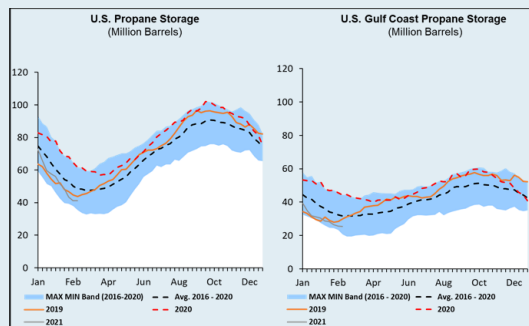




No Growth Guarantees for U.S. Propane Exports in 2021/22

Will the 2021-22 heating season be a challenging year for propane? To be more specific, will it be a challenging year for U.S. propane exports? For the first time in many years, we are seeing lack of consensus amongst the analyst community and market pundits, and for good reasons. Since 2010, U.S. propane supply has grown at a staggering rate year-on-year, with U.S. propane supplies doubling in that period. Most analysts (including us), assumed that propane supply would increase on capital inflow in the upstream sector and billions of dollars of investments in the midstream sector – from processing plant to LPG export terminals. On the demand side, analysts assumed that all propane would be consumed by the ever-expanding economies in Far East and South East Asia. For the first time in recent memory, however, the 2021-22 season seems different. Exports could face pressure this season and may not show year-over-year growth.

While we have a few weeks remaining in propane heating season, it is unlikely that a major weather event will disrupt U.S. propane inventories. Post-Winter Storm Uri, U.S. Gulf Coast propane inventories are close to 5-yr lows as we approach the shoulder/summer injection season.



Besides dislocations from Winter Storm Uri, U.S. propane exports have consistently ranged between 1.0 – 1.3 Million BPD over the last year, with some extraordinarily strong months in 4Q2020, when exports exceeded 1.6 Million BPD. In fact, 4Q2020 was the strongest quarter ever for U.S. propane exports, averaging more than 1.4 Million BPD. Tightness in propane markets has resulted in strong prices, with Mont Belvieu propane’s ratio to crude price trading significantly above the 5-yr average (65% vs 5-yr average of less than 50%). Consequently, export arbs have retreated and are just holding above 5-6 cpq over Mont Belvieu – and this is despite a sharp drop in the VLGC

freight market, as shipping rates for a USGC to Asia VLGC voyage have plunged from ~36 cpq in Dec/Jan 2020 to just above 10 cpq.

We believe Asian economies will continue to increase their appetite for more imported propane, but this is not guaranteed. International propane demand for cooking in countries like India and Indonesia will take some time to come out of post-COVID-19 lockdown measures, and propane demand from Asian petrochemicals markets will depend on the relative economics of imported LPG vs naphtha – which continues to favor propane/LPG due to the rise in crude prices. So, while there are a few unknowns, we believe, on balance, that there will be ample market to absorb any growth in U.S. exports in 2021-22. If OPEC+ continues with its production cut program, then it will only support more U.S. LPG exports.

This brings us to the last piece of the U.S. propane puzzle: supply from gas processing plants (we assume that propane from refineries and imports will remain flat at best). Based on EIA data, U.S propane supply (including extraction by gas processing) has remained relatively flat at or around 2.0 – 2.1 Million BPD since 3Q/4Q 2019 due to the lack of growth in crude oil and associated gas production. While propane from Permian may grow at a much slower rate, production data from Eagle Ford, Anadarko, Niobrara, and Bakken are not encouraging, and production is expected to decline through 2021. Overall, we believe that the biggest risk for the growth in U.S. exports lies on the expectation of supply – will there be enough supply to maintain exports at or around 1.3 Million BPD mark? For the very first time in many years, we cannot take propane supply for granted!

Assuming U.S. propane caps out at 2.2 Million BPD for the remainder of 2021, we believe that propane inventory prior to onset of the winter heating season would be well below normal levels (12-15 days of supply versus 28+ days of supply), just to maintain 1.3 Million BPD export levels – which is basically flat to 2020 levels. So, while U.S. LPG exports will increase in the summer due to increases in crude prices (and therefore the Asian propane-MOPJ naphtha price spread) and demand from Chinese PDH plants, exports during winter are not guaranteed.

Welcome to the Enkon Insights Newsletter

Every month, we feature three full-length articles, share critical stories in oil and gas commodities, and break down key trends.

Have opinions? Want to talk shop? Need more insights? Drop us a line:

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“Based on anecdotal evidence and discussion with market participants, it appears that there is a shortage of brine that may impact how product is withdrawn at Mont Belvieu. While inventories will be worked off eventually, the events of 2020 have brought to light liquid hydrocarbon storage capabilities and limitations at Mont Belvieu.”

No Growth Guarantees for U.S. Propane Exports in 2021/22 (continued)

We anticipate propane prices to strengthen in 3Q2021 as domestic buyers start focusing on filling stock levels in anticipation of domestic heating needs. The bottom line is that a bidding war for propane in the third quarter seems inevitable.

