



Good tidings of great joy: COVID vaccines inbound

This has been a rough year, but there's some great news in the fight against COVID. At least two vaccines (one from Moderna and the other from a Pfizer/BioNTech tie-up) [appear highly effective](#) in preliminary results. Just as important, the two vaccines could be available for tens of millions of individuals as early as December, with "wide" availability expected by April. More prophylactics may be on route, as 10 more vaccines are in large-scale efficacy tests. The [Astra Zeneca/Oxford vaccine could potentially provide hundreds of millions of doses at very low cost](#), although initial results are facing scrutiny.

The development and deployment of two vaccines is hugely positive news for U.S. and world energy markets. Assuming widespread vaccine uptake, the U.S. could have highly manageable COVID caseloads as early as June of next year. By this time next year, life in the U.S. could approximate "normal" conditions again, with little to no constraints on mobility – or energy demand. We also believe that the risk of a spring crude products glut (especially for diesel) has been reduced by the vaccine – although refineries may maintain relatively high run rates through the winter in anticipation of higher post-vaccine demand. Finally, in a highly positive development for the entire O&G complex, 2021 jet fuel demand could set monthly records in the post-vaccination period. With jet fuel demand rebounding, the Permian's light, tight oil could become more valuable.

Still, there is a long way from here to there: this winter is going to be highly difficult, and U.S. energy exports will remain hampered so long as the virus is not eradicated overseas, particularly in key consumer markets such as Europe and Asia.

Winter Reality Check

While the COVID vaccine developments are unambiguously good news for U.S. energy markets, let's take a step back and dispassionately apprise the next few months. Even with the vaccine news, COVID still represents a grave, near-term threat to domestic energy demand. Even if authorities can vaccinate 30 million Americans by the end of the year (a very ambitious target), COVID cases are extremely likely to continue to surge across the U.S. Rising caseloads will likely lead to voluntary and involuntary economic/mobility curtailments, constraining energy demand. Furthermore, even in the best-case scenario, most of the U.S. population won't be able to receive a vaccine

during the peak COVID winter months. COVID will continue to constrain energy demand during the winter, especially for crude and crude products.

As we [wrote previously](#), this winter could add to crude product inventories – especially for diesel. While vaccine developments leave us more optimistic, we could still see growing inventories this winter. (especially in terms of days-of-supplies). Since energy demand is expected to rebound in the spring, refineries will be even more reluctant to shut down. We still expect a glut of crude products this winter, but vaccine deployment is expected to gradually return mobility levels to more normal conditions, limiting crude products oversupply.

But domestic demand risks... are largely to the upside

Two other vaccine factors could contribute to energy demand. If additional vaccines are deployed (domestically or internationally), more individuals will achieve COVID immunity faster – helping return the economy and mobility back to normal. As of this writing, at least two vaccines will likely receive approval (there are still questions surrounding the efficacy of the Astra-Zeneca/Oxford vaccine). If more vaccines are proven effective, the rate of vaccination uptake could increase, ensuring that consumer mobility rebounds more rapidly. For example, if, say, an additional three vaccines are approved, the monthly vaccination rate could increase from ~20 million Americans every month to ~50 million per month, defeating the virus sooner and enabling U.S. energy demand to rebound faster.

The vaccines' properties could also contribute to a more rapid recovery. In an ideal scenario, the vaccines could not only prevent the recipient from contracting the virus – they could also prevent individuals from transmitting the virus. We simply won't know until more data is collected. If we achieve this "ideal scenario" of contraction + transmission immunity, then vaccination herd immunity could be obtained very rapidly.

On the other hand, there's a risk that many Americans will simply refuse to take vaccines, regardless of the personal and societal benefits of vaccination.

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“As of this writing, we expect that international markets will lag U.S. vaccination rates by several months... Development of other vaccines, such as the Oxford/AstraZeneca vaccine, will prove critical in mitigating international COVID cases. As we’ve said from the beginning of this crisis, COVID dynamics will determine all economic/energy outcomes.”

Crude Oil News:

[ExxonMobil plans reduction to U.S. staffing levels](#)

[Refineries face headwinds as COVID cases rise](#)

[NuStar Corpus Christi crude exports recovering](#)

[Shell Convent refinery shuts down permanently](#)

[Oil jumps to 11-week high on hope of OPEC+ supply increase delay](#)

Good tidings of great joy: COVID vaccines inbound (continued)

Jet fuel recovery expected, benefitting U.S. upstream producers

We expect jet fuel demand and passenger throughput to remain around historic lows through most of the winter, followed by a gradual rebound that will accelerate as vaccinations lower COVID risks. Jet fuel demand and passenger throughput could reach all-time highs next summer if the vaccination campaign delivers results quickly (and if airline capacity returns to meet growing demand). Rising jet fuel demand will also allow refineries to pursue more balanced output of crude products, which will simultaneously increase demand for Permian/Bakken light grade crudes which favor gasoline and jet fuel. Subject to the availability of affordable capital, we expect more rigs to come online over the next several months as a result of the vaccine news. However, we also share concerns that growing ESG investor considerations will make it tough for the oil and gas sector to access capital.

When will critical export markets receive vaccinations?

During this discussion of vaccinations, one critical piece has been left out: the international environment. About 95% of humanity lives outside of the United States and accounts for 75-80% of world GDP. About 12% of U.S. GDP is directly attributable to exports, around 25% of domestic crude oil output is shipped to international markets, and LNG/PNG natural gas exports typically account for somewhere between 10-20% of all gas production, depending on seasonal variations. While the domestic market is most important for the U.S. O&G complex, conditions won’t return to normal until export markets are also healed.

As of this writing, we expect that international markets will lag U.S. vaccination rates by several months. Europe, a critical location for U.S. crude and LNG exports, has access to the Pfizer/BioNTech vaccine, as BioNTech is a German company. Development of other vaccines, such as the Oxford/AstraZeneca vaccine, will prove critical in mitigating international COVID cases. As we’ve said from the beginning of this crisis, COVID dynamics will determine all economic/energy outcomes. We will continue to monitor vaccine deployment in both the United States and abroad.

