Source: EIA

**Natural Gas – US NE still imports LNG, Jones Act prevents US Gulf Coast LNG**

One other reminder is that the US still imports LNG in the winter into the NE US. The EIA STEO forecasts US LNG “gross” exports to increase from 6.53 bcf/d in 2020 to 9.81 bcf/d in 2021 and then to 11.49 bcf/d in 2022. US LNG imports are modest forecast at 0.10 bcf/d in 2021 and 0.23 bcf/d in 2022. These LNG imports are into the NE US during winter for unpredictable weather related demand. And unfortunately, these LNG imports are likely at spot LNG prices and not at HH prices. The question is why does the US import LNG? its because of the Jones Act. On Tuesday, we tweeted [\[LINK\]](#) “if @POTUS @SecGranholm want to help on winter #NatGas home heating costs, how about waiving #JonesAct so NE US aren't forced to import #LNG at high spot LNG prices & can try for US LNG from Gulf Coast. @BrynneKKelly recaps NE US LNG imports at [\[LINK\]](#) #OOTT”. The Jones Act means that only US owned, flagged and crewed LNG tankers can deliver US LNG from the Gulf Coast to the NE US. And the few such LNG tankers are really just small volume LNG refuelling tankers. As a result, Cheniere cannot ship its LNG to the NE, rather has to send to Asia.

**Jones Act also covers LNG tankers**

**Natural Gas – Cheniere CEO sees LNG supply/demand imbalance happening now**

On Wednesday morning, we just turned on CNBC Worldwide Exchange to hear Cheniere CEO Jack Fusco commented on the sudden LNG demand increase in Asia [\[LINK\]](#). We tweeted [\[LINK\]](#) “#LNGSupplyGap. Originally thought the LNG supply/demand imbalance would be in 2023 but its happening now says @Cheniere CEO Fusco to @SullyCNBC a few minutes ago. Not the exact quote but close enough. #OOTT #NatGas”. We didn't have our PVR on so had to wait until CNBC posted the clip and then were able to create the below transcript of Fusco's key comments. But CNBC's Brian Sullivan asked if he had ever scene a period with demand this strong, Fusco commented, “No, this is the first time we've seen this type of demand pull, which is why prices in Asia and in Europe are 300% more than they were a year before. So we, we always knew that the energy transition was going to be a long

**LNG supply/demand imbalance is now**

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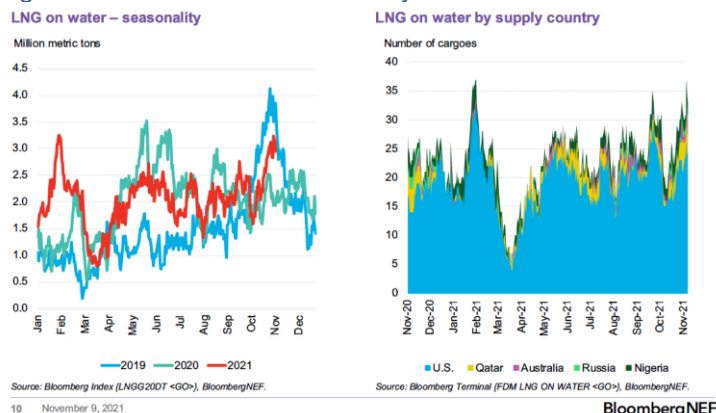
road. That it was going to take everything to make it happen. It's going to take natural gas, wind, solar, eventually hydrogen or some other technology that we just don't even know about, yet. So we were expecting demand growth in liquefied natural gas. Our estimates were that we would see this type of supply and demand imbalance sometime in 2023, and it actually happened now, I think a lot of that is just pure economic recovery, some weather, and maybe not so good planning by some of the countries for what their energy needs were going to be." Governments around the world have underestimated the crucial role of natural gas in the transition to net zero. Fusco noted at the end of the interview, particularly in Asia, countries have switched back to coal to produce electricity, further setting back the transition to net zero and delaying the development of the natural gas infrastructure necessary for the energy transition.

### Natural Gas – There really isn't any floating LNG storage if its almost all US LNG

We continue to see signs of a tight LNG market including that there is very little, if any, floating LNG storage in the face of huge LNG prices as almost all LNG tankers on water for more than 20 days are US LNG cargoes. Our October 24, 2021 Energy Tidbits asked the rhetorical question "is there really any floating LNG storage if it's almost all US LNG?" It followed our October 19 tweet [\[LINK\]](#) "A very tight #LNG market with very little floating LNG storage? US #LNG represents almost all of LNG on water for >20 days & US LNG takes a lot more than 23 days to Asia. Thx @BloombergNEF Lujia Cao, Kornelija Dauksaite, Fauziah Marzuki @PlattsLNG #OOTT." We were referencing BloombergNEF's LNG Trade Weekly October 11-17, 2021 and noted their graphs on LNG on water for more than 20 days. It was almost all US LNG. And we said that even with the shortened voyage thru the Panama Canal, Platts estimates the LNG tanker voyage time is 23 days to Japan and 28 days to China. We did not reference the much longer days for US LNG cargoes if they go a different route to Asia. This is why the vast majority of LNG tankers on water more than 20 days are US LNG but also why, especially under high LNG prices, are not floating LNG storage but just regular US LNG cargos making their normal trip to Japan and China. It was interesting to see BloombergNEF highlight this US LNG cargoes longer voyage time in their November 1-7, 2021 LNG Trade Weekly "U.S. Ships Taking 50 Days to Reach Asia". And "Longer U.S. journeys: Bloomberg's LNG on water indices show that vessels on water more than 20 and 30 days are both above the 4-year average for this time of year. Tankers carrying U.S. LNG are pulling up the index. Arctic Princess and LNG Alliance are approaching 50 days on water, both carrying U.S. LNG to North Asia. Arctic Princess loaded at Corpus Christi on Sept. 20 and crossed the Suez on Oct. 14, signaling Taichung now. LNG Alliance loaded at Freeport on Sept. 21 and passed the Cape of Good Hope around Oct. 13 and is now signaling Tangshan. Gaslog Salem departed from Sabine Pass on Sept.26 and transited via Suez Canal, it is currently waiting offshore Tianjin for unloading." Below are the BloombergNEF graphs from the Nov 1-7 LNG Trade Weekly and Platts table of LNG voyage times

LNG on water  
for >20 days

Figure 10: LNG on water for 20 days or more



Source: Bloomberg

Figure 11: Platts LNG Tanker Voyage Times

	Japan/Korea	SChina/ Taiwan	West India	Southwest Europe	Northwest Europe	Northeast US	Argentina	Brazil	Egypt
Middle East	15	13	3	13*	16*	22*	21	24	8
Australia	9	7	9	21*	24*	29	21	25	15
Trinidad	33*	31*	22*	9	9	5	11	7	14*
Trinidad (via Panama Canal)	22**	27**							
Trinidad (most economic)	lower of above 2								
Nigeria	26	23	17	9	10	13	11	9	14*
Algeria	24*	22*	13*	1	4	9	14	12	5*
Belgium	28*	25*	16*	3	N/A	8	16	14	8*
Peru	21	24	27	23	24	24	9	14	29
Russia	3	5	15	27*	29*	35*	27	37	21
Spain	25*	22*	14*	N/A	3	7	14	11	5*
Norway	32*	28*	20*	6	3	9	19	18	12*
Sabine Pass (most economic)	lower of below 2, until Panama Canal starts	lower of below 2, until Panama Canal starts	lower of below 2, until Panama Canal starts	12	12	N/A	17	13	
Sabine Pass (via Suez Canal)	36*	32*	24*	N/A	N/A	N/A	N/A	N/A	17*
Sabine Pass (via Cape)	38	35	31	N/A	N/A	N/A	N/A	N/A	31
Sabine Pass (via Panama Canal)	23**	28**	N/A	N/A	N/A	N/A	N/A	N/A	

\* Route uses Suez canal, adds one day extra for shipping and 24 cents/MMBtu for canal fees \*\* Route uses Panama canal, adds 21 cents/MMBtu for canal fees

Source: Platts

**Natural Gas – Chevron Gorgon LNG CCS shortfalls to be covered by carbon offsets**

Asian LNG buyers are feeling relieved by the Chevron’s Thursday press release because it means that Chevron’s Gorgon LNG should be able to keep producing on an unrestricted basis. Gorgon LNG’s CCS project has captured anywhere near the level in the approved project. The question has been what agreement will Chevron reach with western Australia on this shortfall. Chevron’s announcement [LINK] was that they agreed to a carbon “offsets package Chevron will implement to address a carbon dioxide injection shortfall at the Gorgon natural gas facility over the five-year period ending 17 July 2021. The package will also see Chevron fulfil its regulatory obligations through the acquisition and surrender of 5.23 million greenhouse gas offsets.” Note that Chevron is clear that this only covers the shortfall up until July 17, 2021. Chevron is silent on any future shortfalls. We have to believe Chevron was not going to do a one off deal without looking to how they would deal on shortfalls after July 17, 2021. It makes us wonder if this will be the precedent for how Chevron makes up for CO2 injections post July 17, 2021. Chevron did not say so but wrote ““We look forward to further discussions with the Western Australian Government to develop lower carbon projects and unlock emissions reduction potential across the state.” It seemed like they were setting the stage for future deals? Our Supplemental Documents package includes the Chevron release.

**Chevron Gorgon LNG CCS shortfalls deal**

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### Looks like Chevron avoided any cutbacks to its Gorgon LNG supply

As noted above, we said Asian LNG buyers should be relieved by the Chevron carbon offsets deal. Our concern was that it could have been way worse ie. it could have been a restriction on Gorgon LNG volumes. Our July 25, 2021 Energy Tidbits noted the risk depending on what deal Chevron cut with western Australia. We then wrote “No one should be surprised to see the Bloomberg report this week “Chevron’s Carbon Capture Struggle Shows Big Oil’s Climate Hurdle”. Our Jan 17, 2021 Energy Tidbits highlighted concern that Chevron being behind on its CCS commitments at Gorgon LNG raise the risk for ultimate LNG rates/recovery. Note that no analysts asked on this at the Chevron analyst day. (i) The Bloomberg report reinforces this risk. Bloomberg wrote “While Chevron has sequestered almost 5 million tons of carbon dioxide since the capture project began in August 2019, that’s fallen short of a target to capture an average 80% of emissions in the first five years of the LNG facility’s operation. “Chevron is working with the Western Australia regulator on making up the shortfall,” the company’s Australia Managing Director Mark Hatfield said in a statement. The company has buried only 30% of about 15 million tons of CO2 generated since Gorgon began producing gas in March 2016, oil industry publication Boiling Cold reported Friday.” “Western Australia’s government insisted on the CCS facility as a condition for approving Gorgon, which is expected to run for four decades. The state’s regulator has requested details on why Chevron missed its target, and Western Australia’s Environment Minister Amber-Jade Sanderson is seeking a meeting with the company.” (ii) We tweeted [\[LINK\]](#) “Another reason to worry about #LNGSupplyGap? Hopefully WA will give \$CVX more time to catch up and let them offset with #CarbonCredits. If not, won’t other potential WA fix-the-shortage actions seem to add risk to #GorgonLNG future recovery/rate? Thx @SStapczynski #LNG.” (iii) The real question is what will Western Australia require? Its hard to see how this isn’t a negative to Gorgon LNG, the only question is how much of a negative. Will they just give them more time to catch up? will they just let Chevron buy carbon credits? Or will they only allow lower rates of production to lower the emissions? or will they force a shorter life at Gorgon LNG? (iv) Our tweet noted that we suspect the hope for Chevron is that Western Australia gives them a combination of more time to catch up and get Chevron to buy carbon credits to make up for the shortfall without asking for any change in LNG volumes. That would be the cheapest but would also add more on the buy side for carbon credits. Gorgon LNG is ~2.3 bcf/d. (v) We hope that Western Australia doesn’t put Chevron in a show-me position and restricts any LNG production or recovery until Chevron proves it can catch up. (vi) Regardless, the underperformance has to add to future LNG supply risk from Gorgon LNG. Our concern remains that continued underperformance of the CCS could lead to a lesser life for Gorgon LNG. (vii) Then there is the bigger question – understanding why this flagship CCS project hasn’t worked anywhere to the level that it was expected? The hope is that this is a unique situation to Gorgon LNG and not to other potential LNG CCS projects. CCS is assumed to work and is the key to allowing more natural gas to be produced for longer to fit a Net Zero scenario. Gorgon LNG partners are Chevron 47.3%, Exxon 25%, Shell 25%, Osaka Gas 1.25%, Tokyo Gas 1% and JERA 0.417%. (viii) This will be an item to watch.”.

### Natural Gas – Will Tanzania slip in to get the next major LNG supply FID?

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

**Tanzania LNG  
potential**

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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 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.

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

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 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 – Total, need security in a sustained manner to restart Mozambique LNG?