Mont Belvieu: Redefining NGL/Olefins Storage Limits

Given its favorable geology that supports high-quality salt dome structures, the U.S. Gulf Coast has been the heart of liquid hydrocarbon cavern storage in the U.S., with multiple NGL/Olefin cavern sites scattered across Texas and Louisiana. Based on the latest public records, the U.S. Gulf Coast has an aggregate salt cavern storage capacity of ~806 Million Bbls, 77% of which is in Texas. Within the state of Texas, the town of Mont Belvieu (60 miles east of Houston, TX) holds the largest concentration of salt cavern structures: 68% (or ~422 Million Bbls) of all Texas Cavern storage capacity is located in Mont Belvieu (technical name of the salt dome - Barbers Hill) with estimated working capacity estimated at 285 million Bbls. While there is plenty of cavern capacity, availability of brine/brine pond capacity at Mont Belvieu has always been a limiting factor on volume of product that could be stored at Mont Belvieu. The data reported by cavern operators supports the fact that effective or usable Mont Belvieu storage capacity has been limited by the availability of brine at Mont Belvieu since at least 2016, when we started collecting and analyzing the data.

It is no coincidence that inventory levels at Mont Belvieu have been limited to ~100 Million barrels until mid-2019, when new brine pond capacity was added at Mont Belvieu. However, the impact of COVID-19 has revealed new facets of Mont Belvieu storage capacity and its limitations. COVID-19 led to demand destruction in the U.S. and triggered a race to identify new market outlets and storage capacity for liquid hydrocarbons.

Crude Oil News:

[Diamondback Energy acquires rival QEP Resources - Houston Chronicle](#)

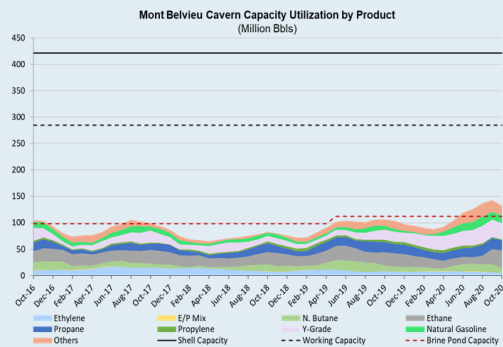
[LOOP didn't export any oil in February, a first in two years - The Advocate](#)

[VLCCs Shouldn't Expect Much When it Comes to US Gulf Export Prospects—Hellenic Shipping News](#)

[India to Cut Saudi Arabian Oil Imports and Buy More From U.S.—Bloomberg](#)

[Make Room, West Texas Intermediate and Brent. Murban Is Here.—Bloomberg](#)

[Key oil market forecasts from the IEA's Oil 2021 report—S&P Global](#)

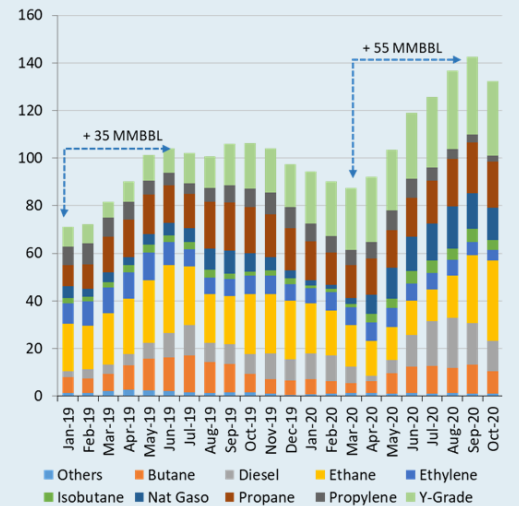


At Mont Belvieu, the aggregate inventory cycle was more severe during 2020, mainly due to the scale of pandemic demand destruction as several NGL, olefins and refined products hit record inventory levels. Purity ethane inventories (not including ethane in EP mix and in Y-grade) increased drastically – from ~14 Million in April 2020 to ~34 Million by Oct 2020, primarily driven by impacts of COVID19 and hurricane-induced cracker closures in the U.S. Gulf Coast.

Adding to the imbalance, ethane extraction rose in the U.S. (esp. from the Permian basin) as midstream companies tried to keep their NGL pipelines and fractionation assets full. Was this ethane owned and stored by the operator, an exporter, or by domestic consumers? Or perhaps the build was used to create enough brine to push out diesel, Y-Grade and other products? In any event, the US reached a new record of ethane inventory levels in October 2020.

Similar inventory build ups can be seen in Diesel and natural gasoline (C5+). In fact, cavern operators in Texas changed products and converted 9 caverns to natural gasoline service to accommodate the influx of C5+. It appears that C5+ is finding its way into condensate blends and crude oil as demand has shot up late in 2020, bringing inventory down. Unlike other NGLs, butane stocks at Mont Belvieu rose, but below levels seen in June 2019, as stronger export demand restrained inventory levels. U.S. butane found an unexpected market in India/Indonesia where butane is used as the cooking fuel (LPG). In 2020, storage operators/midstream Cos were determined to keep butane inventory under control by offering export incentives. Butane exports averaged 334 MBPD in 2020, smashing the previous year's record of 262 MBPD.