Domestic Strength, Soft Exports?

The next few months will be difficult for nearly every country due to COVID. We expect additional economic and mobility curtailments in the pre-vaccine period, limiting energy demand and possibly giving rise to a glut in some crude products, such as diesel. Deployment of vaccines could rapidly alter this dynamic, however. With the United States expected to vaccinate tens of millions of individuals every month, economic demand and mobility could come roaring back next year. We may even see “revenge consumption,” with widespread purchases of vacations, appliances, etc. At the same time, the international environment will remain uncertain for some time, as vaccination uptake rates are expected to be slower overseas.

It is early days in the COVID vaccination campaign – and information could change rapidly. We will continue to track this story closely and report its implications for energy markets.

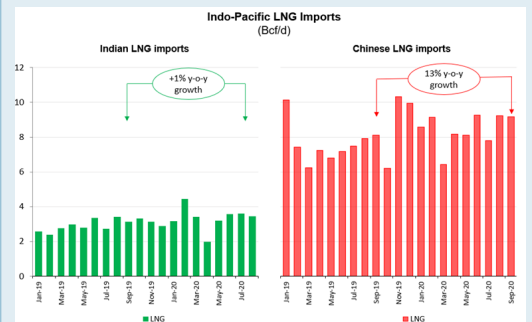
U.S. LNG exports to China and India and international coal uptake

Over the past month, U.S. LNG has encountered something unfamiliar: a steady stream of (mostly) good news. Pfizer and Moderna have announced an apparent breakthrough in a vaccination for COVID-19, Northeast Asian markets continue to control COVID, European LNG demand is steady, and, finally, Chinese buyers have even inked an agreement with Cheniere. In this article, we discuss implications of Chinese and Indian LNG demand for the United States LNG complex, and prospects for additional agreements.

China and India are the world’s two largest countries by population, and the two most important sources of future LNG (and energy) demand. We expect that rising demand in these two countries will have a sizable, but only indirect, impact on U.S. LNG exports. The Chinese market will likely remain semi-closed to U.S. exports due to structural political tensions, and geographical distance/transportation costs will limit Indian imports of U.S. LNG. The rate of coal adoption in China and, to a lesser extent, in India, is of great concern for the future of LNG.

Chinese and Indian LNG demand is growing

Nearly every indicator suggests that future Chinese and Indian LNG demand will increase. Despite some of the worst economic conditions in living memory, the most recent import data shows Chinese and Indian LNG demand has grown by ~13% and 1%, respectively, from year-ago levels. With LNG demand showing resilience during the pandemic, imports will likely pick up in future years once macroeconomic growth improves.



Indian and Chinese agreements with U.S. producers

Indian and Chinese companies have also expressed interest in discrete contracts with U.S. LNG producers. Although the Petronet/Driftwood LNG deal appears to have fallen through, Petronet is reportedly considering inking a deal with other U.S. projects. Chinese buyers are also considering offtake agreements with U.S. projects, with [Foran Energy agreeing to a 26-cargo purchase](#) with Cheniere from 2021 through 2026. We are somewhat optimistic about long-term LNG deals between Indian buyers and American sellers. Both sides share geopolitical and environmental interests in expanding bilateral LNG trade, and Indian demand could grow significantly post-vaccine. Still, geographic distances will constrain U.S.-Indian LNG trade, particularly since Qatari, Eastern African and Australian LNG producers enjoy advantages on shipping costs.

U.S. LNG exports to China and India and international coal uptake (continued)

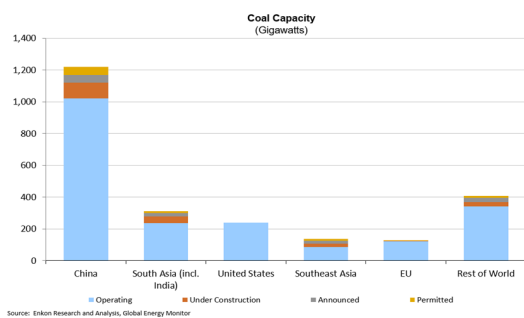
The Cheniere-Foran agreement between a U.S. seller and Chinese buyer didn't surprise us. As [we wrote in February](#):

"Few market participants believe Chinese buyers will sign medium or long-term contracts with US buyers. Given the probable recurrence of US-China political and economic tensions, most Chinese buyers will likely continue to avoid long-term contracts with US LNG exporters, particularly when they can buy pipeline natural gas or LNG from alternative suppliers. Chinese buyers could, however, pursue short-term (12-60 month) contracts with some US exporters or buy more on the spot market... Cheniere may be well-positioned to benefit from greater Chinese short-term/spot market purchases."

We think our February analysis has held up well. Structural political tensions between the U.S. and China will likely preclude long-term agreements, although Chinese buyers might purchase volumes on the spot market. The U.S. will likely ship more LNG volumes to China, but pre-FID projects will still have a very hard time securing SPAs with Chinese buyers.

Coal Uptake in China and India

While Chinese and Indian direct demand for U.S. LNG is important, their fuel mix choices will determine the future of coal and gas. Notably, Chinese construction of coal capacity is the greatest threat to future LNG demand. China is not only the world's largest consumer of coal, but it is rapidly building out coal infrastructure. The world's second-largest economy currently operates over 1,000 GW of capacity, or a little under half of the world total. If China continues to choose coal over gas, world LNG markets will suffer.



Despite promises to meet climate goals by 2060, China is rapidly expanding its coal fleet, as nearly 100 GW of coal-fired projects are currently under construction on the mainland. If all under construction projects reach operational stages, China's share of world coal capacity will actually *increase*. Within one or two years, China could have more coal capacity than the rest of the world *combined*.

New coal capacity obviously competes with natural gas-fired generation for baseload power requirements. We roughly estimate that new coal capacity under construction will remove approximately 8-10 Bcf/d of gas demand from

natural gas markets, or theoretically up to 60 – 75 MTPA of LNG exports (for reference, total world LNG trade totaled about 355 MTPA in 2019, [per the IGU](#)). If announced and permitted coal projects are constructed, gas demand destruction will increase.