We think TotalEnergies comments continue to point to the hope that it can get back to construction in mid-2022 on its Mozambique LNG ie. an effective construction pause of about 1.5 yrs so they can have first LNG in 2026. Their comments are security is getting better but not yet to the point where they can restart construction. On Tuesday, Platts reported

### Mozambique security update

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*“Mozambique security improving, but TotalEnergies seeks more stability to restart LNG project” [\[LINK\]](#). Platts quoted TotalEnergies SVP of Africa, Henri-Max Ndong Nzue, on the sidelines of the Africa Oil Week conference. Nzue said “We are looking at the situation and, so far, the steps taken by the Mozambican government are going in the right direction”, “Things are improving by what we can see on the ground. The African forces are doing quite a good job” and ““So things are improving. But what is key is to have security in a sustained manner, and that is very important.”*

### **TotalEnergies is hoping to restart Mozambique LNG construction in 2022**

Our Oct 3, 2021 Energy Tidbits highlighted the TotalEnergies 2-day investor outlook that included their longer term outlook, which had to include what are they now assuming for first LNG cargoes from Mozambique LNG. We have been highlighting how the entry of Rwandan troops has been the key driver for pushing out the rebels and re-establishing security in the LNG centered northern regions. Prior to then, TotalEnergies had not provided a restart date. But at the investor outlook, they presented their long term outlook including first Mozambique LNG in 2026. That is two years later than the original start year of 2024 but one year later in their revised timing before the force majeure. In their prepared remarks, mgmt said *“This forecast of upstream production in 2026 includes Mozambique LNG production only in 2026. This relies on the assumption that the project activity will review in 2022.”* No surprise there were a number of questions on this assumption. And mgmt did caution *“You know that we do not control all the situation, a security situation in Cabo Delgado. This would impact the '26 target by \$500 million”* ie. a 1 year delay in Mozambique from this assumption reduces 2026 cash flow by \$500 million. In the Q&A, mgmt seemed to exercise caution on this assumption. Mgmt replied *“We have some -- there are some positive evolutions on the ground, but it has to be consolidated. There is a war. So we will not -- what we will not do on Mozambique is remobilizing to remobilize. That's clear. So if we are not able to remobilize beginning next year, then the delay in Mozambique LNG this \$500 million could go to 27%.”* We still believe TotalEnergies wants to avoid what happened in Dec 2020 thru March 2021. Recall, previously that, in Dec 2020, TotalEnergies had shut down development for 3 months due to the security risk and then had restarted on Wednesday, March 24, 2021. Then there were 3 days of violence and attacks followed, and TotalEnergies suspended operations on the Saturday and started to pull all staff out of Mozambique. That was when construction stopped and then a month later TotalEnergies declared force majeure. At that time, we thought TotalEnergies would want to have a longer period (ie. 6 months or so) of perceived security/stability before agreeing to restart. As of our 7am MT news cut off, we have not seen any TotalEnergies comment on the Club of Mozambique report this week. So at least for now, TotalEnergies is hopeful that construction restart can happen in early 2022. Our Supplemental Documents package includes the TotalEnergies LNG slide noting the Mozambique delay and their long term cash flow slide that shows 2026 is up because of Mozambique.

### **Natural Gas – Morocco to import LNG after dispute with Algeria**

The continued diplomatic rift between Morocco and Algeria has sent Morocco looking abroad for LNG. Last week’s (November 7) Energy Tidbits noted that Algeria had officially cut off piped supplies to Morocco. We noted *“the 25-year transit deal expired without renewal as the Algerian president ordered a halt to gas flowing through Morocco to Spain via the GME pipeline”*. Bloomberg reported on Monday [\[LINK\]](#), that Morocco is looking at developing its port infrastructure to accommodate greater LNG imports. The transition to LNG imports from

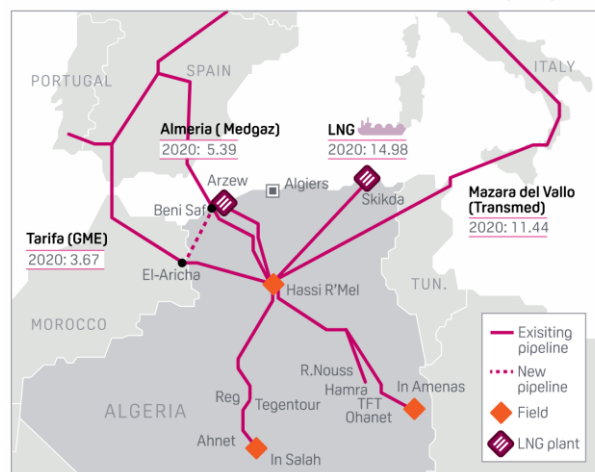
**Algeria and Morocco gas transit issues**

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the spot market is expected to cost over \$500 million. Morocco has relied on the Algerian pipeline to supply 0.096 bcf/d of natural gas. The plants that have traditionally received the plant have been idled with the stoppage in flows. With the demand for gasoline expected to grow to 0.29 bcf/d by 2040, Morocco is likely to pay a significant price in natural gas imports from the spot market moving forward. Below is a map of the pipelines flowing to Spain via Morocco. Our Supplemental Documents package includes the Bloomberg report.

Figure 12: Algeria's EGPDF (El Aricha to Beni Saf) Pipeline Inaugurated May 7, 2021

ALGERIA COMMISSIONS NEW GME DIVERSION PIPELINE (Bcm)



Source: Platts

### Natural Gas – Petronas to reduce offtake LNG cargoes in 2022

We have more confirming reports that Petronas is reducing LNG cargoes from its Bintulu LNG export facility. On Tuesday, Bloomberg reported Petronas provided some colour to the Malaysian LNG Bintulu export facility. The company noted that it will reduce exports between January and March of 2022. It is expected to cut at least 4 cargoes per month from their long term offtakers. Last week's (November 7) Energy Tidbits noted that the potential cuts have boosted buying interest in the spot market. It stated "Japanese buyers with offtake from the 3.95 bcf/d Bintulu LNG export facility in Malaysia are interested in winter deliveries from the spot market following requests by Petronas to reduce contractual deliveries. Petronas is requesting the cancellations be through the downward quantity tolerance clause in its contracts which when exercised, gives the suppliers the right to decrease annual contracted quantities. The updated number of February and March cargoes that will be impacted is unclear."

Continued  
Malaysia LNG  
supply problems

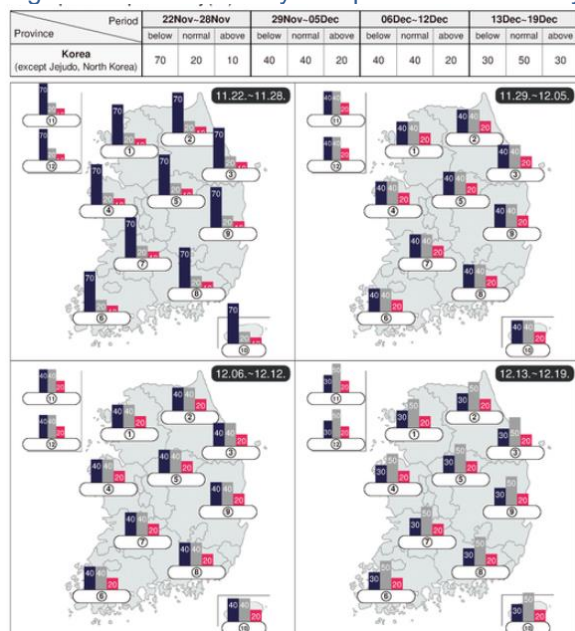
### Natural Gas – normal to below normal temps for Korea in next 30 days

Its been a cold November so far in Korea. On Tuesday, we tweeted [\[LINK\]](#) "Support for #LNG #NatGas prices in Nov/Dec. 1st snowfall in Seoul, 30 days earlier than 2020, 10 days earlier than 30-yr ave." And when we look ahead, the Korean Meteorological Administration released their 1-month outlook temperature probabilities [\[LINK\]](#). It is a good link to bookmark for the average temperatures over the next 30 days in South Korea. The First 7 days of the outlook, beginning on Nov 22, have a 70% chance of being below average temperatures. The following two weeks, it is an equal probability that temperatures will be at or below average. The Dec 19 week has a 50% chance of normal temperatures in Korea. Below is a graphic depicting the temperature probability forecast in South Korea over the next 4 weeks.

Korea 30-day  
weather outlook

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Figure 13: Korea 30-day Temperature Probability Outlook



Source: KMA

### Natural Gas – Another Asian LNG buyer (Japan's Hokkaido) looks for long term LNG

We continue to believe the best validation of a pending LNG supply gap in the 2020s is that more Asian LNG buyers are looking to lock up long term LNG supply thru the 2020s. The latest to do so is Japan's Hokkaido Gas. On Wednesday, we tweeted [LINK](#) "Best sign for #LNGSupplyGap in 2020s. Another Asian LNG buyer wants to lock up long term supply. @SSstapczynski says Japan's Hokkaido Gas seeks long term supply for 5-10 yrs from 2025. Since SAF Group 07/14 blog, 5 more Asian long term LNG supply deals totalling 2.19 bcf/d #OOTT." Hokkaido Gas is not a major Asian LNG buyer, but Bloomberg reported that they are looking to lock up LNG supply after 2025 for 5 to 10 years.

Hokkaido Gas  
looks for long term  
LNG

### Asian LNG buyers abruptly change and lock in long term supply

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 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

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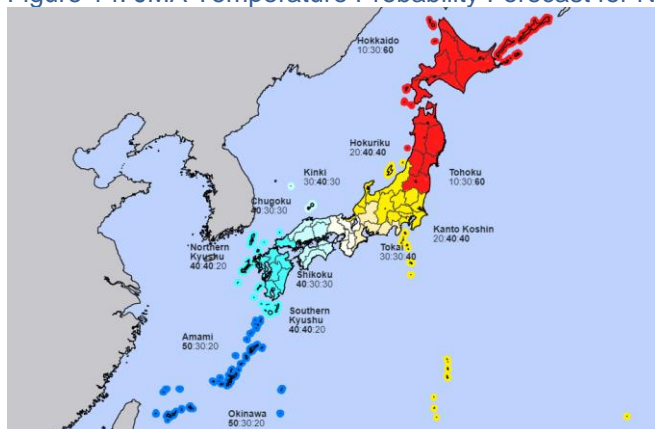
*Petroleum's massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas." Our Supplemental Documents package includes our July 14 blog.*

### Natural Gas - No major weather natural gas demand pull in Japan till mid Dec

We are now in the start of winter natural gas demand season and the weather related demand pull on natural gas in Japan continues to be very little. For the first half of November, temperatures in Tokyo have been daily highs just above 20 and nightly lows below 15. Its not really hot enough for air conditioning or cold enough for major heating. The temperatures are going to be little bit lower, but Japan is still expected to experience above average temperatures for the remainder of November and into December. After the next few days, AccuWeather is calling for daily highs in the 15-19C and night lows in 8 to 10C range. The Japan Meteorological Agency issued its updated month ahead weather forecast for Nov 13 – Dec 12 on Thursday [\[LINK\]](#), which calls for above average weather in central Japan with above average temperatures in the north and central regions. The southern islands have a high chance of being below seasonal norms. Below is the current JMA forecast for Nov and into early Dec.

**Japan is warm in November**

Figure 14: JMA Temperature Probability Forecast for Nov 13 – Dec 12



Source: Japan Meteorological Agency

### Natural Gas – Belarus threatens to cut off gas flow from Russia over EU sanctions

As of our 7am MT news cut off, we have not seen any comments from the President of Belarus on Putin's comments yesterday. The President of Belarus made headlines this week after threatening to choke the transit of gas from Russia to the rest of Europe [\[LINK\]](#). Gas flows from Russia through the Yamal-Europe gas pipeline, that began construction in 1994 and concluded in 2006; it spans 2000 km and has 14 gas compressor stations with a 3.18

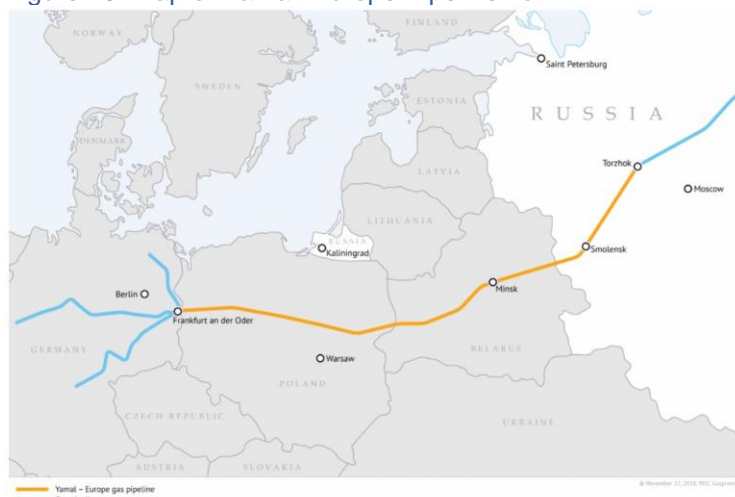
**Belarus threatens to cut off natural gas**

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bcf/d capacity. We do not have the recent throughput volumes. The pipeline flows from Russia's Northern Tyumen regions, through Belarus and Poland to Germany. The Belarusian section is 575 km long and runs 5 compressor stations; Gazprom is the sole owner of the Belarusian segment of the pipeline. The announcement by President Lukashenko comes as a threat against the expansion of new EU sanctions against Belarus, and Poland threatening to close the Polish-Belarusian border. Lukashenko stated *"We are heating Europe, they still threaten us that they will close the border. And if we cut off natural gas there? Therefore, I would recommend that the Polish leadership, Lithuanians and other headless people think before speaking. And if we close the transit through Belarus? It will not go through Ukraine: the Russian border is closed there, there are no roads through the Baltic states. If we close it for the Poles and, for example, for the Germans, what will happen then? , stop at nothing."* Below is a graphic depicting the Yamal-Europe pipeline. Our Supplemental Documents package includes the TASS report.