Mont Belvieu Inventory by Product (Million Barrels)



The inventory buildup has all sorts of implications for brine pond storage, brine disposal, operators' ability to source brine, and resultant product deliverability issues. For example, operators are getting rid of brine to make space for more product storage. This raises a storage deliverability question: how quickly can product be pulled out under a brine scarcity scenario? Based on anecdotal evidence and discussion with market participants, it appears that there is a shortage of brine that may impact how product is withdrawn at Mont Belvieu. While inventories will be worked off eventually, the events of 2020 have brought to light liquid hydrocarbon storage capabilities and limitations at Mont Belvieu. We outline these implications, as well as key market and commercial trends in our latest update of the U.S. Gulf Coast cavern storage report. If you are interested in leaning more about the 2021 Liquid Hydrocarbon Benchmarking Report, give us a shout: (info@enkonenergy.com)

LNG supply trends: ESG moves to center stage

U.S. and world LNG markets are facing a new normal: regulators, off-takers, and end-users are all increasingly conscious of greenhouse gas (GHG) emissions. The ultimate impact on U.S. LNG and natural gas demand is unclear, but some players could be left behind. Engie cancelled a planned long-term supply agreement with Next Decade's Rio Grande LNG project in November, Pavilion and Qatar Petroleum have included a carbon emissions tracking feature in shipments, and Cheniere is including cargo emission tags in its shipments. We expect that environmental, social, and governance criteria (ESG) will be an enduring, permanent feature in LNG markets as "Carbon neutral" LNG cargoes increasingly gain market and investor attention.

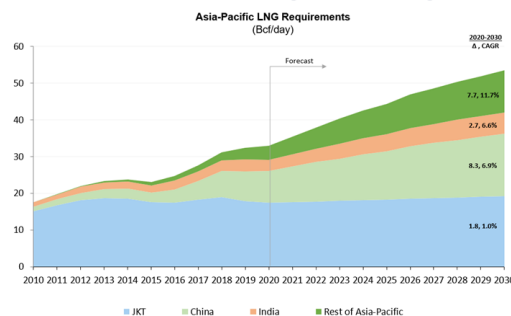
Faster project development could also reshape markets. Cheniere and Venture Global may be able to complete their Sabine Pass and Calcasieu Pass projects well ahead of schedule – an extraordinarily impressive feat amid a pandemic. If U.S. LNG producers can accelerate production schedules at minimal cost, they will become more competitive.

ESG will weigh on exports to Europe, coal on exports to Indo-Pacific

The LNG-as-bridge debate will continue to play out in different ways across different markets. We continue to believe that ESG concerns and increasingly competitive renewables/battery costs will pressure U.S. LNG exports to Europe in the long term. Indeed, the IEA is projecting that the EU's 2030 gas demand will be 8% lower than in 2019. We believe that LNG may be a beneficiary of the ESG wave, however, as it can lower carbon emissions at the expense of coal and oil.

Indo-Pacific markets are likely to be much more receptive to U.S. LNG exports. While U.S. LNG long-term supply agreements with buyers in China and India will remain constrained because of politics and geographic distance, respectively, we are much more optimistic that U.S. volumes will find their way into Southeast Asian markets in Vietnam, Thailand, Indonesia, Malaysia, etc. We believe that South and Southeast Asian markets (along with niche Latin American markets) will largely determine the long-term future of U.S. LNG, as we project that the "Rest of Asia-Pacific" markets will add nearly 8 Bcf/d of demand from 2020 to 2030.

LNG demand in Asia Pacific is expected to grow by ~21 Bcf/d by 2030 with China and India accounting for ~50% of the growth



Some market participants are predicting peak world LNG demand by 2030. We think it's too soon to call a peak, as governments in Asia try to increase their reliance on low-carbon fuels such as LNG.

Much will depend on coal policies in the Indo-Pacific and the pace of technological progress for renewables and long-duration batteries.

Supply trends: Qatar adds volumes, as construction schedules may be compressed

Qatar Petroleum is betting on continued, robust LNG demand, as it announced [a major supply expansion](#) in early February, adding 33 MTPA (~4.34 Bcf/d) to world supply by 2026 or 2027, roughly the equivalent of adding an additional 6-train Sabine Pass LNG to world markets. QP's aggressive move is intended to intimidate and deter new entrants, of course. Competitors may be adapting by rapidly accelerating their construction schedules.

As a rule of thumb, LNG projects traditionally take 4-6 years to complete. That timeline may be changing, as both Venture Global and Cheniere appear to have dramatically accelerated their construction time. Cheniere announced it would ramp up production on its sixth train at Sabine Pass by the end of the year. We expect they will achieve consistent flows by no later than 2Q2022. Cheniere took FID on Sabine Pass T6 only in June 2019 and anticipated a start up by mid-2023: and some in the industry criticized their initial timeline as too aggressive. Cheniere's T6 will likely go from FID-to-first gas in under 36 months, which will break all speed records for mid/large-scale LNG producers in the United States, and possibly across the world.

Venture Global says it will begin LNG production at Calcasieu Pass as soon as October 2021. We are more skeptical. We believe that operations will more likely start in late 2022. Still, even completing the LNG project at that speed is impressive: Calcasieu Pass only took FID in August 2019, the project is a greenfield investment, and construction took place amid a pandemic.

We are adjusting our forecast accordingly: U.S. LNG annual export volumes may reach 12 - 13 Bcf/d by YE 2022, up from ~6.5 Bcf/d in 2020, when volumes were suppressed due to COVID. There is also some upside risk to these estimates, since Sabine Pass T6 and Calcasieu Pass may be able to achieve their ambitious construction completion goals. Both projects will undoubtedly seek to receive first gas prior to the high-demand winter months.