Chinese and Indian LNG Demand: Indirect but Important

Chinese and Indian LNG demand could exert a strong, indirect influence on the future of U.S. LNG. While Chinese buyers may buy spot and medium-term cargos from U.S. producers, long-term deals remain highly unlikely due to structural political tensions between the two sides. India will likely forego U.S. imports due to considerable transportation costs from the U.S. Gulf Coast.

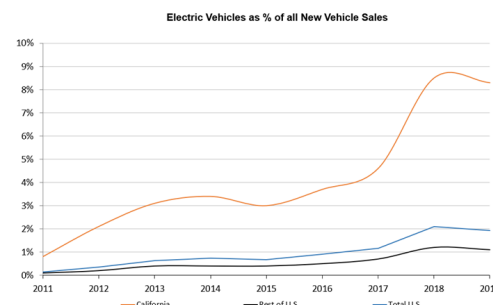
While U.S. LNG producers likely won't ink large-scale, long-term contracts with Chinese or Indian buyers, these two markets remain hugely important. Chinese and Indian LNG demand could pull competing supply from other markets, leaving U.S. LNG with more opportunities to expand into niche markets in Southeast Asia and Latin America. Whether or not China and India increase their LNG demand depends, of course, on their willingness to forego coal projects for cleaner-burning natural gas power generation.

Oil Demand, Autos, EVs: A California Case Study

Electric Vehicles, or EVs, are an increasingly important variable for world, national, and regional oil demand. EVs, unlike internal combustion engine vehicles, do not use gasoline. Instead of using the byproduct of crude oil, EVs are powered by a battery, with fuel sourced from the electricity grid. EV adoption could therefore reduce crude oil demand. In this article, we'll discuss the current status of EV adoption, as well as some potential future outcomes in the auto world.

EV adoption is mostly a California story... for now

One saw in the auto industry is that EVs will always be the automobile of tomorrow. The reasons behind this joke are understandable: EVs receive an amount of time and attention disproportionate to their current market influence; electric vehicle adoption has been largely confined to California; and, speaking bluntly, many folks in the automobile industry and O&G complex don't want EVs to succeed.



"Despite promises to meet climate goals by 2060, China is rapidly expanding its coal fleet, as nearly 100 GW of coal-fired projects are currently under construction on the mainland. If all under construction projects reach operational stages, China's share of world coal capacity will actually increase. Within one or two years, China could have more coal capacity than the rest of the world combined."

NGLs News:

[Phillips 66 says Midstream Consolidation ahead](#)

[Cenovus and Husky to merge](#)

[India's Sep. LPG imports jump 33% month-on-month](#)

[DEP blocks restart of Revolution pipeline, saying steep slopes still a risk](#)

LNG News:

[Venture Global delays Plaquemines FID to 2021](#)

[Sempra takes FID on Costal Azul Phase 1 in Mexico](#)

[Mexico President offers Sempra LNG export permit on condition](#)

[New blow for US LNG in Europe as Ireland quashes import terminal](#)

[Cheniere offering more competitively priced LNG for marketing volumes](#)

Oil Demand, Autos, EVs: A California Case Study (continued)

But EVs are no laughing matter. More and more industry leaders publicly debating peak oil demand – and many see EVs as a key driver behind lower future oil demand. Indeed, EVs will increasingly challenge internal combustion engines for market share.

EVs are increasingly efficient

The “sticker price” of all-electric vehicles has fallen considerably over the past decade: the Tesla Model 3 base model cost a little over \$35,000 in 2017 dollars; [Tesla claims it will “create” a \\$25,000 EV](#) within three years. We’re skeptical of the timeline and the final sticker price, but more confident of the trend of lower costs. Indeed, EVs can compete well on total ownership costs, or a car’s lifetime costs. A recent [Consumer Reports study](#) suggests that EV drivers could save an average of 50% on maintenance costs when compared to similar internal combustion engines.

The EV models analyzed above generally share an important trait: they tend to be light, compact cars. When modeling future fuel demand, we’ve found that replacing compacts and sub-compacts with EVs has little impact on future fuel demand. The reason is simple: light cars tend to already enjoy excellent or even outstanding fuel economy. On the other hand, SUVs, Pickups, and Vans tend to have relatively poor fuel economy, and typically cannot travel more than 19 miles without consuming a gallon of gasoline. Once electric SUVs and pickups hit the road, gasoline demand destruction could accelerate.

The electrification of SUVs and pickups – or “high riders” – could become the major energy story of the 2020s, particularly towards the latter half of the decade. At least 19 electric SUV and pickup models will hit the road this year, with many more on the way. While startups such as Bollinger Trucks have entered the space, established players are also making sizable investments.

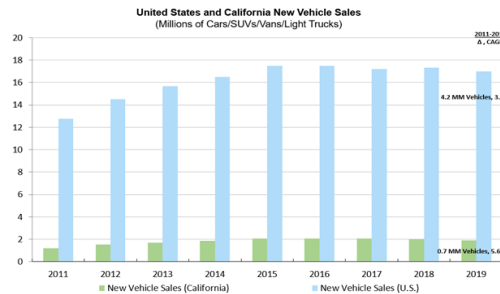
[Amazon and Ford](#) have invested over \$1.2 billion into the EV truck producer Rivian. Amazon has pledged that at least 100,000 of its ubiquitous delivery vans will use Rivian’s model as part of its “electric delivery vehicle.” It remains to be seen if this purchase a discrete event or part of a larger trend. If other large fleet owners move to EVs, however, the effect on fuel demand could be highly significant. Policy and consumer support for EVs

While EVs are largely gaining a foothold because of their increasing economic competitiveness, policy may nudge further adoption. Many states, localities, and even national governments are beginning to adopt EV mandates, requiring that all new cars and passenger trucks produce zero emissions. In September, California announced that [all new cars and passenger trucks must be zero emission by 2035](#); New Jersey followed suit less than a month later. Policy-makers and consumers appear to increasingly favor EVs over internal combustion engines.