Figure 15: Map of Yamal–Europe Pipeline flow



Source: Gazprom

### Putin's to talk to Lukashenko, also reminds of Ukraine

Yesterday, we tweeted [\[LINK\]](#) on Putin's comments on the Belarus threat to cut off Gazprom's natural gas that transits thru the Yamal-Europe pipeline to Europe. TASS reported [\[LINK\]](#) *"Putin hopes that it will not come to the blocking of the transit of Russian gas by Belarus"*. Putin acknowledged that Lukashenko *"can probably given an order to cut off our supplies to Europe"*. But he also sent a pretty clear message to Lukashenko on a number of points: *"this would be a violation of our transit contract, and I hope it will not come to that," "But this [blocking gas transit] would cause great damage to the energy sector of Europe, the energy sector of Europe and would not contribute to the development of our relations with Belarus as a transit country," "there is nothing good in this." "I will, of course, talk to him on this topic, if he just said it not in his hearts."* And then Putin gave the reminder message to Lukashenko noting he had gone thru this once before and that was when Ukraine cut off transit of Russian gas to Europe in 2008. It was a good reminder that Putin doesn't like people cutting off Russian natural gas transit. Our Supplemental Documents package includes the TASS report.

### Natural Gas – Gazprom approves gas injection into European storage facilities

There was some good news for gas prices and European gas storage on Friday, as Gazprom approved their plan to begin injecting the company's gas in underground European gas storage facilities [\[LINK\]](#). Gazprom said in their statement *"Gazprom has approved the plan for the injection of the Company's gas into European underground storage facilities and is implementing it now. Gas is transmitted via various routes, including through the territory of Ukraine. We will surpass our obligations under the transit contract with Ukraine this year. So said so done."* Our October 31 Energy Tidbit noted that Putin had instructed Gazprom to begin natural gas injections into Gazprom's European storage facilities, upon completion of injections to Russian storage units.

**Gazprom to begin European gas injections**

### Natural Gas – Gazprom says its surpassed contract volumes thru Ukraine

The most consistent from Russia over the natural gas crisis has been that Russia delivers on its natural gas supply contracts. That message was reinforced by Gazprom Chairman Alexey Miller. On Friday, we tweeted [\[LINK\]](#) on the short Gazprom release [\[LINK\]](#) *"Gazprom has approved the plan for the injection of the Company's gas into European underground storage facilities and is implementing it now. Gas is transmitted via various routes, including through the territory of Ukraine. We will surpass our obligations under the transit contract with Ukraine this year. So said so done."* Our tweet included the question *"wonder by how much?"* We don't know the Gazprom contracts, but we suspect the contracts have a minimum delivery level and that is the likely reference point. Regardless, Russia's point is valid – they are reliable in meeting contract obligations.

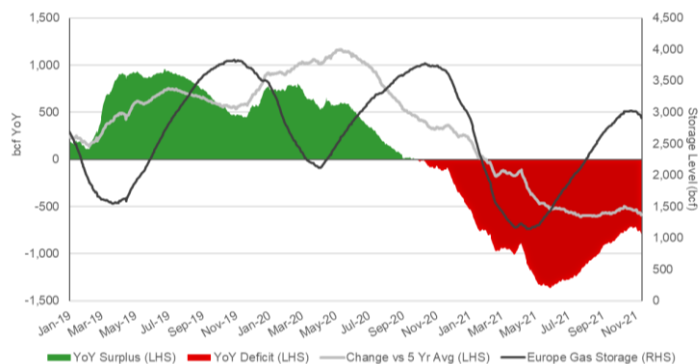
**Gazprom exceeds contract volumes**

### Natural Gas - Europe storage 75.08% full vs 5 year average of 90.40%

Draws to European gas storage units continued this week as we enter the heating season for natural gas. It was a small draw but it marked the third consecutive week of draws, indicating winter is beginning. Europe inventories are at their lowest level at this time of the year in more than a decade. The set up for winter natural gas prices continues to support strong winter natural gas prices. Russian pipeline import variability continues to deliver uncertainties to European gas storages, though the recent announcement from Gazprom announcing flows to German gas storage units is likely to alleviate some of the high gas prices this season. With the key indicator for winter Europe natural gas prices, and global LNG prices is Europe storage. Europe gas storage started last winter (Nov 1) at basically full levels at 94.66% and had dropped by 65.77% to be 28.89% at Apr 1. This winter began (Nov 1) with gas storage at 77.14% capacity, down 18.52% YoY. Europe storage levels bottomed in late Apr at 29%, which was the lowest level since Apr 2018. Storage as of Nov 11 is 75.08%, which is -18.60% less than last year levels of 93.68% and are -15.32% below the 5-year average of 90.40%. Europe storage levels over the next few weeks will be the key item to watch for indications on LNG markets going into the winter. Below is our graph of Europe Gas Storage Level.

**Europe gas storage down YoY**

Figure 16: Europe Gas Storage Level



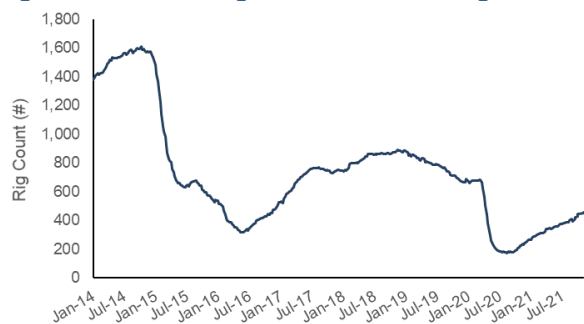
Source: Bloomberg

**Oil – US oil +4 WoW at 454 oil rigs**

Baker Hughes released its weekly North American drilling activity data at 11am Friday. This week US oil rigs were up +4 rigs WoW at 454 rigs. Oil rigs are +282 off the bottom of 172 in Aug14/2020 week. Permian was flat this week and is the oil basin expected to drive growth. We expect that US rigs will reach their peak soon with the typical decline occurring after Thanksgiving weekend. With oil prices up 69% so far this year and expectations that consumers will switch to oil products with high gas prices, producers are increasing active rigs to boost production to accommodate demand and to rebuild DUCs inventory. US oil rigs hit their 2020 peak at 683 on March 13 and have since fallen by 229 to 454 oil rigs (-34%). The biggest contributor to the decrease is the Permian being down 147 oil rigs from the March 13, 2020 peak (-35%), although we are seeing it continue to ramp up slightly. Below is our graph of US oil rigs since January 1, 2014.

**US oil rigs +4  
WoW**

Figure 17: Baker Hughes Total US Oil Rigs



Source: Baker Hughes

**Oil – US Frac spreads +3 to 269 as of Nov 12**

Mark Rossano (C6 Capital Holdings) provided his US frac spread recap for week ended Nov 12 on the Primary Vision network. The YouTube video is at [LINK](#). US frac spreads were +3 to 269 for week ended Nov 12. Permian was flat, that was expected as they had a big increase last week. Had bigger increases in natural gas including Appalachia, Texas/Louisiana salt, and western Gulf. Still on track to hit 275 frac spreads but didn't specify his normal middle of November. Reminds that he is not expecting the normal large seasonal percentage decline in frac spreads in the Thanksgiving to Xmas period, primarily because we

**Frac spreads +3  
to 269**

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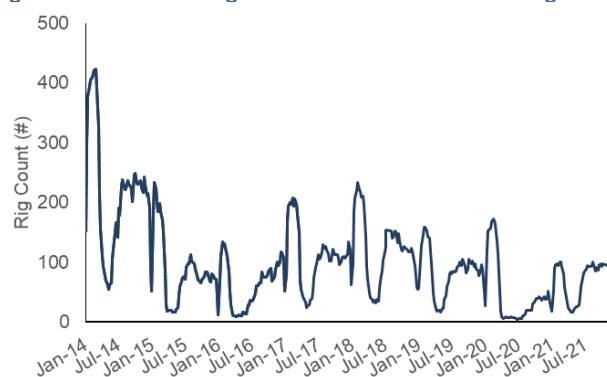
aren't starting at the same higher levels as in the past. He noted that seeing simulfracs now being talked or looked at moving beyond the Permian

### Oil – Total Cdn rigs +8 to 168 total rigs and +81 rigs YoY

Total Cdn rigs were +8 this week to 168 total rigs. Cdn oil rigs were +6 at 101 rigs. Cdn gas rigs were +2 to 67 gas rigs with strong natural gas prices. Total rigs are now +157 since the June 26, 2020 all-time low. There has been a bit of pull back in the last two weeks despite very strong oil and natural gas prices. We expect to see this ramp up continue over the next month before pulling back with the normal Christmas break. Cdn drilling has recovered YoY, a year ago Cdn oil rigs were 39 and Cdn gas rigs were 50 for a total Cdn rigs of 89, meaning total Cdn rigs are +81 YoY and total rigs are up +34 vs 2019.

**Cdn rigs +8 WoW**

Figure 18: Baker Hughes Total Canadian Oil Rigs



Source: Baker Hughes

### Oil – US weekly oil production flat at 11.5 mmb/d, back to pre-Hurricane level

US oil production remained at pre-Hurricane Ida levels. Weekly production in the US was flat this week at 11.5 mmb/d for the week ended Nov 5. Lower 48 production drove total production, flat from last weeks level of 11.1 mmb/d; Alaska saw a slight 0.01 mmb/d increase as refineries conclude their maintenance season. US oil production is up YoY at +1.0 mmb/d and is still down significantly at -1.6 mmb/d since the 2020 peak of 13.1 mmb/d on March 13. The EIA DPR has expectations of a slight increase for Oct/Nov for the major shale/tight oil plays.

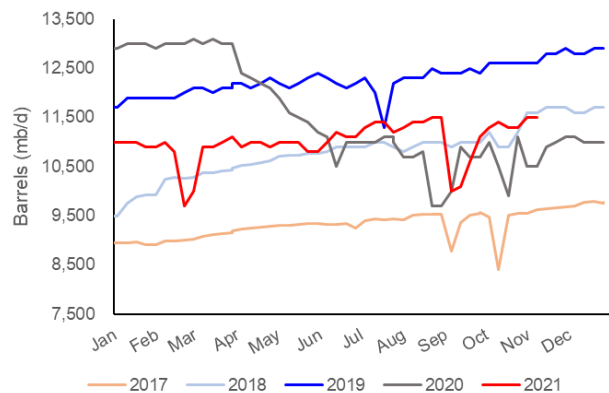
**US oil production flat WoW**

Figure 19: 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								

Source: EIA

Figure 20: US Weekly Oil Production



Source: EIA, SAF

**Oil – EIA STEO increasing its forecast for US oil production growth to Q4/22**

One of the headlines from the EIA STEO was on its increasing its forecast for US oil production. (i) There was no change to the historical 2019 oil production of 12.29 mmb/d and 2020 at 11.28 mmb/d, down 1.01 mmb/d YoY. (ii) Full year 2021 is increased by +0.11 mmb/d vs October STEO to 11.02 mmb/d, which is down -0.15 mmb/d YoY from 2020. (iii) The EIA forecasts a continued YoY growth in 2022 with production averaging 11.90 mmb/d, +0.77 mmb/d YoY (was 11.73 mmb/d previously), with Q4/22 production of 12.16 mmb/d, is still down -0.72 mmb/d from Q4/19. (iv) In the US oil production commentary, the EIA wrote “we forecast production will rise to 11.6 million b/d in December. We forecast annual production will average 11.1 million b/d in 2021, increasing to 11.9 million b/d in 2022 as tight

**EIA forecasts US 2022 oil exit at 12.16 mmb/d**

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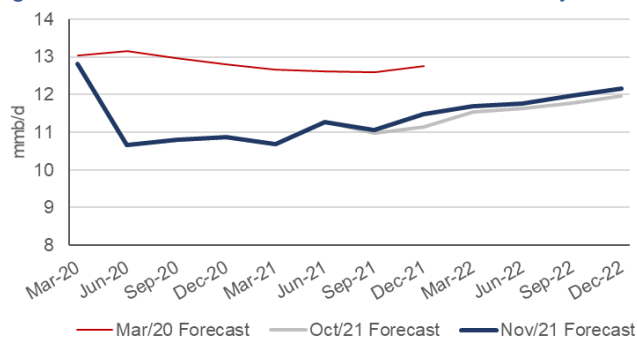
oil production rises in the United States. Growth will come largely as a result of onshore operators increasing rig counts, which we expect will offset production decline rates.”