Bright short and medium-term outlook for LNG

LNG demand will likely expand this year, assuming that the COVID-19 pandemic continues to recede in European and Asian demand markets. Netbacks are strongly positive, particularly for winter 2021/2022. Although we are keeping an eye on marginal international liquefaction capacity that may be returning to the market, we expect far fewer U.S. LNG cargo cancellations in 2021. Similarly, there may be a window of tight LNG markets in the medium-term.

Coal News:

[ArcelorMittal creates new green steel initiative to reduce carbon emissions—S&P Global](#)

[The World's Three Biggest Coal Users Get Ready to Burn Even More—Bloomberg](#)

[The Rock Standing in the Way of China's Climate Ambitions: Coal—NYT](#)

[China must shut 100 GW coal-fired power capacity to meet climate goals - research—Reuters](#)

LNG News:

[US LNG feedgas demand hits new record on positive market trends—S&P Global](#)

[Japanese companies form buyers' group to promote carbon neutral LNG—S&P Global](#)

[Analysis: Qatar tightens global gas market grip with bold expansion moves—S&P Global](#)

[No plan to aid gas-based power plants at this juncture, says Power Minister — Economic Times](#)

Hydrogen: A fuel of Future?

Hydrogen: A Primer

There's been a LOT of recent discussion in energy circles about Hydrogen, so we decided to write about it. In this article, we discuss why Hydrogen is important, some of the key policy and technology variables to watch, and timelines for potential adoption. Green Hydrogen is a relatively immature energy technology, much less developed than wind, EVs, solar, or even lithium-ion batteries (more on that later). While it will take some time, probably well over a decade, for Hydrogen to achieve large-scale adoption, this technology should not be dismissed.

What is Hydrogen?

Hydrogen is the universe's simplest, lightest, and most abundant element (unsurprisingly, given that it is the first atomic number). The element is less abundant on the earth's crust, however, and occurs naturally on earth only if it combines with other elements in gases, liquids, and solids. Hydrogen combined with oxygen forms water, while Hydrogen and carbon bond to form hydrocarbons such as methane, ethane, propane, etc.

When burned, however, Hydrogen produces only water vapor, not carbon dioxide (CO₂). Therefore, if Hydrogen is produced from renewable sources of energy it is carbon free. Interestingly, Hydrogen can produce electricity and electricity can produce Hydrogen. This "energy loop" is renewable and environment friendly.

Hydrogen is classified into primarily four different colors based on the primary source of energy used to produce the Hydrogen. Arranging from least to most environmentally friendly, the colors are: brown, grey, blue, and green. Let's go over each in detail.

Brown Hydrogen is produced from coal or lignite and is easily the most polluting source of Hydrogen production. Grey Hydrogen, meanwhile, is produced from hydrocarbons, typically a natural gas feedstock. While less polluting than Brown Hydrogen, Grey Hydrogen still produces significant greenhouse gas (GHG) emissions. Blue Hydrogen, meanwhile, is produced from natural gas but is combined with carbon capture and storage/sequestration (CCS). There's some evidence that Blue Hydrogen only halves the carbon emissions produced from Grey Hydrogen, however, and this technology is likely infeasible without formal carbon prices. Finally, Green Hydrogen is the cleanest type. It is produced via electrolysis from renewable power sources (typically wind and solar). Green Hydrogen earns the lion's share of attention from renewables advocates, regulators, and investors.

Why (Green) Hydrogen

Green Hydrogen is important because it could mitigate intermittency and long-duration storage problems associated with wind and solar generation. In the future, solar and wind power could run electrolyzers that convert water into Green Hydrogen, while the excess power could be stored and sent back to the grid. Lithium-ion batteries suffer from relatively short discharge times, limiting their usefulness for inter-day/seasonal storage. Furthermore, lithium-ion supply chains are complicated: cobalt complements lithium-ion batteries but is largely controlled by state-owned People's Republic of China firms operating in the Democratic Republic of the Congo.

Conversely, Hydrogen is not only abundant but can also be stored at scale for a long time using tried and tested salt caverns. Green Hydrogen storage could effectively eliminate renewable "intermittency" (such as solar's "duck curve"), increasing the competitiveness of wind and solar. Furthermore, Hydrogen can potentially be distributed via existing natural gas infrastructure.

Hydrogen Economics and Public Policy

Green Hydrogen adoption is highly constrained, for now, by the staggering cost of electrolysis: Green Hydrogen costs around \$5.5/Kg to produce, versus a Grey Hydrogen cost of ~\$1.0/Kg. While Green Hydrogen's costs are expected to fall substantially, the new technology likely won't get off the ground without substantial government support.

Japan, the EU, Canada, and the U.S. have all begun to adopt Hydrogen policy initiatives, although most of these initiatives are inchoate and unspecific. For instance, the U.S. doesn't even have a comprehensive Hydrogen policy, while Canada's strategy is light on specifics. Even the most aggressive Hydrogen policies don't foresee substantial uptake until 2030.

Keep an eye on two variables this year: funding for basic and applied Hydrogen research, and studies on the practicality of distributing green hydrogen through existing natural gas pipeline networks. If Hydrogen receives funding and can be safely transported with already in-place infrastructure, investors will take this new technology much more seriously.

DVDs or Betamax: what kind of technology is Hydrogen?