Car Ownership: Uncertainty from COVID

Of course, even if EVs were to suddenly vault to 100% of all new car sales by 2024 (which won’t happen, by the way), the legacy internal combustion engine fleet will remain

in-service for years, probably more than a decade. Cars enjoy long lifespans: probably more than 12 years for most new cars, and the average life of the fleet is over 11 years. Therefore, gasoline demand will be around for a long time.



Due to the COVID-19 pandemic, consumers have increasingly turned away from public transportation and towards used cars. Indeed, some [used car outfits are reporting record-breaking sales](#). It remains to be seen whether this is a temporary or permanent consumer shift. Even so, gasoline demand has not recovered, with U.S. vehicle miles traveled in August 2020 down 12.3% from the prior year. While some of the fall is attributable to reduced GDP growth, we suspect work-from-home is also chipping away at fuel demand.

Post-COVID

We still don’t know which habits will stick in the post-COVID world – or even if (when, hopefully) that day will come. It does seem likely, however, that EVs will absorb an increasing proportion of the U.S. auto market, decreasing gasoline demand. With EV adoptions limiting domestic crude and crude products demand, the U.S. O&G complex will increasingly turn to exports, even more so than now. We’ll discuss this in a future article.

Engie scraps its agreement with NextDecade over methane emissions

UPDATE: [Platts reports that Engie has halted talks with NextDecade](#) over a supply agreement with Rio Grande LNG. In a written statement to Platts, Engie said “[We have] decided not to proceed with commercial discussions with NextDecade on this gas supply project. We will not be making any further comment.”

Our initial read is that the SPA’s cancellation will likely have major implications for LNG and the entire U.S. O&G complex. We expect that, going forward, EU (and probably U.S.) regulators will carefully scrutinize methane emissions when evaluating future O&G projects. But the impact could, potentially, be much greater. It’s possible that existing flows of crude, LNG, ethane, and other NGLs could face greater regulatory scrutiny and penalties. We will have to watch this trend carefully. We suspect the sudden emphasis on methane emissions is at least partially attributable to a new satellite system dedicated to monitoring methane emissions.

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Natural Gas News:

[Alberta cheers federal approval of \\$2.3 Billion pipeline expansion](#)

[Mild November weather stings natural gas prices](#)

[Enbridge to blend hydrogen with natural gas in Ontario](#)

[Mexico moving towards killing power market reforms](#)

Coal News:

[Power sector coal consumption fell 30% y-o-y for 1H2020](#)

[Vistra to close coal plants in Illinois, Ohio](#)

[China’s coal addiction](#)

[World’s largest coal producer warns of bankruptcy risk](#)

[Will Indiana stick with coal or embrace renewables? Commission to decide this week](#)

Engie scraps its agreement with NextDecade over methane emissions (continued)

On October 21st, [GHGSat launched a new tool](#) that tracks methane emissions from space. It's hard not to draw a link between the launch of the methane tool and news of the project cancellation, which both occurred on the same day.

Engie and Rio Grande LNG: what the heck just happened

On October 21st, Politico broke a shocking story: Engie agreed to a \$7 billion, 20-year contract with Next Decade's Brownsville-area Rio Grande LNG, only to have it blocked by French regulators over fears of methane emissions in the Permian basin. This story is stunning for several reasons: this deal would represent the first Sales and Purchase Agreement, or SPA, signed by a U.S. LNG exporter since Plaquemines LNG inked an agreement with EDF in Feb 2020; more French/EU regulatory scrutiny of methane emissions could pose enormous risks not only to LNG, but even to crude oil exports; and, finally, we're surprised that Engie chose Rio Grande LNG over other projects. We – at least for now – expect the deal to receive approval after some bureaucratic tussling, but also expect that emissions are moving to center stage for LNG projects.

U.S. LNG's offtaker difficulties

U.S. LNG exporters haven't contracted offtaking capacity since the Plaquemines/EDF tie in. Before that, the last deal we're aware of was the Rio Grande/Shell arrangement, [reached in April 2019](#) for 2 MTPA. We've also heard that these SPAs were of "low value" for the respective LNG projects, as Shell and (probably) EDF were able to obtain preferential rates due to their status as "foundational shippers." By signing onto a project in its commercial infancy, foundational shippers can often secure steeply discounted rates. We won't be surprised if Rio Grande offered similarly lucrative terms to Engie – although, to be clear, the quantity and \$/MMBtu terms have not been publicly disclosed. If, on the other hand, Rio Grande was able to secure a sizable quantity commitment on competitive terms, that would be a big deal for the project – and could indicate that some of the pessimism surrounding the industry has been misplaced. We will have to wait and see until more information becomes publicly available.

Regulation troubles?

If U.S. LNG begins to consistently run afoul of EU methane emissions the consequences could be dramatic, and not just for natural gas. Could Permian or (less probably) Bakken-sourced oil exports face similar penalties? Our perspective is that while regulators will increasingly scrutinize emissions, potentially weighing on the shale patch, we expect the Rio Grande/Engie deal to ultimately receive approval (and, indeed, a [U.S. Senator is pushing for a rapid approval of the contract](#)).

At the same time, keep in mind that important constituencies in France will lobby against LNG imports, and France has significant options for baseload power. About 75% of French electricity generation is sourced from [zero-emission nuclear power](#) and, interestingly, [EDF operates France's 58 nuclear reactors](#). The EU regulatory environment could be more complex than we understand over here in Texas.

Brownsville-area LNG faces structural disadvantages

We've always been highly skeptical that the Brownsville-area LNG projects would receive FID. Brownsville is relatively geographically distant from upstream production and liquid trading hubs; doesn't have a sizable O&G labor pool to draw from (unlike Corpus, Houston, Port Arthur/Lake Charles, and even New Orleans); local projects have faced intense local environmental opposition; and some of the projects have faced permitting difficulty. We've heard that at least one of the Brownsville-area LNG projects wanted to site in Corpus but could not secure space on its highly congested docks. Brownsville, it seems, was the 2nd best choice after Corpus Christi: it happens to be the first deep water port south of Corpus.