Figure 21: Estimated US Crude Oil Production By Forecast Month

(million b/d)	Q1/19	Q2/19	Q3/19	Q4/19	2019	Q1/20	Q2/20	Q3/20	Q4/20	2020	Q1/21	Q2/21	Q3/21	Q4/21	2021	Q1/22	Q2/22	Q3/22	Q4/22	2022
Nov-2021	11.80	12.15	12.31	12.88	12.29	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.07	11.47	11.13	11.69	11.77	11.97	12.16	11.90
Oct-2021	11.80	12.15	12.31	12.88	12.29	12.81	10.67	10.79	10.87	11.28	10.69	11.28	10.98	11.13	11.02	11.54	11.64	11.78	11.96	11.73
Sept 2021	11.80	12.15	12.31	12.88	12.29	12.81	10.67	10.79	10.87	11.28	10.69	11.28	11.06	11.28	11.08	11.42	11.58	11.81	12.06	11.72
Aug 2021	11.80	12.15	12.31	12.88	12.29	12.81	10.67	10.79	10.87	11.28	10.69	11.22	11.26	11.30	11.12	11.46	11.62	11.86	12.11	11.77
July 2021	11.83	12.13	12.25	12.78	12.25	12.75	10.81	10.81	10.90	11.31	10.70	11.20	11.17	11.34	11.10	11.54	11.72	11.95	12.20	11.85
June 2021	11.83	12.13	12.25	12.78	12.25	12.75	10.81	10.81	10.90	11.31	10.70	11.04	11.17	11.38	11.08	11.55	11.67	11.88	12.05	11.79
May 2021	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.81	10.90	11.31	10.65	10.97	11.12	11.34	11.02	11.51	11.68	11.96	12.21	11.84
Apr 2021	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.81	10.90	11.31	10.75	10.93	11.13	11.35	11.04	11.54	11.74	11.99	12.18	11.86
Mar 2021	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.81	10.87	11.31	10.79	11.06	11.27	11.46	11.15	11.67	11.84	12.16	12.41	12.02
Feb 2021	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.81	10.89	11.31	10.98	10.91	11.00	11.18	11.02	11.30	11.38	11.61	11.83	11.53
Jan 2021	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.81	10.81	11.29	11.06	11.03	11.07	11.25	11.10	11.32	11.37	11.52	11.74	11.49
Dec 2020	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.80	10.99	11.34	11.02	11.00	11.09	11.29	11.10					
Nov 2020	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.93	11.07	11.39	11.06	10.97	11.08	11.28	11.10					
Oct 2020	11.83	12.13	12.24	12.78	12.25	12.75	10.82	11.02	11.22	11.45	11.07	11.00	11.05	11.22	11.09					
Sept 2020	11.83	12.13	12.24	12.78	12.25	12.75	10.81	10.91	11.08	11.38	10.96	10.97	11.08	11.32	11.08					
Aug 2020	11.83	12.13	12.24	12.78	12.25	12.75	10.57	10.79	10.96	11.26	11.00	10.99	11.16	11.40	11.14					
July 2020	11.81	12.10	12.23	12.78	12.23	12.74	11.41	11.29	11.10	11.63	11.02	10.93	10.97	11.13	11.01					

Source: EIA STEO

Figure 22: Estimated US Crude Oil Production By Forecast Month



Source: EIA STEO

**Oil – EIA STEO didn’t give Biden the signal to release SPR reserves**

Our question on Biden is if he has backed himself into a corner, or have Democrats backed him in a corner where he has to do something like release SPR or lose credibility. Last week, Energy Secretary Granholm had highlighted this week’s EIA Short Term Energy Outlook as key data/outlook they were waiting on for what options they would take to help lower gasoline prices. When the STEO came out on Tuesday, we tweeted [LINK](#) “If @EIAgov Short Term Energy Outlook is the guide for @SecGranholm @POTUS, then don’t have to release #SPR unless they want a faster impact on #Oil #Gasoline prices as STEO seems to call Nov (right now) the peak. See below excerpts #OOTT.” Our tweet included some EIA STEO excerpts such as EIA forecasts gasoline prices to peak this month and then start to decline in Dec, upped its forecast for US oil growth in 2022, expects global oil stocks to build in 2022 putting downward pressure on Brent oil prices, forecast US gasoline consumption to decrease in Nov and remain below that level until May 2022. There were other items that all point to the same view that the EIA STEO did not give Biden the signal to release SPR reserves unless he wanted to accelerate the expected decline in prices.

**STEO did not give Biden the SPR Signal**

**Oil – 11 Democratic senators want Biden to stop oil exports & release SPR oil**

At least its clear now who on the Democrats is pushing Biden to release SPR and now to stop US oil exports to relieve US gasoline prices. On Tuesday, 11 Democratic senators, including Elizabeth Warren, posted their Nov 8 letter to Biden “As Gas Prices Rise, Reed

**Senators want oil export ban, release SPR**

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*Urges Biden Administration to Take Action & Invest in Making America More Energy Independent and Efficient*. [\[LINK\]](#) The letter said “We share the administration’s concerns that the decision by the Organization of the Petroleum Exporting Countries (OPEC) and others to purposefully manipulate gas prices by constraining supply, as well as the choice of domestic leaseholders and producers to continue to export U.S. petroleum, threaten to send already record prices even higher. Continued U.S. exports and overseas supply collusion could be devastating to many in our states, contributing to higher bills for American families and businesses. In light of these pressing concerns, we ask that you consider all tools available at your disposal to lower U.S. gasoline prices. This includes a release from the Strategic Petroleum Reserve and a ban on crude oil exports. We hope you will consider these tools and others to make gasoline more affordable for all Americans .” The 11 Democratic senators were Reed (Rhode Island), Casey (Pennsylvania), Leahy (Vermont), Warren (Massachusetts), Hassan (New Hampshire), Markey (Massachusetts), Smith (Minnesota), Van Hollen (Maryland), Shaheen (New Hampshire), Blumenthal (Connecticut), and Brown (Ohio). Our Supplemental Documents package includes the letter to Biden.

### **Oil – Granholm says Biden only has limited range of tools to impact gasoline prices**

So much for the President of the US being the most powerful man in the world moniker. On Monday, Energy Secretary Granholm was on MSNBC Morning Joe. She had many comments catch our attention, but one was her saying “*But he is looking at other tools that he may have and hopefully there will be an announcement or so this week, he is certainly looking at what options he has in the limited range of tools that a President might have to address the cost of gasoline at a pump because it is a global market.*” Granholm and the administration have talked about OPEC increasing supply, potentially releasing SPR reserves and having the FTC make sure no price gouging. No question that the price of oil makes up the biggest portion of the cost of gasoline. We tweeted [\[LINK\]](#) “*#Biden has “limited range of tools” to address the cost of #Gasoline says @SecGranholm. Why not #JonesAct waivers so any tanker can “export” US gasoline, distillates, etc to US ports & replace higher cost imports of gasoline? also how about federal excise tax reduction? #OOTT.* Waiving the Jones Act would allow US oil to be cheaper than foreign oil. The EIA estimates federal excise taxes are \$0.184 per gallon on gasoline and \$0.244 per gallon on diesel. He could also do something on tax relief for refineries or shippers to reduce the refining/shipping component of gasoline prices.

**Biden only has limited range of tools?**

### **Oil – White House says US not considering shutdown of Line 5**

There was big news this week on Enbridge’s Line 5 that is trying to be shut down by Michigan. It was good to see White House spokesperson Jen Psaki is back to par following Covid, but it was also good to have her Deputy, Karine Jean-Pierre, fill in for almost two weeks. No surprise, it seemed like the White House used this replacement time to change its messaging and give more specific answers on long asked subjects like Line 5. Jean-Pierre gave very specific answers that we hadn’t seen under Psaki. (i) The US is not considering shutting down Line 5 and will engage with Canada on the 1977 treaty. We don’t recall seeing this specific statement before. On Monday, Jean-Pierre was asked “*So why is the administration now considering shutting down the Line 5 pipeline from Canada to Michigan?*” Jean-Pierre replies “*So, Peter, that is inaccurate, that is not – that is not right. So any reporting indicating that some decision has been made, again, is not accurate. But what I will say is -- I’ll lay this out for you for a little bit here -- where we are at – we -- where we are is -- with this is that Canada has decided to invoke, dispute resolution provisions of the 1977 Transit Pipelines Treaty. We expect that both the U.S. and Canada will engage constructively in those negotiations.*” (ii) Not seeing any backtrack of this position. We tweeted [\[LINK\]](#), “*Will this be “clarified” today? If not, reduces risk to \$ENB #Line5. US/Can discussions on #Line5*

**US says not considering Line 5 shut down**

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"shouldn't be viewed as anything more than that & certainly not an indicator that the US govt is considering shutdown. That is something that we're not going to do" @KJP46 #OOTT." (iii) Confirmed the US Army Corps of Engineers is preparing an Environmental Impact Study. Jean-Pierre replied "no, no, happy to. So the Army Corps of Engineer is preparing an environmental impact statement on Line 5 and the construction of that replacement line. So that is at issue here. The EIS will help inform any additional action or position the U.S. will be taking on the replacement of Line 5. This is a -- consistent with the -- President Biden's commitment that every infrastructure project, potential pipelines very much include -- included -- must undergo a full and fair review that considers the environmental impact that those projects would have. And so I -- you know, any other further information on that, I would refer you to the Army Corps of Engineers." (iv) As a reminder, the Army Corps of Engineers started its EIA for in operations Dakota Access pipeline in the spring and it is expected to deliver the EIA in the spring of 2022.

**Oil – One less Covid outbreak area in oil sands facilities, down to seven**

There was one oil sands facility removed from the Alberta Covid outbreak areas list per the Alberta Nov 12 update [LINK](#). Suncor’s Firebag was removed from this list this week. These leaves seven oil sands outbreak areas: Cenovus Foster Creek, CNRL Albion, CNRL Horizon, CNRL Kirby Jackfish, CNRL Primrose-Wolf Lake, MEG Christina Lake, and Suncor Fort Hills.

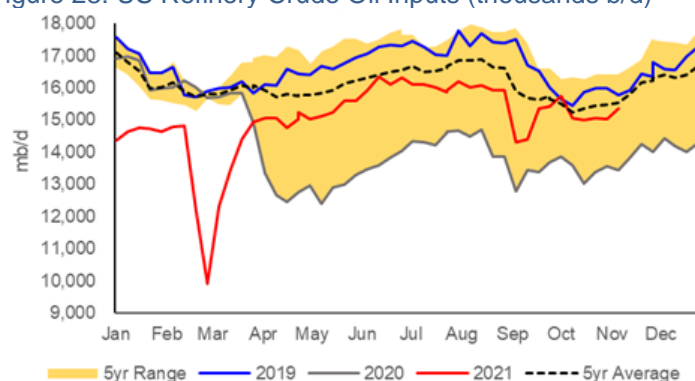
Covid in oil sands

**Oil – Refinery inputs +0.343 mmb/d YoY at 15.366 mmb/d**

Refineries continue to recover from the impacts of Covid, Hurricane Ida and normal seasonal maintenance; we observed inputs increase as refineries progress through regularly scheduled seasonal maintenance. There was a notable increase as Alaskan refineries completed their seasonal maintenance. Crude inputs to refineries were up +0.343 mmb/d this week to 15.366 mmb/d and are +1.919 mmb/d YoY. Refinery utilization was up +0.4% to 86.7%, which is still +9.7% YoY with the maintenance season coming to an end across the nation. Total products supplied (i.e., demand) was up -0.708 mmb/d to 19.290 mmb/d. Motor gasoline was down -0.245 at 9.259 mmb/d from 9.504 mmb/d last week. Gasoline supplied, a proxy for demand, was down last week. Gasoline stockpiles are at their lowest levels with demand for gasoline at a 4-week high. The four-week average of production supplied increased to 9.430 mmb/d, up from last year.

Refinery inputs up  
WoW

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



Source: EIA, SAF

**Oil – Phillips 66 to convert Alliance Refinery to a terminal facility**

On Monday, Phillips 66 announced the fate of its Alliance refinery and that it plans to convert it to a Terminal facility [LINK](#). Our Sept 12, 2021 Energy Tidbits reported that the Alliance

Alliance refinery  
to convert to  
Terminal facility

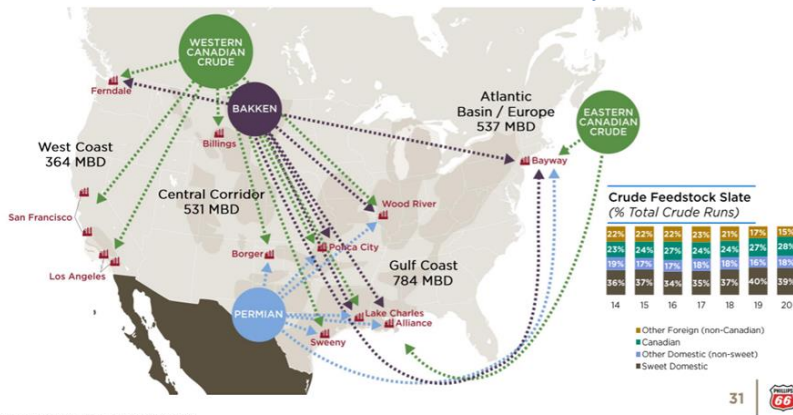
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refinery may be a victim to damage from Hurricane Ida and that Phillips was considering idling the refinery with repairs expecting to be too costly. At that time we wrote “*Bloomberg reported that Phillips 66 may idle a New Orleans area refinery that sustained significant damage from Hurricane Ida, with repairs presumed to be too costly. The Alliance refinery (255,000 b/d) closed operations Aug 28, immediately preceding Ida’s landfall. The storm bore a hole in the refinery’s protective levee and inundated the plant.*” Phillips 66 CEO spoke on the decision, “*Alliance’s existing infrastructure and Gulf Coast location make it an attractive midstream asset. Phillips 66 will continue to be a major refiner with 12 facilities in the U.S. and Europe.*” Our Supplemental Documents package includes the Phillips 66 release.

**Alliance refinery has crude throughput of 255,000 b/d**

Phillips 66’s background on Alliance refinery [LINK](#) notes crude throughput is 255,000 b/d, and resultant gasolines production is 130,000 b/d and distillates production 120,000 b/d. Alliance was built in 1971, and “*The alliance refinery processes mainly light, low-sulfur crude oil. The single-train refinery’s facilities include fluid catalytic cracking, alkylation, coking, and hydrodesulfurization units, a naphtha reformer and aromatics units that enable it to produce a high percentage of gasoline, diesel and aviation fuels. Other products include petrochemical feedstocks, home heating oil and anode-grade petroleum coke* [LINK](#). Its refined products are distributed to eastern US customers by common carrier pipelines and barge.” Below is a graphic depicting North American crude feedstock.