Technological development often follows the famous "S-curve," where adoption occurs very slowly in the initial phase, only to rapidly accelerate until it achieves its peak penetration rate. Of course, some technologies never reach liftoff. It's far too soon to say how quickly Green Hydrogen will be adopted – if at all – but we'll be checking in on this technology often. Don't dismiss Green Hydrogen.

"Green Hydrogen is important because it could mitigate intermittency and long-duration storage problems associated with wind and solar generation. In the future, solar and wind power could run electrolyzers that convert water into green Hydrogen, while the excess power could be stored and sent back to the grid."

Utilities News:

[Renewables industry questions whether Duke, Southern SEEM proposal would limit competition—Utility Dive](#)

[Gas-to-coal switching in MISO, SPP risks Midwest summer power burn demand—S&P Global](#)

[Tesla Is Plugging a Secret Mega-Battery Into the Texas Grid—Bloomberg](#)

[Dominion, Berkshire Hathaway push better transmission siting as Biden turns focus to infrastructure—Utility Dive](#)

Infrastructure Bill News:

[Business leaders engage Biden administration on ways to pay for infrastructure—CNBC](#)

[Big questions loom ahead of Biden's next spending push, like 'what is infrastructure?' - Reuters](#)

[CO2 infrastructure bill unveiled today—Politico](#)

[Biden wants bipartisan support for infrastructure, but GOP and Dems are already drawing battle lines—CNBC](#)

Commodity Outlook (90 days out)

Energy demand and differential COVID outcomes

COVID-19 cases in the U.S. are expected to fall dramatically by April as vaccination uptake increases. According to the [University of Washington's IHME](#) base case projections, U.S. daily COVID infections will decline to ~38,000 by day on May 1st, and to just ~11,000 by June 1st. For reference, U.S. peak daily infections reached nearly 400,000 in late December 2020. Barring the emergence of a new variant, the U.S. appears to be well on its way to defeating COVID-19 and will likely reach "normality" by early summer. Due to good news on vaccinations, the Federal Reserve has increased its 2021 GDP growth forecast to 6.5% while projecting growth of 3.3% and 2.2% in 2022 and 2023, respectively. Some market analysts are even more bullish, but 6%+ 2021 GDP growth will obviously prove highly positive for domestic energy consumption and prices.

The international economic recovery will likely prove more sluggish, potentially weighing on energy exporters' profits. The EU's vaccination program is struggling, as European regulators have halted the rollout of the AstraZeneca COVID-19 vaccine, at least for now. Other regions are even further behind Europe. At the global level COVID cases appear to be rising again, reversing a downward trend seen since late January. More transmissible COVID-19 variants continue to pose severe risks to world energy demand.

Oil Market Movers:

A [new IEA report](#) is making waves in the oil world, as it predicts that oil demand will not reach pre-pandemic levels until 2023 and will rise to 104 MMBPD by 2026. More provocatively, the IEA suggests that gasoline demand has already peaked.

We think it's too soon to call a gasoline demand peak, but also acknowledge that this summer will teach us a lot about the shape of future energy/oil/crude products demand. Assuming that America largely defeats or contains the virus by summer 2021, which trends will prove enduring?

Will offices continue to move towards telecommuting and decrease business travel? Will consumers continue to shy from public transit and move to the suburbs, or will greater real estate availability in large cities with lots of amenities spur a wave of urbanization?

We don't think the answers to many transportation questions will be determined quickly, although we do believe work-from-home is here to stay. We've heard anecdotally that many corporate offices will be remote-only for the rest of 2021. At this point, work-from-home uptake has substantial path dependency that will be difficult to reverse, particularly as labor markets strengthen and employers compete to hire workers...

Natural Gas Market Movers:

Domestic natural gas economic (vice temperature-related) demand appears strong (particularly after petrochemical customers fully return online), international LNG pull is at all-time highs, and storage levels are relatively low. On the other hand, production levels and temperatures (as ever) remain key uncertainties.

We believe ESG and investors will restrain shale's drilling impulses—but higher crude prices could tempt associated producers to scale up output.

Electricity/Renewables:

Demand for DER (distributed energy resources) continues to climb amid catastrophic grid failures in Texas and California, improving solar+storage economics, and the broader societal ESG shift. Notably, Tesla has stopped taking orders for its Powerwall home battery pack unless a customer also purchases a new solar panel project. We've heard anecdotal stories from industry contacts of sky-high demand for rooftop solar and other DER solutions.

Something worth watching carefully in the U.S. infrastructure bill: funding levels for basic and applied renewables research. These bets can take years or even decades to pay off (some never do, of course), but they can also "crowd-in" investment.

LNG Market Movers:

Our data show that U.S. LNG feed gas flows hit a record on March 18th, as LNG exports have recovered from Winter Storm Uri, and then some. With netbacks remaining well above cancellation levels and world economic growth expected to surge in 2021, we remain confident that very few cargoes will be cancelled this year—even in the shoulder season.

Futures curves are also now showing higher JKM prices in the winter months. Will we see a repeat of sky-high winter JKM prices again this year?

NGL Market Movers:

Crackers are still recovering from Winter Storm Uri: lower run rates will likely continue to significantly impacting ethane demand.

We expect ethane to trade under 25 cpg for 1Q2021 but is likely to approach 30 cpg by end of 2Q2021 as inventory is worked through in the USGC.