... but is overcoming it, potentially?

Rio Grande LNG may have two competitive advantages over other projects, however. It secured highly favorable tax treatment from the local county government, and could enjoy economies of scale from its (massive) train sizes. The project could also offer superior environmental benefits when compared to other LNG projects (despite the spat over methane emissions).

Rio Grande and Cameron County reached an agreement in 2017 wherein Rio Grande LNG received a [tax abatement valued at \\$373 million](#). This tax abatement could potentially allow Rio Grande LNG to undercut the prices of competitors in other jurisdictions, such as Corpus Christi, the TX/LA border, or southeast Louisiana. Rio Grande would also presumably "front-load" tax abatement savings for the initial customers, and then use its economies of scale and sunk costs to attract additional, follow-on customers.

Rio Grande LNG's massive (~5.4 MTPA) train sizes could conceivably represent a competitive advantage, despite the industry's trend towards smaller and smaller train sizes. Rio Grande LNG has filed two FERC applications: in its first application, it listed the number of trains at 6 and a total nameplate capacity of 27 MTPA. In a subsequent application, it obtained approval for a 5-train redesign, while holding its total nameplate capacity constant at ~27 MTPA.

Curiously, NextDecade may have completed the redesign for "environmental economies of scale." Rio Grande has hyped the CO2 savings from the 5-train redesign, [saying the redesign will lower CO2 emissions by 21%](#). NextDecade has also put out press releases saying it is [targeting carbon-neutrality at Rio Grande LNG](#).

Wait and see, LNG

There are a lot of moving parts in this saga. We believe that, on balance, the Rio Grande-Engie deal is more likely to proceed than not, but note that there is considerable regulatory uncertainty. We're going to follow this story very carefully, as greater EU regulatory scrutiny of methane emissions could have important repercussions for the entire U.S. O&G complex. **[Editor's note:** Engie definitively called off the deal subsequent to this article's initial publication.]

"This story is stunning for several reasons: this deal would represent the first Sales and Purchase Agreement, or SPA, signed by a U.S. LNG exporter since Plaquemines LNG inked an agreement with EDF in Feb 2020; more French/EU regulatory scrutiny of methane emissions could pose enormous risks not only to LNG, but even to crude oil exports; and, finally, we're surprised that Engie chose Rio Grande LNG over other projects."

Renewables News:

[Unpopular opinions about solar](#)

[Annual PV installations from BNEF](#)

[US power sector eyes battery storage growth](#)

[Battery life: the race to find a storage solution](#)

[Boris Johnson lays out U.K. plan for a Green Industrial Revolution](#)

Images from Wikimedia Commons: [Maciek Kwiatkowski](#), [Martian-2007](#), [Downtowngal](#), [Qyd](#), [Joshua Doubek](#), [Carol M. Highsmith](#)

Commodity Outlook (90 days out)

Vaccines, COVID, and energy

In case you missed it, at least two vaccines (as of this writing) appear likely to hit the market. We are *much* more optimistic about energy demand in the post-vaccine period. Demand for crude and other “mobility fuels” is expected to rise in tandem with vaccine uptake. It will take a while to get from here to there, however, and the domestic + international vaccine rollout will be complicated.

According to the head of the University of Oxford’s COVID-19 vaccine trial, people should be able to mix coronavirus vaccines, using one initially and then boosting with another. This is very positive news, as is the potential for additional vaccines. As more vaccines reach approval, more doses can be administered more rapidly, enabling energy demand to rebound more quickly.

Oil Market Movers:

Rapid vaccine administration could be a saving grace for U.S. refineries. Many U.S. refineries have been utilizing capacity at rates close to shut-down levels; in last month’s newsletter, we wrote that a refinery or two would undertake a short-term shutdown. Since products demand is likely to rebound sharply in the post-vaccine world, we think that refineries are now more likely to try to ride out the winter than shut down. Still, some refineries are choosing to exit the market. Shell’s 0.24 MMBPD Convent refinery will shut down permanently in December 2020.

Indeed, while 2021 is shaping up to be a year of recovery for the oil market, considerable uncertainties remain over the medium-term. In our view, medium and long-term supply and demand fundamentals are not yet settled or even predictable, as of this writing.

On the demand side, it is simply too early to say how consumers and businesses will adjust in a post-vaccine (and possibly post-COVID) world. We suspect that work-from-home will become a permanent feature in most developed economies, including the United States. The efficiency gains from reducing commuting times and eliminating property overhead will likely prove tempting for consumers and businesses. An uptake of work-from-home would likely sharply reduce fuel demand, as [commuting typically accounts for about 30% of all vehicle miles traveled](#).

But even if work-from-home uptake continues, the net effects on fuel demand are not settled, in our view. Consumers and businesses could adapt to the virtual office by moving from high-cost urban areas to lower-cost cities, suburbs, and exurbs—which could possibly raise fuel demand. We suspect that crude products demand in developed economies will trend downwards on work-from-home and virtual commuting, but it is still too soon to say.

On the supply side, the next few years will be tumultuous. Will investors commit capital to the sector? In any event, expect consolidation in the U.S. oil sector to continue. We won’t be surprised, in fact, if two of the largest U.S. oil companies team up to achieve economies of scale...

On the international front, OPEC+ unity could face challenges in the post-COVID world. OPEC+ producers will be tempted to close budget deficits by raising output. If peak oil demand looms on the horizon, will producers choose to limit supply?

LNG Market Movers:

Feed gas inflows stand above 10 Bcf/d and will probably flirt with 11 Bcf/d later this winter, which is close to the U.S. LNG sector’s maximum throughput capacity. Cheniere is trying to accelerate the opening of Corpus Christi LNG Train 3 to 1Q2021 in order to capture a portion of winter’s elevated demand. Given Cheniere’s track record of delivering projects on schedule, we’re confident they can achieve this target.