Figure 24: North American Crude Feedstock Flexibility



Source: Phillips 66

**Oil – US “net” oil imports down 1.047 mmb/d WoW at -4.339 mmb/d**

US “NET” imports were down 1.047 mmb/d to -4.339 mmb/d for the Nov 5 week. US imports were down -0.064 mmb/d to 6.108 mmb/d. US exports were up +0.128 mmb/d to 3.053 mmb/d. The WoW decrease in US oil imports was driven by US’s top 10 imports by country were down -0.064 mmb/d from Top 10. Some items to note on the by country data. (i) Canada was down this week by -0.135 mmb/d to 3.550 mmb/d, which is now ~0.150 mmb/d below the average levels in Jan/Feb of 2020. (ii) Saudi Arabia was up 201,000 b/d to 0.598 mmb/d this week. (iii) Colombia was up +0.05 mmb/d to 0.121 mmb/d. (iv) Ecuador increased imports this week, up 0.025 mmb/d to 0.117 mmb/d. (v) Iraq was down -136,000 b/d to 51,000 b/d. (vi) Venezuela remained at 0 due to US sanctions. (vii) Mexico was down by -74,000 b/d to 0.365 mmb/d.

**US “net” oil down WoW**

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Figure 25: US Weekly Preliminary Oil Imports by Major Countries

	Aug 27/21	Sept 03/21	Sept 10/21	Sept 17/21	Sept 24/21	Oct 1/21	Oct 8/21	Oct 15/21	Oct 22/21	Oct 29/21	Nov 5/21	WoW
Canada	3,612	3,580	3,200	3,143	3,034	4,039	3,441	3,254	3,472	3,685	3,550	-135
Saudi Arabia	345	296	369	399	561	622	304	319	336	397	598	201
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	674	372	538	835	764	652	316	462	631	439	365	-74
Colombia	71	145	0	212	255	0	382	211	141	71	121	50
Iraq	174	106	50	42	0	31	188	239	155	187	51	-136
Ecuador	195	0	174	102	235	59	208	0	222	92	117	25
Nigeria	43	116	82	95	64	133	211	137	0	64	64	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	5,114	4,615	4,413	4,828	4,913	5,536	5,050	4,622	4,957	4,935	4,866	-69
Others	1,226	1,195	1,348	1,637	1,639	1,499	944	1,203	1,297	1,237	1,242	5
Total US	6,340	5,810	5,761	6,465	6,552	7,035	5,994	5,825	6,254	6,172	6,108	-64

Source: EIA, SAF

### Oil – OPEC MOMR forecasts Q4/22 demand 102.63 mmb/d, +1.8 mmb/d vs Q4/19

OPEC released its Monthly Oil Market Report at 6am MT on Wed morning. (i) We tweeted [\[LINK\]](#), “Overlooked positive for #OilDemand from #OPEC MOMR. Yes, OPEC fcasts 2022 demand average 100.59 mmb/d, up 0.83 mmb/d vs pre-Covid 2019 99.76 mmb/d. But even bigger relative increase to exit 2022, OPEC fcasts Q4/22 at 102.63 mmb/d, +~1.8 mmb/d vs Q4/19 of ~100.8 mmb/d. #OOTT.” (ii) There was a downward revision in 2021 oil demand growth by 0.2 mmb/d to +5.65 mmb/d YoY and 2021 average of 96.44 mmb/d is still well below pre-covid 2019 of 99.76 mmb/d. (iii) No change in oil demand growth in 2022 remaining at +4.15 mmb/d YoY. This brings the 2022 demand average is now 100.59 mmb/d, down -0.18 mmb/d from last months forecast of 100.76 mmb/d, revisions come from the lower 2021 forecast; Q4/22 now forecasts 102.63 mmb/d, still well above Q4/19 demand of 100.79 mmb/d. OPEC wrote “some minor opposing revisions were considered, mainly taking into account adjustments to macroeconomic projections and challenges affecting demand performance in the world’s main consuming centres. Thus, marginal upward revisions in OECD Europe, due to better economic views in some European countries, were offset by softer growth in industrial fuel demand in OECD America and Latin America.” (iv) OPEC Oct production per “secondary sources” was down -0.092 mmb/d to 27.236 mmb/d, revised from the Oct report of 27.328 mmb/d. Reminder that OPEC+ agreed to a +0.4 mmb/d MoM in Oct. There were only small revisions to Sept; the biggest revision came from Nigeria -0.052 mmb/d. Nigeria was down -0.042 mmb/d to 1.451 mmb/d; Iran is up slightly at 2.502 mmb/d. Venezuela was up at 0.590 mmb/d, holding steady over 0.5 mmb/d in 2021 and reflecting the impact. (v) Minor changes to non-OPEC supply growth for 2021, +0.66 mmb/d to 63.64 mmb/d, and 2022 unchanged from last month at 66.66 mmb/d. Key non-OPEC supply growth areas for 2021 are Canada +0.32 mmb/d YoY, Russia +0.19 mmb/d YoY, China +0.16 mmb/d, Brazil +0.05 mmb/d, and Norway +0.07 mmb/d YoY. Key YoY growth areas for 2022 are Russia at +0.99 mmb/d, US +0.94 mmb/d, Brazil +0.24 mmb/d, Norway +0.12 mmb/d, Canada +0.17 mmb/d and Kazakhstan at +0.17 mmb/d. (vi) The other big positive in the OPEC outlook is OECD commercial oil stocks for Sep estimates 163 mmb below 2015-2019 average. Our Supplemental Documents package includes the OPEC MOMR.

OPEC MOMR for Nov

### Oil – OPEC, global oil stocks are down 930 million barrels since June 2020

OPEC’s Monthly Oil Market Report highlighted the drop in global inventories since its historic peak in June 2020. We tweeted [\[LINK\]](#) “#Saudi Energy Minister Abdulaziz is The Man, led #OPEC+ to a stronger #Oil market vs pre-Covid. Since historic peak Jun 20 peak, global #Oil stocks down 938 million bbl incl OECD commerical -411 mmb, OECD SPR -46 mmb, non-OECD -320 mmb & oil at sea -160 mmb says #OPEC MOMR. #OOTT.” OPEC highlighted that there has been major reductions in all forms of global oil stocks. OPEC wrote ““Since its

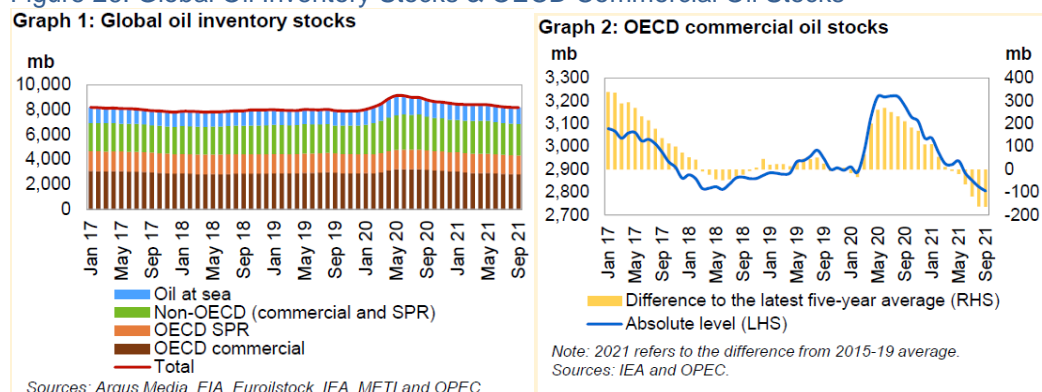
Global oil stocks down 930 million

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historic peak in June 2020, global oil inventories have declined significantly. At the end of September 2021 they had fallen by 938 mb, with all components witnessing stock draws. Over this period, total OECD commercial and SPR stocks have dropped by 411 mb and 46 mb, respectively, while non-OECD and oil at sea have fallen by 320 mb and 160 mb, respectively.” “Moreover, OECD commercial oil inventories, compared to the latest five-year average (2015-2019), reached a high of around 270 mb in June 2020, clearly reflecting a huge supply excess. This surplus has since declined to a deficit of 163 mb at the end of September 2021”. The OPEC MOMR included the below two graphs.

Figure 26: Global Oil Inventory Stocks & OECD Commercial Oil Stocks



### Oil – Saudi Aramco says spare capacity will shrink as a jet fuel demand grows

We are seeing more on the Energy Transition side come to the realization that there is an oil and natural gas crunch building for the 2020s as demand isn't decreasing and industry capex isn't sufficient for future supply needed to meet demand. As we say, everyone may recognize that but it's the select few countries like Saudi Arabia, Russia, UAE and a few others that are investing for supply growth. On Tuesday, Saudi Aramco CEO spoke in Japan with a similar message as in the past – there is a lack of investment needed to maintain or expand spare capacity. The outlook for oil and gas demand is still strong as renewables are still unable to meet the world's energy needs. Bloomberg reported on Tuesday [LINK](#) that surplus capacity in the oil market will shrink as jet fuel demand increases, with travel expected to rebound in 2022. Current spare capacity is 3-4 mmb/d and the buffer is expected to diminish, especially next year. Oil demand is expected to be 100 mmb/d in 2022, which would be close to record levels. The outlook for additional spare capacity is weak as many oil companies are not trying to increase their output capacity. Saudi Aramco CEO stated "Unfortunately, there is not enough investment in the sector to increase supplies and maintain that spare capacity. Expanding capacity in our industry takes around 5-7 years, and there is not enough investment in the world to increase capacity, this is a huge concern." This reinforces that investment and development in oil output throughout the 2020s would be profitable, but also with increased levels of volatility. Our Supplemental Documents package includes the Bloomberg report.

**Aramco sees shrinking spare capacity**

### Oil – Will a quick return to JCPOA depend on definition of sanctions linked to JCPOA?

Yesterday, TASS reported [LINK](#) on comments from Russia's foreign minister Lavrov on the JCPOA. TASS wrote "On November 29, the resumption of negotiations of the participants in the Joint Comprehensive Plan of Action to resolve the situation around the Iranian nuclear program is scheduled. We will advocate that the agreements that were signed within the framework of this document in 2015 be implemented. So that their implementation is

**JCPOA restart Nov 29**

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resumed in full. ", - he said. "This presupposes the return of the United States to fulfill its obligations, including the lifting of all sanctions that were introduced in the context of the JCPOA," the minister stressed." We think the Lavrov is signaling what may be the stumbling block to a quick return to the JCPOA – the definition of what sanctions were "introduced in the context of the JCPOA". Iran has argued that all sanctions must be lifted and that all the sanctions are linked to the JCPOA or as Russia is likely signaling in the "context" of the JCPOA.

### Oil – IEA, oil & natural gas demand won't drastically decrease, will it increase?

On Tuesday, we tweeted [\[LINK\]](#) on the Japan Ministry of Foreign Affairs press release [\[LINK\]](#) following its video meeting with IEA Executive Director Faith Birol. Our tweet was "2020s should be good for #Oil #NatGas. Japan, need to have "measures with pragmatic time frame" on acceleration of decarbonization efforts. @fbirol says need more investment to meet future #Oil #NatGas demand that won't "dramatically decrease", wonder if he sees it increasing? #OOTT." The JOFA release did not provide any detailed numbers from Birol. But Birol's comments are in line with the view of not enough supply and demand isn't dropping as fast as expected by the Energy Transition drivers. We are always careful of wording, which is why we wonder if Birol sees demand increasing in the 2020s? The JOFA release said "He also shared with Ms. Ono the IEA's analysis of the future energy market following the results of the OPEC Plus Ministerial Meeting held on November 4, 2021. He pointed out that the gap between supply and demand will continue to be tight in the short term, however, the supply and demand balance will improve around the turn of the year and the market will gradually regain stability. Furthermore, he underscored the need for additional investment to meet future demand, explaining that the demand for oil and natural gas will not drastically decrease even through our path towards transition to renewable energy." Our Supplemental Documents package includes the JOFA release.

**IEA on oil & natural gas demand**

### Oil – Rosneft sees potential supercycle for both oil and natural gas

Rosneft's CEO Sechin's comments in the Q3 results on Friday really remind on who will be the winner in the stronger for longer oil and natural gas prices in the 2020s – it will be OPEC, Russia and a few others that are actually increasing capex/production while, because of high prices, still increasing dividends and reducing debt. Sechin highlighted what is happening with demand for oil and natural gas at the same time as supply being constrained – looks like a supercycle for both oil and natural gas. We tweeted [\[LINK\]](#) "As structural discrepancies between supply and demand on global energy markets are further revealed, we may witness a new super cycle on the #Oil and #NatGas markets" #Rosneft Sechin. Plan to win in supercycle, increasing capex/supply & still lower debt/up dividends. #OOTT." Our Supplemental Documents package includes the full Sechin comment from the Q3 report.