There's a tug of war with exports as propane inventories remain below 5-year averages (especially in the Gulf Coast). We expect prices will continue to receive support from diminished inventories in 2Q; a bidding war in 3Q seems highly likely.

Increased demand in USGC cracking due to strong olefins demand will keep butane prices elevated. Exports likely to increase as well as butane is likely to trade lower than propane on a per btu basis.

"Will offices continue to move towards telecommuting and decrease business travel? Will consumers continue to shy from public transit and move to the suburbs, or will greater real estate availability in large cities with lots of amenities spur a wave of urbanization?"

Renewables News:

[7 key trends from renewable energy's 2020 prices and some initial takeaways from Texas 2021—Utility Dive](#)

[\\$1.5B transmission project would boost California's access to renewable energy—S&P Global](#)

[California utilities allege \\$3b rooftop solar 'cost shift' in bid to change net metering rules—PV Magazine](#)

NGL News:

[The United States exported more propane than distillate in 2020 - Hellenic Shipping News](#)

[No 'one-trick pony' as Enterprise considers switching up US pipeline infrastructure - S&P Global](#)

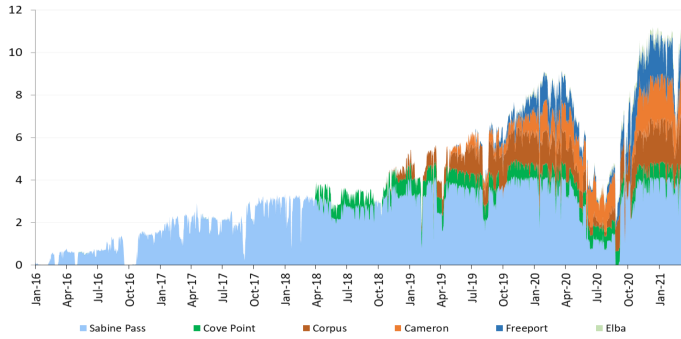
[Oriental Energy hives out LPG, shipping to focus on petrochemicals, hydrogen - S&P Global](#)

Photos from Wikimedia Commons:

Propane Tanks: © Tomas Castelazo, www.tomascastelazo.com / Wikimedia Commons / CC BY-SA 4.0

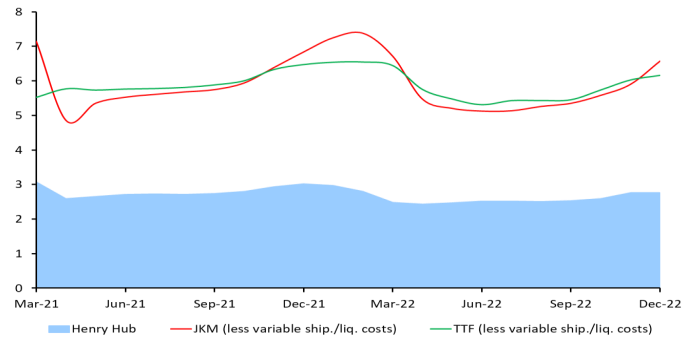
Key Market Dashboards

Firm Feed Gas Receipts into U.S. LNG Terminals
(Billion Cubic Feet per Day)



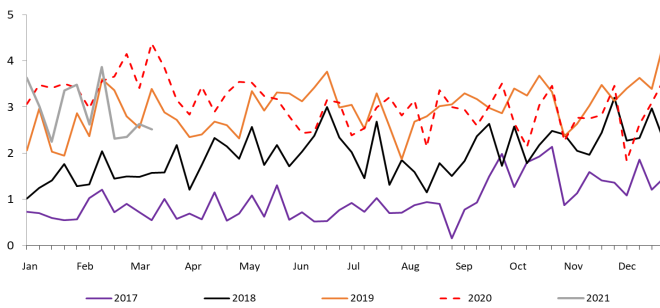
U.S. LNG feed gas flows fully recovered from Uri (and are reaching all-time highs) - but some small levels of cargo cancellations may be ahead

LNG Netbacks to U.S. (on Cash Basis)
(\$/MMBtu)



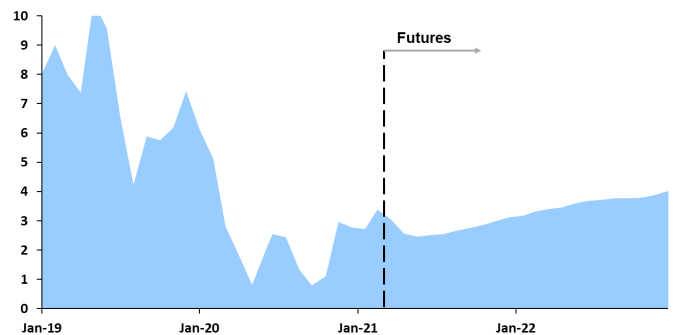
Few cancellations are expected in the shoulder season—forward curve indicating another potential JKM price blowout

U.S. Crude Oil Exports
(Million Barrels per Day)