Sempra took FID on Phase 1 of its Costa Azul LNG project after receiving the go-ahead from Mexican regulators. We have Phase 1 in our base-case estimate, but we’re a little concerned by the Mexican government’s lackadaisical approval process and fear that its approval could prove fickle. We think this project is more likely than not to reach operational status, but we’re also going to keep an eye on any future regulatory issues.

NGL Market Movers:

If crude prices rise on the vaccine news, ethane and propane prices could receive some support. Propane markets are also seeing stronger support from seasonal exports, which are “in the money,” and storage levels, which are falling closer to 5-year averages, particularly in the Gulf Coast.

In ethane markets, we expect that ethane rejection will rise until inventory is worked off in the USGC (stocks have risen due to COVID19 and the series of hurricanes this year).

Natural Gas Market Movers:

An uptick in crude prices can be bad news for natural gas. Henry Hub prices have trended downwards in recent weeks on warmer weather, demand losses from COVID and... positive news on the vaccine front.

The market seems to be anticipating a rise in crude production (and associated natural gas output). Indeed, rig counts in the Permian and Eagle Ford have trended upwards in recent weeks.

Heading into 2021, LNG exports appear steady and could strengthen on a post-vaccine recovery. Coming out of winter, we’ll be keeping a close eye on storage levels in the U.S. South Central Region: we believe that could give us clues for the shape of 2021 prices.

“On the demand side, it is simply too early to say how consumers and businesses will adjust in a post-vaccine (and possibly post-COVID) world. We suspect that work-from-home will become a permanent feature in most developed economies, including the United States.”

Competitiveness of US LNG versus Qatar (and Australia) Competition

U.S. LNG is at a marked disadvantage in Indo-Pacific markets due, in part, to the tyranny of distance. Australian and Qatari LNG are geographically proximate to demand markets in the Indo-Pacific, which limits transportation costs such as vessel chartering, fuel burn, Panama Canal transit fees, etc.

It’s also worth noting the market’s structural realities and Qatar’s continuing dominance. Although U.S. LNG producers have become more competitive over time, Qatar produces the lowest cost LNG in the world and enjoys shipping advantages against virtually all of its competitors. According to an excellent [Platts podcast](#), Qatari associated gas for LNG is essentially free when oil prices are above \$30/bbl, and Qatar LNG can sell into European spot markets below \$2/MMBtu landed. For U.S. facilities, such as Cheniere, [liquefaction fees alone cost between \\$2 - \\$2.50/MMBtu](#).

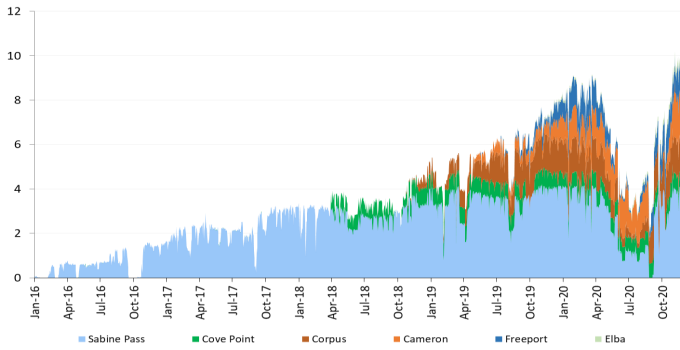
Of course, U.S. LNG exports can still find a home in the Indo-Pacific if demand outstrips supply. We’ve recently completed a bottoms-up, project-by-project assessment of World LNG supply-demand balances. We believe that U.S. LNG has become more competitive, even in Indo-Pacific markets, due to the delay or even cancellation of so many LNG projects amid the COVID pandemic; we suspect there may be some tightening ahead if demand projections hold. If you’d like to discuss our view of LNG supply-demand balances, drop us a line at:

info@enkonenergy.com

Key Market Dashboards

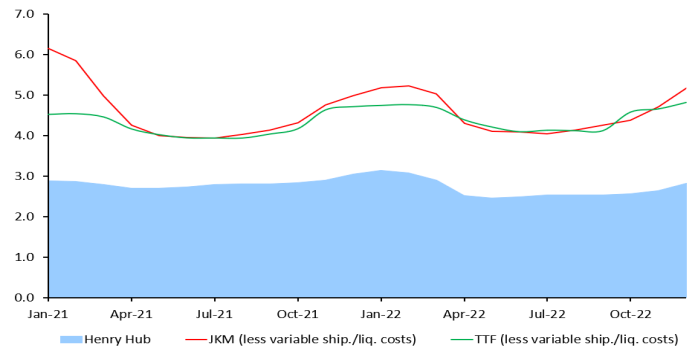


Firm Feed Gas Receipts into U.S. LNG Terminals
(Billion Cubic Feet per Day)



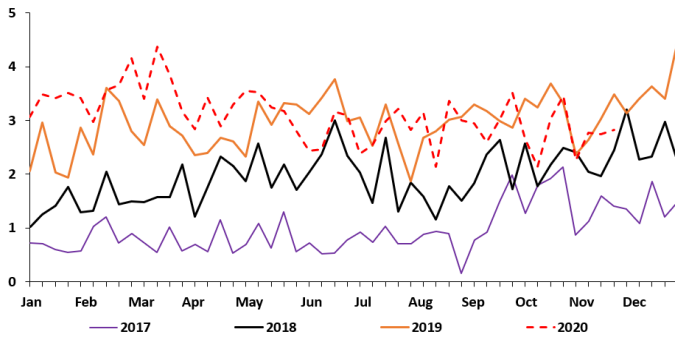
U.S. November LNG feed gas flows at record levels and could reach 11 Bcf/d in a best-case scenario

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



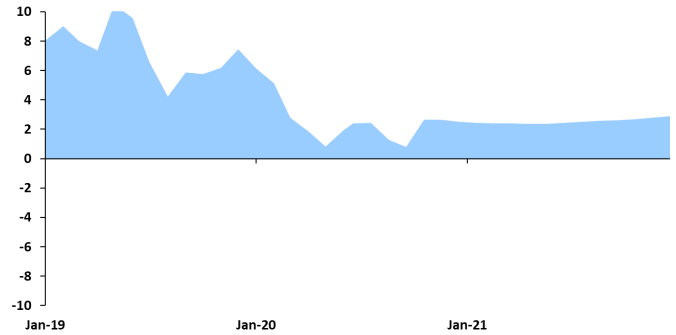
Netbacks remain positive, with some downside risks in NE Asia on potential COVID outbreaks