**Rosneft sees potential supercycle**

### Oil – Vitol sees global demand to reach 100mb/d and price spike of \$100/bbl

On Tuesday, Bloomberg reported on its interview with Vitol Group CEO Russell Hardy. Vitol is the world's biggest independent oil trader. The report received attention due to his view that oil demand is likely to exceed 2019 levels in the first quarter of 2022. The bullish sentiment comes after BP Plc said that the demand for crude is back to 100 mmb/d. They expect market demand and supply to be reasonably tight with a likelihood that oil will jump to \$100/bbl. The report stated, "Hardy cautioned that demand has returned even as jet fuel and U.S. gasoline demand are not yet fully recovered to pre-pandemic levels. The forecast underscores how demand for diesel and petrochemicals is driving the crude oil recovery despite continued weakness in air travel that has decimated demand for jet fuel." Hardy noted that the market is expected to remain tight as OPEC producers currently have between 2-3 mmb/d of spare production capacity. US production is expected to be less than 1 mmb/d

**\$100/bbl oil likely in 2022**

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in 2022, underscoring the market tightness. Our Supplemental Documents package includes the Bloomberg Vitol CEO report.

#### **Vitol's Asia head reminded China is very much in oil inventory building mode**

Last week's (November 7, 2021) Energy Tidbits memo highlighted that morning's comments from Vitol's Asia Head. Last week, we wrote "*Earlier this morning, we tweeted [\[LINK\]](#) on some excellent (and different) China oil insights from Vitol's Mike Muller (Head, Vitol Asia) on the today's Gulf Intelligence New Silk Road podcast [\[LINK\]](#). We don't believe we have heard other experts put forward his near term China oil views. Muller's comments certainly caught our attention. He had a number of points so worth reading the transcript we created of his answer. He looks at China's recent edits and policy and sees that they have successfully talked down oil markets. And says "so my personal view is that China is very much in an inventory building mode because they don't want to be caught short in a colder winter." And "And they very successfully talked this down by policy and by edict a couple weeks back such that the steam got taken out of the whole thing. But you cannot move markets by words, in the end its all about inventories and about behaviour at the spot end of the market. But yes. watch this space. China is very much in a state of flux on NDRC rhetoric and directives versus real demand. And as I said a few minutes ago, there is a bit of a standoff in crude markets where the Chinese buyers for the January trading cycle haven't come to the table yet and are now faced with offers that are \$1 or \$2 a barrel higher at differentials vs Brent and Dubai than they were a month ago. And the view on the street is they will buy it because they need to." There is much more in his answer. Our Supplemental Documents package includes the transcript we created of his China oil comments.*

#### **Oil – Vortexa est 83.48 mmb at Nov 12, note big revision to Nov 5 estimates**

Note that we are referencing the Vortexa global crude oil floating storage data posted on the Bloomberg terminal as of 5:30pm MT yesterday and that these estimates often get revised over the weekend, and then again for the next week. Note we do not check daily for the revisions so our comments are compared to the Oct 29 and Nov 5 estimates that were posted on Sat Nov 6 at 3:30pm MT. It was another week of significant revisions to the prior week estimates, but not as much as the last two weeks. However, if we look at the last few months, float oil storage looks rangebound but trading near the lower end of the range. It is important to remember it is the smaller part of the global oil storage outlook and, as noted earlier in the memo, OPEC highlighted the massive correction to global oil inventories since June 2020. As of 5:30pm MT Sat, Bloomberg has posted Vortexa crude oil floating storage as of Nov 12 is estimated at 83.48 mmb, which is down 14.95 mmb WoW from the revised Nov 5 estimate of 98.43 mmb. There was a large upward revision to the Nov 5 estimates. Last Sat at 3:30pm, it was estimated at 91.53 mmb, which is 6.90 mmb lower than yesterday's 5:30pm MT estimate of 98.43 mmb for Nov 5. There was a smaller downward revision to the Oct 29 estimate. Last week at 3:30pm MT, it was estimated at 94.89 mmb, which is 2.55 mmb higher than yesterday's 5:30pm MT estimate of 92.34 mmb. The Nov 12 estimate of 83.48 mmb is +6.26 mmb vs the recent June 25 trough of 77.22 mmb. The Nov 12 estimate of 83.48 mmb is down 140.88 mmb vs the June 26, 2020 peak of 224.36 mmb. There was small revision to the June 26, 2020 peak that was estimated last week at 222.26 mmb. The Nov 12 estimate of 83.48 mmb is +24.22 mmb vs the Pre-Covid of 59.26 mmb as of Nov 11, 2019. Below is the Bloomberg posted Vortexa crude oil floating storage data for the past two years as was posted yesterday at 5:30pm MT.

#### **Vortexa floating storage**

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Figure 27: Vortexa Floating Storage Nov 12, Posted on Bloomberg 5:30pm MT Sat



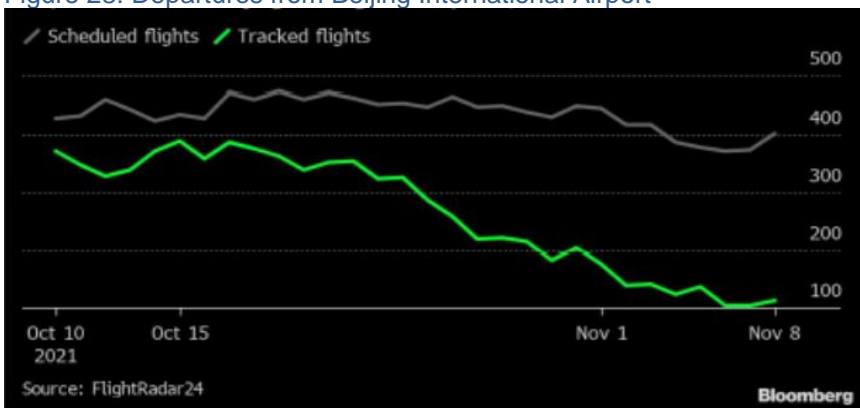
Source: Bloomberg, Vortexa

**Oil – Bloomberg Oil Demand Monitor, China cancels more flights due to Covid**

We recommend reading the weekly Bloomberg terminal Oil Demand Monitor for a good recap of key oil demand indicators around the world. China seat capacity decreased by 13% from last week following new Covid-19 restrictions, in accordance with China’s zero-tolerance policy. China is now operating at 23% fewer seats than the equivalent week in 2019. Europe’s six biggest flight markets are down 21% vs 2019, still significantly better than January to May levels that were 65% lower than pre-pandemic levels. Turkey flight levels have the most optimistic picture, down just 3% from 2019 levels on November 1, though the gap widened to being down 8% on Nov 8. The US has consistently seen 1.8 million passengers passing through security turnstiles since early October, much closer to 2019 levels compared to the rest of the world. New York, London, and Paris continue to be above 2019 levels of congestion, with levels of +8%, +15% and +12% respectively. France saw roadways volumes +0.7% above 2019 levels and Brazil was also up 5.9% for the week ended Nov 8. Refinery utilization was up 0.3% at 86.7% compared to 2019; US East refinery utilization were a significant +19% compared to 2019. Below is a graph depicting the decline in departures from Chinese Airports. Our Supplemental Documents package includes the Bloomberg Oil Demand Monitor.

**Bloomberg’s Oil Demand Monitor**

Figure 28: Departures from Beijing International Airport



Source: Bloomberg

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### Oil – AAA expects a +13% increase in travellers for Thanksgiving weekend

On Tuesday, the AAA released their forecasts for US Thanksgiving travel, which is the busiest travel weekend of the year [\[LINK\]](#). Based on mid-October forecast model, AAA is expecting a 13% YoY increase in travellers to 53.4 million, within 5% of 2019 levels. Air travel has significantly recovered, up 80% from last year and with the recent border opening to all fully vaccinated individuals, we are likely to see more crowded roadways and airports for the holidays. AAA expects an 8% rise in automobile travel, and an 80% increase in air travel, down just 9% from 2019 levels. Not surprisingly, AAA expects a 47.5% decline YoY in air travel to 2.4 million travellers. Our Supplemental Documents package includes the AAA forecast.

**AAA  
Thanksgiving  
travel forecast**

### Calgary ties with Tel Aviv, Israel, for 8<sup>th</sup> most popular thanksgiving destination

The AAA US Thanksgiving travel forecast also included its list of top US and international destinations for US Thanksgiving travel based on the AAA booking data. The vast majority of the most popular booked destinations aren't going to surprise anyone as they are almost all to warmer places. But we were surprised by one name on the list so we tweeted [\[LINK\]](#) "What doesn't belong on this list @AAAnews Big Cities & Beaches for Americans travel during Thanksgiving? #Calgary is only cold place to crack the list. We don't have warm weather/beaches, but it's a great city & #Canmore #Banff in Cdn Rockies are close". Calgary was tied for #8 on the international destinations. The top 9 international destinations, in order, were Cancun, Montego Bay, Aruba, Los Cabos, Nassau, St. Lucia, Tel Aviv tied with Calgary, and then Paris. Most of those are more vacation type travel, but we suspect Calgary and Tel Aviv are more related to the reopening of borders and reuniting families/friends.

### Oil & Natural Gas – PSAC raises Cdn wells forecast for 2022 by 16% to 5,400

There is no question that public Cdn E&P continue to move away from the going for growth model to a model of increasing dividends, increasing buybacks, reducing debt and modest growth despite huge oil and gas prices. This is reflected in the drilling outlooks. Drilling activity in Canada is expected to be higher than 2019 levels with strong forecasted oil prices in the near term, still significantly down from pre-downturn levels. With global supply and demand imbalances, we expect that drilling will increase out of necessity. There is concern over the labour shortage in Canada, that could be a limiting factor into how much growth the industry will be able to achieve in 2022. PSAC released its update to its Canadian Oilfield Services Activity Forecast for 2022, which is reflective of this significant increase [\[LINK\]](#). PSAC increased its forecast for wells to 5,400, an increase of 750 or 16% vs their last forecast of 4,650. This is based on WTI of \$70/b, AECO C\$4.10/mmbtu, and a \$0.80 dollar vs the forecast of \$67/b WTI, C\$3.60/mmbtu AECO, and a \$0.80 dollar. PSAC expects the drilling activity to be in the Montney and Viking formations with E&P companies not deviating from the strict capital discipline. Wells in Alberta are expected to increase 450 YoY to 3,125, Saskatchewan +198 to 1,495, and BC +79 to 605. Our Supplemental Documents package includes the PSAC update.

**+750 wells from  
final 2021  
forecast**

### Oil & Natural Gas – Reminder cash income taxes will be an increasing 2022 factor

Its been a great Q3 reporting for Cdn oil and natural gas companies. And we continue to remind that Q4 will be even better with higher average prices vs Q3. But one increasing cost for oil and gas companies is increasing cash income taxes. Historically, oil and gas companies paid very little, if any, cash income taxes. A key reason being they would spend at least cash flow and generate more income tax deductions. But capex is now at some portion

**Cash income  
taxes in oil and  
gas**



(say 50 to 60%) of cash flow. And combined with the great cash flows, it means that cash income taxes are starting to increase. And these cash income taxes will be higher next year.

### Oil & Natural Gas – Quebec joins Beyond Oil & Gas Alliance

Quebec's ability to easily shut down the potential of the Energy East oil pipeline should have left no doubt in the oil patch that it will be impossible to do any new oil and natural gas projects that directly involve Quebec. We don't think anyone felt differently but, if they did, they shouldn't feel differently now. At the COP26 Climate conference in Glasgow, 11 national and subnational governments announced the launch of the Beyond Oil & Gas Alliance (BOGA). The group, led by Costa Rica and Denmark includes core members of France, Greenland, Quebec, Sweden and Wales. The alliance is the first of its kind and involves implementing an end date for each governments oil and gas exploration and licensing, in accordance with the Paris Agreement. BOGA plans to leverage momentum and create an international community that will be able to support governments in the transition to phase-out oil and gas production. We are interested in the comment by Quebec Premier Francois Legault who stated *"Quebec intends to fight against climate change by exploiting, in particular, its abundant hydroelectric resources. But to achieve our target of reducing GHG emissions by 37.5% in 2030 compared to 1990 and achieve carbon neutrality in 2050, we must also free ourselves from fossil fuels. By joining the Beyond Oil and Gas Coalition, Quebec is setting an example and assuming its leadership role in green energy production. We must also urge other states to find alternatives to oil and gas."* Quebec's membership paints a bleak picture for the development of oil and gas infrastructure in Canada and reminds of the Energy East pipeline proposal that was shut down by the Quebec government. Our Supplemental Documents package includes the announcement.

**BOGA alliance**

### Energy Transition – COP26 keeps 1.5c alive, but “the pulse of 1.5 is weak”

It took an extra day until later Saturday local time, but COP26 did results in the Glasgow Climate Pact. We will be writing and linking in the COP26 agreement in our upcoming memos and blogs. The end result should not surprise anyone as this was the chatter in the last month lead up – the focus will be on Net Zero leaders to be able to leave Glasgow saying 1.5c is alive. There are many big picture disappointments for climate change side is that they were unable to get the global commitment to get rid of fossil fuels, in particular coal. It will be hard for anyone to not believe that the demise of oil, natural gas and coal will not be as quick as aspired by the climate change side. One other theme that is finally catching traction is mini nukes for power, a theme we have been highlighting for years. This climate change disappointment was clearly reflected in the COP26 President Alok Sharma concluding media statement. [\[LINK\]](#) We have to feel for Sharma as he put a lot into COP26 and he is clearly disappointed and the video shows that disappointment. In the statement, Sharma said *"I would say, however, that this is a fragile win. We have kept 1.5 alive. That was our overarching objective when we set off on this journey two years ago, taking on the role of the COP presidency-designate. But I would still say that the pulse of 1.5 is weak. That is why, whilst we have reached, I do believe, a historic agreement. What this will be judged on, is not just the fact that countries have signed up, but on whether they meet and deliver on the commitments."* One last reminder is that as weak as the agreement may seem, the reality is that the actual commitments will be weaker. Every agreement of this type as separate side agreements that are not part of the public final agreement and these side agreements are done to get countries to sign up.