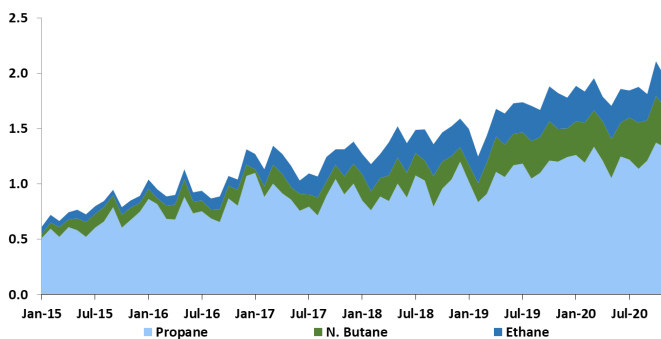
Refinery outages and stronger domestic demand are in tension, complicating export outlook

Brent—WTI Spread
(\$/Barrel)



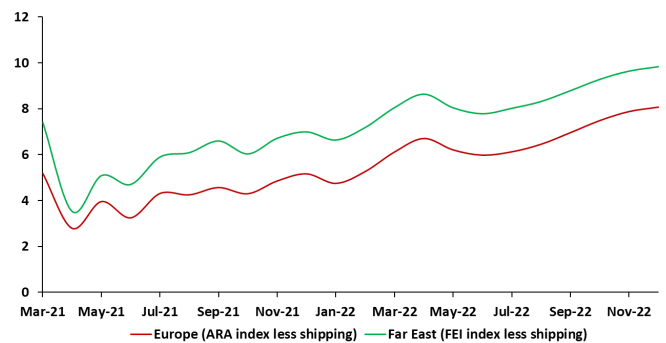
Futures market suggests a rising Brent-WTI spread, but exports could be pressured on COVID vaccination differentials

U.S. NGL Product Exports
(Million Barrels per Day)



U.S. LPG exports remain strong despite internal demand pull and low domestic inventories.

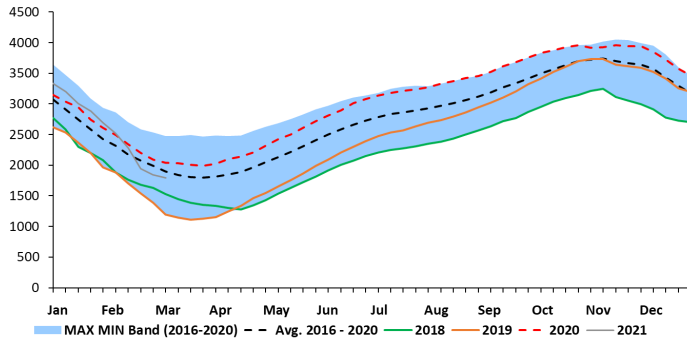
International Propane Netbacks (to Mt. Belvieu)
(Cents Per Gallon)



Netbacks are expected to rise with time on strong demand and soft transportation costs

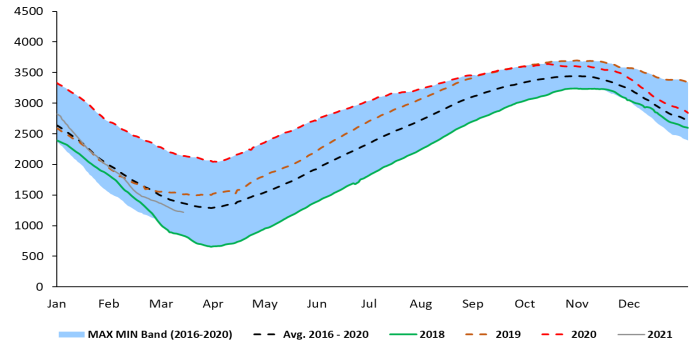
Key Market Dashboards

Natural Gas in Storage, Lower 48
(Billion Cubic Feet)



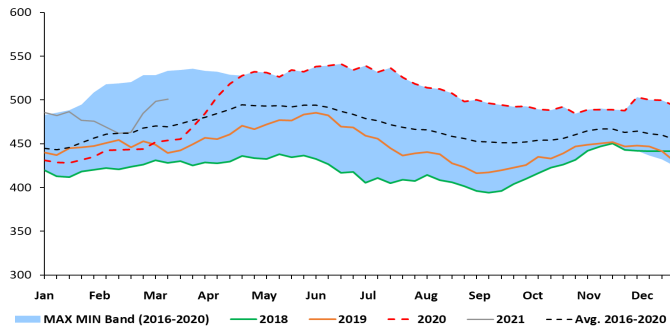
Stronger post-COVID domestic + LNG demand could pressure inventories—watch production levels closely

European Storage
(Billion Cubic Feet)



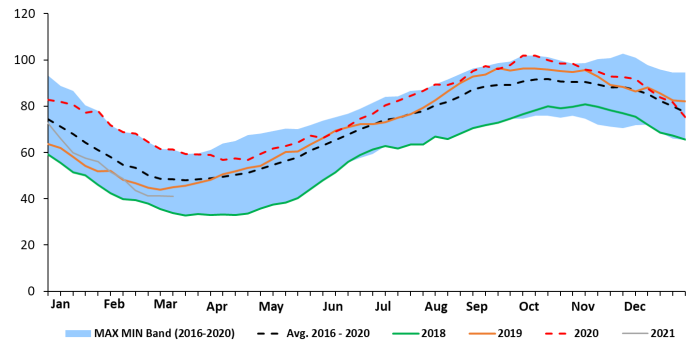
Europe's continued low storage levels could provide price/volume support for U.S. LNG exports