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



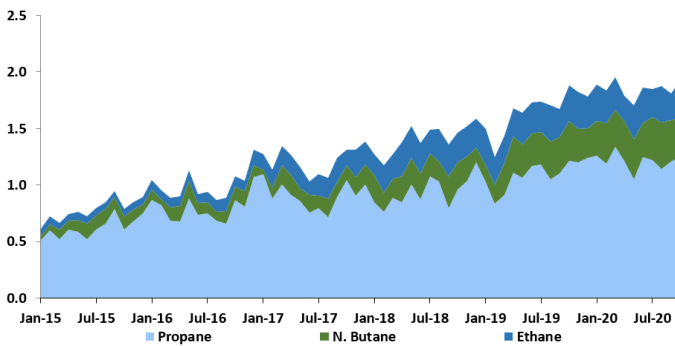
Crude exports could face headwinds if Brent-WTI spreads narrow on earlier COVID U.S. vaccine deployment. Greater competition from Libyan light crude grades may also weigh on U.S. exports

Brent—WTI Spread
(\$/Barrel)



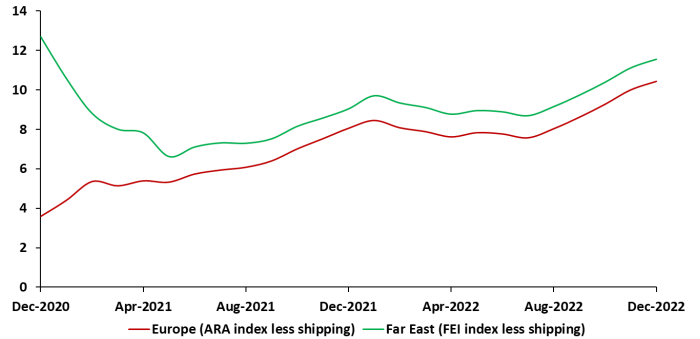
Brent-WTI spread is projected to rise gradually, but overseas COVID dynamics could pressure Brent and threaten this trend

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



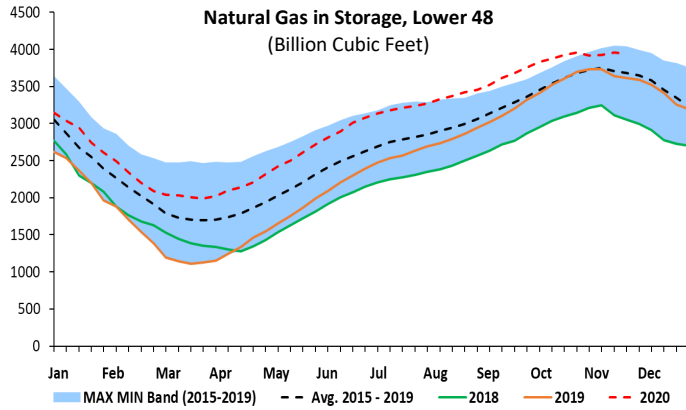
U.S. LPG exports remain above levels required to balance the domestic market

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

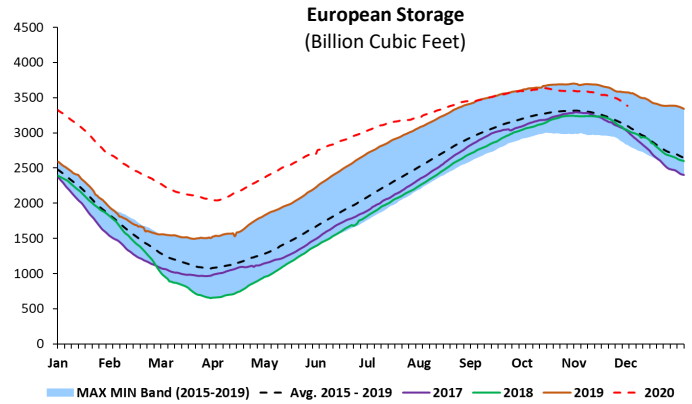


Freight costs are rising, and lockdowns are stifling European demand—but Asian demand remains strong

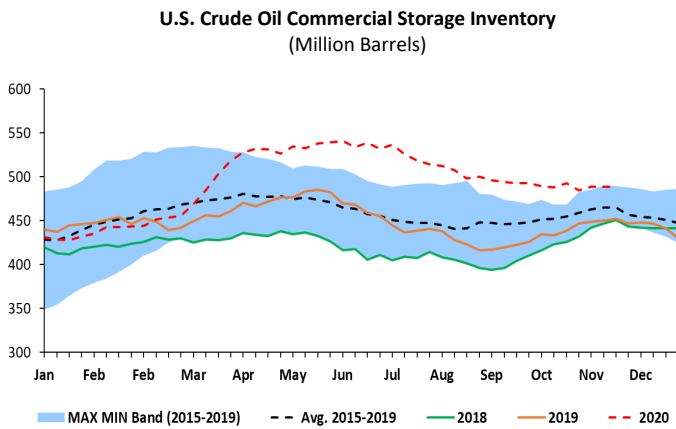
Key Market Dashboards



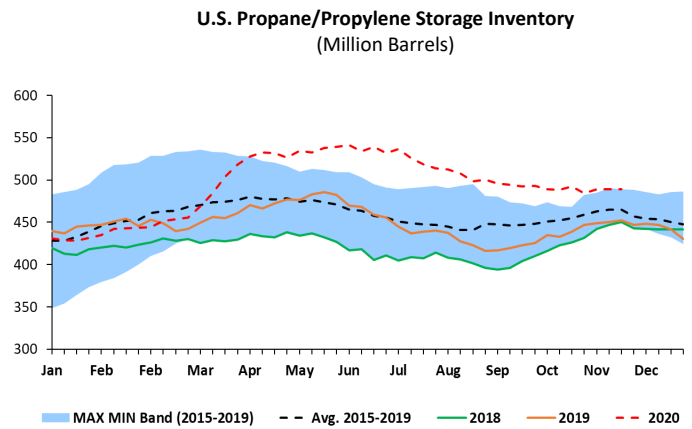
Natural gas storage levels are highly dependent on weather-related demand — LNG exports close to capacity levels