**COP26 kept 1.5 alive, but barely**

### Energy Transition – Macron wants a “credible strategy” on CO2 emissions in Europe

No one should be surprised to see France President Macron take a more realistic approach to the Energy Transition. On Tuesday, Macron made a national speech [\[LINK\]](#) that was

**Macron turns realistic on Energy Transition**

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focused on the pandemic and how France is emerging. However, what caught our attention was the last sentence in a speech that wasn't focused at all on energy and the energy transition. Its why, we tweeted [\[LINK\]](#) *"Does #Macron hope can avoid yrs of energy crisis/high prices if a realistic #EnergyTransition. "We will be able to build a credible strategy for reducing our CO2 emissions, compatible with our industrial & technological sovereignty" @EmmanuelMacron #OOTT."* It is important to remember that Macron takes a leadership role in Europe next year with the French presidency of the Council of the European Union. So Macron closes his speech with a view of what he wants to accomplish with the EU. And the last line in the speech is a *"credible strategy"* for reducing CO2 emissions. This sounds like a clear view that Europe needs something that is realistic and credible. He concluded his speech *"But France will not be strong alone. With the European Union: → We need to better protect our external borders. → We will continue to rebuild a relationship of peace, stability and growth with Africa. → We will be able to better regulate the digital giants. → We will be able to build a credible strategy for reducing our CO2 emissions, compatible with our industrial and technological sovereignty."*

### **Macron warned of higher medium and long term fossil fuel prices**

We say no one should be surprised by Macron wanting a credible strategy because he has been vocal that they are building a system that is going to see higher medium and long term fossil fuel prices and threaten the economy. Our October 31, 2021 Energy Tidbits memo was titled *"Macron "Ironic, Because We are Building a System Where in the Medium & Long Term Fossil Energy Will Cost More & More"*. In the Oct 31 memo, we wrote *"Its more than annoying that we finally see political and business leaders acknowledge the Energy Transition will take longer, be a bumpy road and have higher energy costs. One of our tweets yesterday was a reply [\[LINK\]](#) "Yes. Its unfortunate G7 leaders knew they wouldn't get commitment to #NetZero if they told people they really didn't have a plan on how to get there without causing a self inflicted energy crisis for the 2020s, hopefully not longer than that." We think its too late, for the most part, to see these new confessions – this time by France's Macron. These political leaders and also business leaders drove thru the push to the Energy Transition in 2019, 2020 and the first part of 2021 and now we see some start to warn that this isn't going to be pretty. They didn't have a plan on how to execute this and certainly didn't have (and still don't have) an idea of how much it will cost. Although some like Macron are admitting it means higher energy prices for years to come. As we put in our tweet, hopefully its no more than a decade. Our first tweet yesterday morning [\[LINK\]](#) was on the FT's report "Macron warns of threat to global economy from energy crisis" [\[LINK\]](#). Macron's concern on current energy prices got all the attention. However, the part that is getting less attention is what Macron said on fossil fuel prices. Our tweet was "Oops, #Macron on #EnergyTransition "ironic, because we are building a system where in the medium & long term fossil energy will cost more & more, that's what we want to [to fight climate change]". 2020s will be very good for #Oil #NatGas prices. Great report @labboudles #OOTT."* Note Macron is saying medium and long term, he is not just talking about the energy crisis this winter. This is an acknowledgement that is acknowledging what our thesis has been, even before Covid, that the 2020s will be a period of stronger for longer oil and natural gas prices. FT posted the full report without subscription and there is more in it such as more natural gas supply is needed. Our Supplemental Documents package includes the FT report."

### Energy Transition – Japan wants a pragmatic time frame for decarbonization

Japan isn't as direct as Macron, but has the same message on having a realistic plan and time frame for the energy transition. On Tuesday, we tweeted [\[LINK\]](#) on the Japan Ministry of Foreign Affairs press release [\[LINK\]](#) following the video meeting with IEA Executive Director Faith Birol. There were two significant points from Japan on the Energy Transition – there should be a pragmatic timeframe and one based on individual country circumstances. Japan wrote *“The two sides also exchanged views on acceleration of decarbonization efforts following COP26, and shared the importance on measures with pragmatic time frame based on individual circumstances that each countries face including its renewable energy potentials, while it is important to expand investment on renewable energy to achieve carbon neutral.”*

**Japan wants a pragmatic time frame**

### Energy Transition – Granholm puts on the record high energy costs are here for years

Last week's (November 7, 2021) Energy Tidbits noted Biden seemed to also acknowledge a longer life for oil and natural gas. On Oct 31, we tweeted [\[LINK\]](#) *“Is #Biden following #Macron & finally realizing demand for #Oil #NatGas is going to be more for 2020s than in his #NetZero aspiration? Oops, cancel #KeystoneXL, do zero to support US oil supply growth, etc. 2020s will be very good for #Oil #NatGas prices & #OPEC+. #OOTT.”* Biden wasn't as direct as Macron the week before on demand (see our Oct 31, 2021 Energy Tidbits), but seemed to be acknowledging demand for oil isn't going away as fast as he had planned. And, as everyone now knows, supply has been hurt by lack of oil investment so its sets up the tighter oil market for the 2020s. In his closing G20 press conference, Biden said *“Well, on the surface, it seems like an irony, but the truth of the matter is — you've all known; everyone knows — that the idea we're going to be able to move to renewable energy overnight and not have — from this moment on, not use oil or not use gas or not use hydrogen is just not rational.”* Energy Secretary Granholm was on MSNBC Morning Joe on Monday. We tweeted [\[LINK\]](#) on her comments and noted she that US/Can voters weren't warned in the recent elections that the Energy Transition will happen but will lead to higher prices on oil, natural gas and electricity for years to come. We created a transcript of her saying *“So the long term strategy is that. and yes we have a short term cost issue because the economy is still coming back on. we have a supply, demand that does not, the supply doesn't meet the demand. that is an issue we are going through. The president is all over this both in the short term and in the long term.”*

**Granholm warns on energy costs**

### Energy Transition –Is \$23 trillion the Biden cost estimate to decarbonize the US?

We have to wonder if Energy Secretary Granholm revealed the mysterious Biden administration estimate for how much it will cost to implement Biden's plan to decarbonize the US. On Monday, Granholm was on MSNBC Morning Joe and we tweeted [\[LINK\]](#) *“#CleanEnergy sector is a \$23T sector by 2030 says @SecGranholm to @morningmika. Is \$23T the #Biden cost estimate for US to be carbon neutral that she wouldn't say in June to @SenJohnKennedy? See SAF June 27 Energy Tidbits. #EnergyTransition will cost big big money. #OOTT”*. To date, we are not aware of Granholm ever providing an estimate for how much it will cost to decarbonize the US. The only dollar figures she kind of admitted to was something less than hundreds of trillions, but something in the trillions. On Morning Joe, she threw out the “clean energy sector is a \$23 trillion sector by 2030”. Probably doesn't mean much to most but she didn't give details on what she meant by the \$23 trillion. But to have a number like \$23 and not \$20 or \$25 or \$30 would seem to suggest that there is some specific number out that is \$23 trillion. Maybe its some economist forecast for the value of the clean energy sector. But we also have to wonder if it's the Biden estimate of the cost of the energy transition. We made a transcript of here comments and she said *“Mika, the clean energy sector is a \$23 trillion sector by 2030, \$23 trillion. And that means for us, are we going to*

**Granholm's \$23T clean energy sector**

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*stand by and allow other countries to do it or are we going to get into the game. This bipartisan infrastructure bill allows us to get in the game. To be able to build those products here. Stamp them made in America. Use them here, export them. So the long term strategy is that. and yes we have a short term cost issue because the economy is still coming back on. we have a supply, demand that does not, the supply doesn't meet the demand. that is an issue we are going through. The president is all over this both in the short term and in the long term."*

### **In June, Granholm wouldn't say how many \$trillions to decarbonize the US**

Our June 27, 2021 Energy Tidbits memo was titled "*Biden Either Doesn't Estimate or Won't Say How Many \$ Trillions To Get US to Carbon Neutral*". Granholm testified that week at a Senate committee meeting, and we wrote "*We think Energy Secretary Granholm may have inadvertently taken away the credibility for the Biden administration to shoot down any views that the energy transition will make energy very expensive in the future. We recognize that Senate and House hearings with Biden cabinet members, in this case Energy Secretary Granholm, are basically used by the questioners to make their political point. However, in this case, we tweeted on an exchange between Rep Senator Kennedy and Granholm. Kennedy's problem is that the Biden's push to reduce emissions won't mean much if China and India don't similarly step up. But linked to that was the exchange that caused us to tweet [\[LINK\]](#) "US can't control what CN IN actually spend to be #CarbonNeutral, but politics aside, shouldn't #Biden admin have a rough estimate of how many \$trillions to get US to carbon neutral? How can anyone say #EnergyTransition won't cost more? #NatGas #OOTT". The exchange starts with Kennedy asking Granholm how many trillions it will cost to get the world to carbon neutral, she doesn't have a number, he asks hundreds of trillions and she replies "it would be a lot, for sure" with a smile. We don't think we are been bias by saying most people think she is a well liked person and we suspect she probably that might be enough to change questions. However, it was Kennedy so he comes back asking how much the energy department thinks it will cost to make the US carbon neutral? Granholm replies, "again, it would be a lot", Kenney asks "hundreds of trillions?", Granholm "I don't know about hundreds of trillions but it would a lot of money", Kennedy "it'd be in the trillions", Granholm "Yes", Kennedy "mid trillions?", Granholm "I don't know". We recognize Kennedy is trying to play at gotcha you in getting Granholm to commit to an estimate but, the more we thought about it, we thought it was a good question – shouldn't the Biden administration have some even really rough idea of what they think it will cost? Because without some rough cost with many unproven assumptions, how can they continue to argue that estimates or even calls that the energy transition will be expensive are incorrect or based on old thinking? Didn't Granholm take away their credibility to say that in the future. The gotcha you question may not have worked the way Kennedy wanted, but really did work in a different way. Our Supplemental Documents package includes the transcript of the Kennedy/Granholm exchange.*

### **Energy Transition – Excellent Eni reality check on Energy Transition**

Eni, like the other European supermajors, are leading Big Oil in the energy transition. So we look at the Eni CEO comments more of a warning on here is the implications of what we are doing as we are committed to the Energy Transition. Earlier this morning we had four Tweet thread [\[LINK\]](#) on an excellent Corriere Della Sera interview yesterday with Eni CEO Claudio Descalzi. [\[LINK\]](#). We could have done a bigger thread. Here are a few of his insights. (i) a great description. We don't think we are seeing the pendulum swing back, but as noted by Macron, Japan and others, we are at least seeing some reality check that the Energy

**Eni CEO on higher energy costs ahead**

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Transition plan isn't working. Descalzi said *"We are witnessing a pendulum effect. There is the impression that large corporations have done what they have wanted all these years, so it is concluded that in order to be able to block emissions, corporations must be blocked. So it swings to the opposite extreme"*. (ii) The pendulum swing has led to the European supermajors reallocating oil and gas capital to renewables. And with demand reducing, we have a supply problem. Descalzi said *"We feel the right need to decarbonise but this impacts on investments in traditional sources and generates a decrease in their supply in the face of a demand that still requires them structurally"* *"those who must ensure energy are unable to maintain production at the necessary pace, due to the decline in investments in recent years."* (iii) Energy costs have to go higher because it costs more to produce biofuels and hydrogen. Descalzi said *"With laws, incentives and implementing rules. If biofuels are to be used instead of regular gasoline, regulations are needed. If you have to use green or blue hydrogen that has a higher cost than that produced by the simple transformation of methane, then you need to compensate for the difference in production costs."* (iv) Need a realistic plan to connect the dots. Descalzi said *"It is not enough to set goals for 2030 or 2050. We must build the connective tissue of infrastructures, of demand, of supply, of norms, of laws. A very in-depth analysis must be made"*. (v) See the role for mini-nukes. It was interesting that Descalzi didn't say, like biofuels & hydrogen, that incentives will be needed for mini-nukes. Rather all he highlighted is the need to have streamlined procedures to get done. Descalzi said *"To be competitive, we need to streamline procedures, find a pact with the local area to be able to develop industrial activities and be aware that industrialization done in the correct and transparent way that creates development and work is positive for the whole of society."* (vi) Great reminder how that unless Africa is stuck in poverty, they will be a game changer for energy demand growth. Descalzi said *"The demand for energy will rise, also because humanity is growing. The expected 25-year increase of more than two billion people will be concentrated in Africa and Asia. There is the most important energy gap: African energy consumption is about 4% of the world, but the population is 17%. This gap is the measure of poverty. But when the development comes, the demand for energy will increase dramatically. So it will be in China, in India, in all of Asia in general"*. Our Supplemental Documents package includes the Corriere Della Sera interview.