U.S. Crude Oil Commercial Storage Inventory
(Million Barrels)



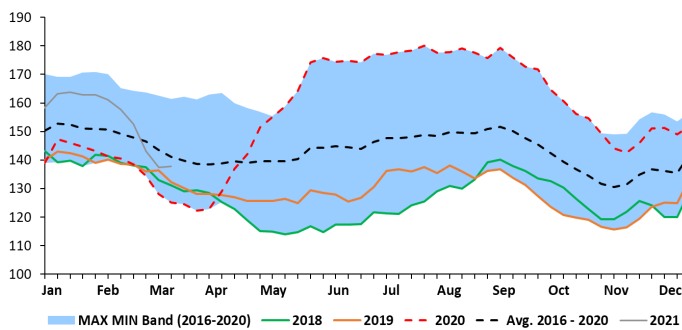
Refineries are slowly coming back online, as products demand is expected to increase sharply post-COVID

U.S. Propane/Propylene Storage Inventory
(Million Barrels)



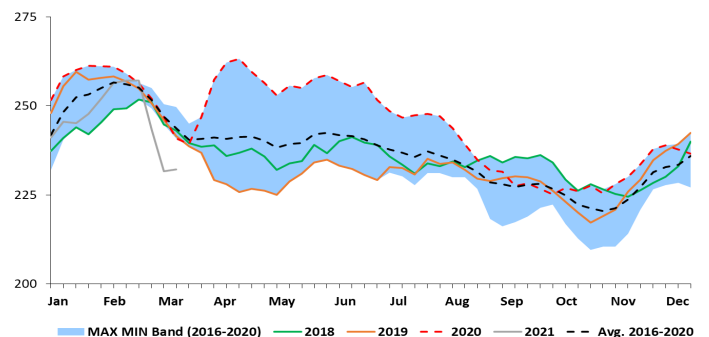
U.S. propane inventories still facing pressure from strong domestic and international demand

U.S. Diesel Storage Inventory
(Million Barrels)



Diesel inventories could face pressure amid greater demand although refinery startups could add to supply

U.S. Gasoline Storage Inventory
(Million Barrels)



IEA says peak world gasoline demand has already been reached—but this summer could see extremely strong post-COVID demand

Our Subscription Product Offerings

Regional NGL Benchmarking & Outlook

(Research, intelligence and insights into Supply, Logistics, Pricing, Disposition and Outlook)

Each quarter, Enkon provides clients a unique, bottom-to-top analysis of NGL supply, logistics, pricing, netbacks, product disposition and outlook for eight NGL producing basins in the U.S. The granularity of the analysis makes this product unique. The analysis identifies NGLs (by purity product) produced at each of the ~700 U.S. gas processing plants as the building block of the analysis to quantify asset utilizations across the midstream value chain.

Appalachian	Rockies	Haynesville- Bossier
Permian	Bakken	Barnett
Eagle Ford	STACK/SCOOP/MERGE	LA Gulf Coast

	Deliverables	Format	Update Frequency
1	NGL Benchmarking	Report (MS PowerPoint)	Quarterly
2	Report discussion & review	In-Person Meeting/Conf Call	Quarterly
3	Supporting data sets	Secured online portal	Quarterly
4	Market insights	Memo	Monthly

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U.S. Gulf Coast Liquid Cavern Storage Benchmarking

(Research, intelligence and insights into NGL, Olefins, Refined Product Cavern Storage)

Once a year, Enkon provides clients a one-of-a-kind, comprehensive lay-of-the-land and granular benchmarking for ~250 non-crude liquid-hydrocarbon salt cavern storage wells in Texas and Louisiana. The report provides regional analysis of cavern storage capacity versus brine pond capacity in each of the dome locations. The report also identifies product storage in each of the cavern wells along with historical product injection, withdrawal, inventory and cavern utilization.

Texas Cavern Coverage		Louisiana Cavern Coverage	
Barbers Hill (Mont Belvieu)	Hull	Sulphur	Bayou Choctow
Stratton Ridge	Spindletop	West Hackberry	Napoleonville
Markham	Fannett	Arcadia	Sorrento
Clemens	Sour Lake	Pine Prairie	Venice
Pierce Junction	Boiling	Anse La Butte	Section 28
West/Panhandle Texas	East Texas		

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Regional Fractionation and NGL Export Terminal Benchmarking & Outlook

Each quarter, Enkon provides clients a provide a historical benchmarking and comprehensive outlook of Y-grade NGLs in the U.S. Gulf Coast with the objective of quantifying incremental need for fractionation capacity in various locations in US Gulf Coast, namely Mont Belvieu, Sweeny and Louisiana, and adequacy of NGL export capacity in the USGC and Northeast.

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North America LNG Export Project Benchmarking & Outlook

(Research, and insights into U.S. Liquefaction Projects)

Each quarter, Enkon undertakes an exhaustive review of over 24 post and pre-FID North American LNG export terminals; summarizing the North American LNG export terminal landscape, LNG nameplate capacity and feed gas forecasts, key market trends, and a competitive assessment of pre-FID North American terminals. For each project, we report terminal attributes, commercial models, key regulatory milestones, risk assessments, and, for existing terminals, historical feed gas receipts (by pipeline), and estimated weighted average landed cost of feed gas into the terminal.

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