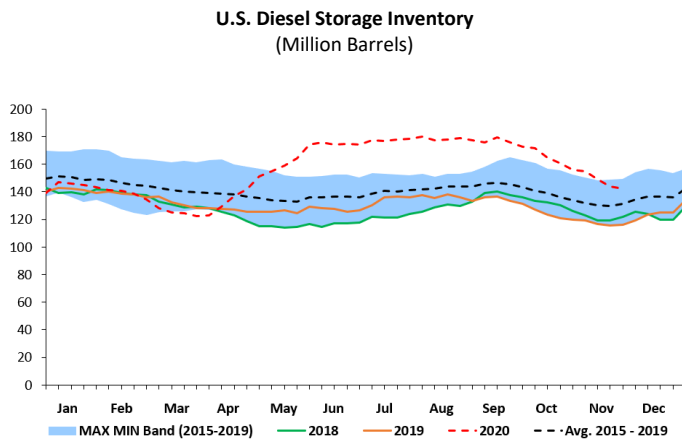
European storage levels holding relatively steady despite COVID-related lockdowns



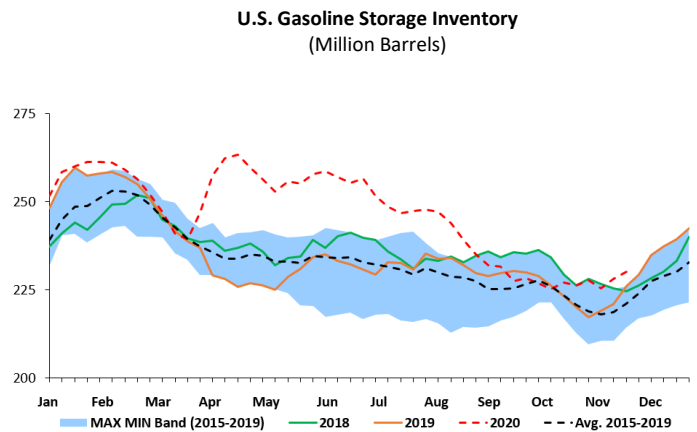
Crude storage levels could rise as drillers ponder post-COVID supply/demand balances—but OPEC+ output could weigh on prices



U.S. Propane inventories remain elevated and export netbacks aren't clearing inventories

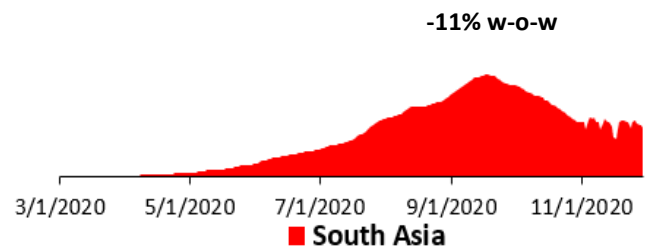
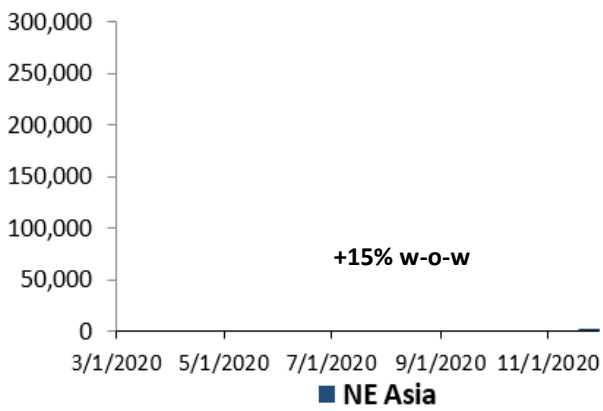
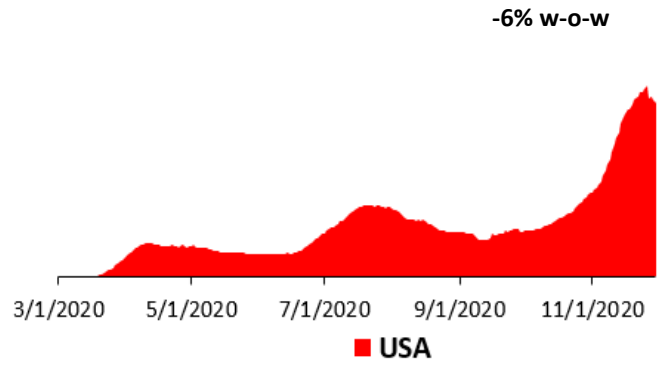
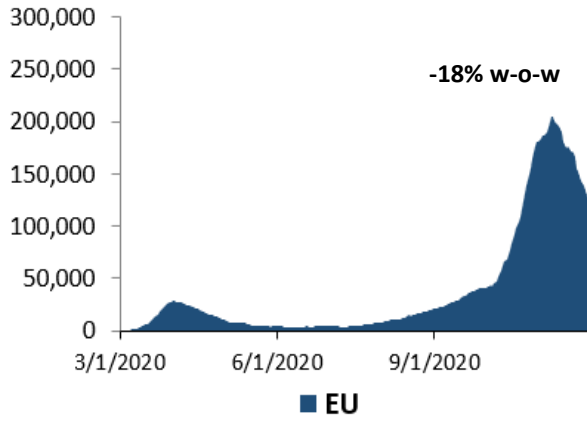


Refineries have enthusiastically cut diesel production. That may change as vaccines lead to a post-COVID demand shock



Gasoline inventories could rise over winter as demand takes COVID-related hit but refineries refuse to shut down with end of COVID in sight

Key COVID Daily Case Dashboards (7-day averages)



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.

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.