### Energy Transition– TotalEnergies begins tree planting initiative in Congo

TotalEnergies has launched their "Bateke Carbon Sink" afforestation operations in the Republic of Congo [\[LINK\]](#). We continue to believe tree planting and protection of forests will be a much bigger focus for carbon offsets. Our April 25, 2021 Energy Tidbits memo noted the utilization of tree planting to combat CO2 emissions, *"As we were about 2/3 the way through the leader's speeches at Biden's climate summit on Thursday, we had to tweet on perhaps the most mentioned emissions reduction themes – planting trees. We had to tweet [\[LINK\]](#) '#NetZero. one group that should be happy f/ leader commitments at @POTUS climate summit is the plant a tree, save a life movement. lost count of how many billion trees are being committed to be planted, but has to be at least 1 tree for the 7.9 billion people in the world.'" We didn't do a final count, but we suspect the commitments were more like 2 trees for every person in the world. This won't just be countries, but also companies will be jumping in on the tree planting."* The large- scale project conducted by TotalEnergies, in partnership with Foret Resource Management, consists of 40,000 hectares of planted forest on the Bateke Plateaux of the Southwest region of the Republic of Congo. 40 million trees are expected to be planted over 10 years and cared for over the next 35 years. Local tree nurseries have already produced over a million trees for the project, that are intended to be planted during the next rainy season over 800-hectare region that has been prepped since last summer. TotalEnergies said the tree planting is expected to create a carbon sink which will capture 500,000 tons of CO2 per year over the next 20 years; this roughly equates to the

**TotalEnergies  
tree planting  
announcement**



average emissions of a European city of 70,000 inhabitants. The carbon credits are to be certified in accordance with the verified Carbon Standard. Our Supplemental Documents package includes the TotalEnergies release.

#### **TotalEnergies needs 12x the area in tree planting to offset the emissions**

TotalEnergies said this project should offset the equivalent of a typical European city of 70,000 people. This made us wonder about the relative land areas of the two. TotalEnergies is planting 40,000 hectares to offset the 70,000 person city. Perhaps the best known France city of 70,000 population is Calais with 73,000 and Wikipedia has its area as 33.5 km<sup>2</sup> or 3,350 hectares. So it will take 12 times the area of tree planting to offset the CO<sub>2</sub> emissions of the area of a town like Calais.

#### **Energy Transition – Southwest Airlines to utilize sustainable aviation fuel**

No one can deny sustainable airline fuel will reduce emissions from airplanes. But no one can also deny that the impact on jet fuel demand will be very small. On Wednesday, Southwest Airlines announced [\[LINK\]](#) their plans to transition to sustainable aviation fuel (SAF) with an offtake agreement with Velocys Renewables LLC. The 15-year agreement looks to import 14.6 million gallons of fuel each year and could abate up to 6.5 million metric tons of CO<sub>2</sub> over the term of the agreement. To put in perspective, Southwest used 2.1 billion gallons of jet fuel in 2019. Southwest will begin purchasing SAF from Velocys Bayou facility in Natchez, Mississippi by 2026; the facility is expected to have an output capacity of 25 million gallons per year. Additionally, the agreement establishes a strategic partnership that will offer Southwest the opportunity to purchase significant volumes of SAF from future Velocys facilities. The deal aims to replace 10% of the current total Jet fuel consumption by 2030. The release stated, *"Our 15-year offtake agreement with Southwest Airlines will enable them to utilize the lowest carbon intensity sustainable aviation fuel announced to date," The SAF produced at the Bayou Fuels facility plans to utilize a sustainable feedstock (forestry residues from plantation forests) and renewable power from a neighboring solar facility, as well as contract for carbon capture that will sequester more than 500,000 tons of carbon dioxide per year.*" Our Supplemental Documents package includes the Southwest press release.

**Southwest agrees to 15-year SAF deal**

#### **Energy Transition –Biggest direct air capture of carbon plant offsets <900 cars**

One of the many topics at COP26 was direct air capture of carbon plants. And any discussion of direct air capture inevitably included the largest operating direct air capture plant in the world – the Orca in Iceland. Bloomberg wrote *"The Iceland plant, called Orca, is the largest such facility in the world, capturing about 4,000 metric tons of carbon dioxide per year. But compared to what the planet needs, the amount is tiny. Experts say 10 billion tons of carbon dioxide must be removed annually by mid-century."* The math says to remove all the carbon by air capture would require 2.5 million more Orcas. The point is that it doesn't do a lot. We described it a little differently in our Sept 26, 2021 Energy Tidbits, when we wrote on the startup of Orca. In that memo, we wrote *"Energy Transition –Biggest direct air capture of carbon plant offsets <900 cars. We are well aware that governments and capital providers are going to make sure the world is put on a push to get to Net Zero, we just don't want to see that ambition result in an massive energy crisis for multiple years in the 2020s. But it gets increasingly harder to not believe a massive energy crisis is coming because we continue to see capital allocation go to energy transition technologies that are Not Ready for Prime Time. Yet, capital continues to pour into them. A good example is the push into direct capture of carbon from the air. On Tuesday, NowThis news tweeted a video [\[LINK\]](#) from Climeworks CEO (Jan Wurzbacher) on how they just turned into operation their Orca plant in Iceland, "which is the largest direct air capture plant currently operational in the world with a*

**Biggest direct air capture of carbon plant**

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capacity of 4,000 tonnes of CO<sub>2</sub> that are captured from the air every year. So that's phenomenal capacity." We hadn't realized that the capacity of the direct air capture plants was that low, which is why we tweeted [\[LINK\]](#) "World needs massive cuts to #CO<sub>2</sub> emissions & need demonstration projects like this to show it can be done. But world's biggest project can remove 4,000 tonnes CO<sub>2</sub>/yr only offsets <900 cars, EPA est typical car emits ~4.6 tonnes CO<sub>2</sub>/yr. #EnergyTransition will be hugely expensive." Our tweet included the main page from the EPA's Greenhouse Gas Emissions from a Typical Passenger Vehicle [\[LINK\]](#) "a typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year". The math perspective is that the world's largest operating direct air capture of carbon plant will only offset the CO<sub>2</sub> emissions of <900 cars. Climeworks did not disclose the capital or operating costs of the Orca plant. But this must be hugely expensive to take the equivalent of <900 cars off the road. Yet direct air capture of carbon is still able to attract massive capital. To illustrate the challenge, the number of cars in the US is approx. 290 million, or the equivalent of ~325,000 Orca direct air capture of carbon plants.

Figure 29: Climeworks Direct Air Capture Plant



Source: Climeworks, NowThis

### Climate Change – most people will make changes to reduce climate change impact

One of the interesting developments to watch over the 2020s will be how much behavioural change will be required of people to reduce emissions. We believe that everyone is prepared to make some change, the question is how much and what items. The test will come when changes are regulated and then we will know what people are prepared to do to reduce climate change impact. Pew Research posted the results of their survey [\[LINK\]](#) across 17 advanced economies around the globe, assessing the widespread concern of the personal impact of climate change. Most citizens said that they would be willing to make lifestyle changes to combat the effects of global warming, but the impact of their efforts remains unclear. Germany was among the most concerned citizens about the personal ramifications associated with climate change, increasing 19% since 2015. Japan saw the largest decline in citizens concern over climate change, down 8% from 2015. The survey noted that young people, who are at the forefront of prominent global climate change protests, are the most concerned with 65% of 18-to-29-year old's are concerned with climate change; this significantly differs from people 65 and older, with only 25% showing concern. Ideological differences were noted as those on the left were more likely to express willingness to change their behaviour to help reduce the efforts of climate change than their right winged counterparts. The publics with education are more likely than those with less education to

PRC climate  
change survey

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alter their lifestyle to reduce their impact. Citizens with a post secondary education were 14% more likely to make changes than the less educated in Belgium, 13% in France and 11% in both Germany and New Zealand. Those with greater than median income were also more likely to make changes to their lifestyle than their below median counterparts.

### Capital Markets – AI has to be an increasing factor in sorting thru “news”

Later in the memo, we note the Pew Research report on how Americans prefer to get their news. And it highlights the increasing preference, especially among younger Americans, to get their news from digital devices. We recognize the challenge in sorting thru and picking what to use from the massive amount of news, reports, etc on Twitter, Facebook, etc. But we don't know how investors and analysts can't look to their devices, Twitter, Facebook, etc for news and information to help in forming their investment strategy and trading. There is a rapidly escalating volume of relevant info/data on social media. And that brings the challenge in sorting and screening. And that is why, on Thursday, we tweeted [\[LINK\]](#) “Here is why #AI is essential to market followers. 5.2b people now internet connected, @Twitter has 206 million daily active users & 575,000 tweets/minute. if 1/10th of 1% were notable for some reason to markets, that is 575 tweets/minute. #OOTT Thx @VisualCap @backlinko.” On Wednesday, Visual Capitalist posted a graphic “From Amazon to Zoom: What Happens in an Internet Minute In 2021?” that noted every minute there are 575,000 Twitter user posts, 65,000 Instagram users shares, and 240,000 Facebook user shares, etc. And Backlinko [\[LINK\]](#) noted Twitter has 206 million daily active users. Our Supplemental Documents package includes the Visual Capitalist graphic. [\[LINK\]](#)

**AI to play big role  
in sorting news**

### Demographics – Digital devices vs TV for “news”, its all about age

The way in which people are consuming their news has shifted drastically in recent years, and the biggest factor is in age difference across populations. The Pew Research study [\[LINK\]](#) results were from asking Americans where they obtain their news and the method in which they prefer the news being delivered to them. 84% of Americans said they often or sometimes get their news from a smartphone, computer, or tablet, with 51% indicating this was their preferred method, down from 60% in 2020. Radio and print news are utilized far less amongst many Americans. Most surveyed Americans indicated using news apps, search engines, social media and podcasts for the delivery of news via digital devices. The biggest difference in the delivery of news comes down to age. 90% of 18–29-year-old obtain their news from digital devices, with 45% indicating they still got their news from the TV. 89% of Americans aged 30–49 also obtain news from digital devices with 58% indicating they still use the TV and 52% listening to the radio for their news. 50–64-year-olds saw 89% utilizing digital devices for their news, with 78% indicating they still used the TV and 58% still using the radio. Americans aged 65+ had 85% using the TV to obtain their news, 72% used digital devices, 51% used the radio and 56% using print publications. And the key item to note is the huge difference in age when it comes to the preferred method of delivery. 77% of Americans aged 18–29 indicated digital devices as their preferred method of news delivery, while just 24% of Americans aged 65+ indicated this as their preference. 57% of Americans aged 65+ indicated the TV as their method of preference while just 11% of 18–29-year-olds indicated the TV as their preference. Almost half of Americans aged 50–64 indicated TV as their preferred method of news delivery while 38% preferred digital devices. Americans aged 30–49 saw 26% in favour of TV and 62% preferring digital devices as their preferred method.

**News delivery  
platforms differ  
based on age**

### 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

**@Energy\_Tidbits  
on Twitter**

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wanted to use Energy Tidbits in our name since I have been writing Energy Tidbits memos for over 20 consecutive years. Please take a look thru our tweets and you can see we aren't just retweeting other tweets. Rather we are trying to use Twitter for early views on energy items. Our Supplemental Documents package includes our tweets this week.

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

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.

#### **Looks like nice cold weather for Canada/Mexico World Cup qualifier Tues**

Canada currently sits 3<sup>rd</sup> with 13 points in the World Cup Qualifying CONCACAF group, just behind the US and Mexico with 14 points. On Friday, US was at home and beat Mexico 2-0 and Canada was at home and beat Costa Rica 1-0. And on Tuesday, Canada is at home in Edmonton to play Mexico. Canada and Mexico played to a 1-1 draw on Oct 8. That was a great match and we weren't alone in thinking Canada should have won. Mexico has the home pitch advantage playing in the heat, humidity and the high altitude 7,300 feet Mexico City. We have to believe Canada has the home pitch advantage on Tuesday that is expected to be -6C at the start of the match and going colder and looking like snow.

#### **Former UCLA basketball coach John Wooten leadership quotes**

I had in the background the other day a sports documentary on Kareem Abdul Jabbar going back to his high school days at Power Memorial and then playing college basketball at UCLA under famed coach John Wooden. The documentary was on Jabbar so didn't get into a lot on Wooden. But it reminded that Wooden, like Lombardi and other great coaches, had great leadership/motivational quotes. Here are a couple: *"The true test of a man's character is what he does when no one is watching"*, *"It's what you learn after you know it all that counts"*, *"Do not let what you cannot do interfere with what you can do"*, and *"Whatever you do in life, surround yourself with smart people who'll argue with you."*

#### **Office workers will miss cubicles when their future office is a phone booth**

We didn't have the PVR going when we saw a clip this week of some offices in the post Covid world moving to these phone booth size work offices. The thesis is it is more needed in the post Covid world for people to have soundproof private work spaces for their own phone calls or even video meetings. They didn't call it phone booth size, but they looked like the size of a phone booth. The first thing we thought about when we saw the clip was that they are just copying the concept of the Tokyo capsule hotels.

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Figure 30: Soundproof work space, Tokyo capsule hotel



Source: Framery, Global Hotel Tokyo

### New Word rules for spacing

There are probably many changes in Word's protocol for highlighting potential typos. And we probably just don't think about it when we see a highlighted potential typo. It's a great assist and our weekly memos would probably have multiples more typos without it. It's like Pavlov's dog except no real punishment. We just get tired of seeing the highlighted mistake so are trying to change our drafting. We are not sure exactly when Word changed their norms/rules for highlighting potential typos, but we have noticed their recent change to now highlight a revised protocol for spacing after a sentence. At least in Word's world, it's now only one space after a sentence, whereas the norm has always been two spaces after a sentence. It looks like it's working.