4 APRIL 2018

Height Commentary

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LNG Exports & Trade

LNG: Diplomacy Tool, Bargaining Chip, and Key to U.S. Energy Dominance

THE TAKEAWAY

Energy exporters are beginning to feel the strain of trade tensions between the US and China. Liquefied natural gas (LNG) exporters, in particular, will depend heavily on Chinese demand growth, both directly and indirectly. Trade tensions could complicate things, however. We doubt that China will target US natural gas directly, but skittishness over tough trade rhetoric between the US and China may discourage investment in projects that are levered to the Chinese market. Should trade negotiations lead to Chinese concessions to increase imports of US goods, we believe LNG could benefit substantially as energy exports could meaningfully erode the US trade deficit with China. China is one of the fastest growing importers of LNG, passing South Korea as the second-largest importer of LNG last year. Gas demand in the world's most populous country is unlikely to decline, and state targets indicate that demand could continue its stratospheric pace of growth. The question becomes from where can China source gas in sufficient supply to meet its needs. We continue to believe the LNG market, where the US is on track to be the largest exporter by the mid-2020s, is the most likely source of natural gas for China's growing market. Consequently, while we believe the opportunity for exporters remains robust, projects and their financiers must navigate trade tensions carefully and creatively.

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The Trump Trade

President Trump's trade policy thus far has followed through, in appearance if not always in substance, on his protectionist rhetoric from the campaign trail. His early actions—initiating a Section 232 investigation on steel and aluminum imports and a Section 301 investigation into Chinese intellectual property theft—set an expectation that strong action was likely to follow. These expectations were buoyed somewhat by tariffs on washing machines and solar panels, even as these tariff proposals drew a mixed response from manufacturing interests.

The rollout of the Section 232 investigation report initially drove expectations toward sharply protectionist actions, with a proposed 25% global tariff on steel and 10% on aluminum. Leading oil and gas groups, including American Petroleum Institute (API) and the Association of Oil Pipe Lines (AOPL), argued the proposed tariffs would hinder Trump's goal of American energy dominance and chill investment in energy infrastructure. The implementation of these tariffs has not lived up to initial fears, however, with significant carve-outs for allied nations, including major steel exporters.

It is still too early to know how the Section 301 investigation will play out but, as we noted on March 21 and March 23, we expect that Trump will leverage this process to drive negotiation with the Chinese rather than move directly to tariff implementation. However, there remains continued risk that US mismanagement of this negotiation could drive Chinese retaliation. This uncertainty has raised fears that the Chinese could either seek to limit the import of US LNG or that the US could seek to utilize LNG exports as a tool to equalize the trade imbalance often cited by Trump. We expect LNG will be on the negotiating table as US exports can help meet China's soaring demand and cut the trade deficit with China by tens of billions of dollars in the process.

U.S. LNG: Opportunities and Risks

US LNG exporters, particularly next-wave companies like NextDecade (**NEXT**), Tellurian (**TELL**), and LNG Limited (**LNGLY**), are likely to depend heavily on growing markets, like China, to support global prices that make US exports attractive. Within the last six months, the global LNG market underwent a substantial shift as rising demand in China and Pakistan, among other markets, not only absorbed excess cargoes but eventually created a tight market for LNG. The spot market, as a share of overall LNG sales, is also growing in size as emerging buyers depend more heavily on short-term procurement than established buyers. Trading houses and LNG portfolio companies appear only-too-happy to support these markets as new, flexible contracts allow buyers to manage their purchases and even take advantage of favorable price differentials.

Enter the US export market, which is revolutionizing a staid market characterized by long-term, inflexible contracts between major Asian and European gas utilities and suppliers like Qatar. Pricing typically is linked to oil, with standard "slopes" tying LNG prices to a fraction of oil. While the oil market is certainly robust and well understood globally, the US Henry Hub is among the most liquid energy trading hubs, and it offers buyers a differentiated option away from the oil linkage. Increasingly, this is becoming attractive to buyers as global oil prices nudge higher while Henry Hub remains relatively range-bound between $2.50-3.00/MMBtu. US Henry Hub contracts at the high end of that range are competitive in Asia at $60/bbl oil prices, or higher, while US gas displaces oil-linked LNG in Europe when oil reaches $65/bbl.

Price is not the only reason that buyers are giving the Henry Hub another look. Unlike traditional suppliers, US contracts have low minimum volume commitments and lower take-or-pay requirements. While traditional

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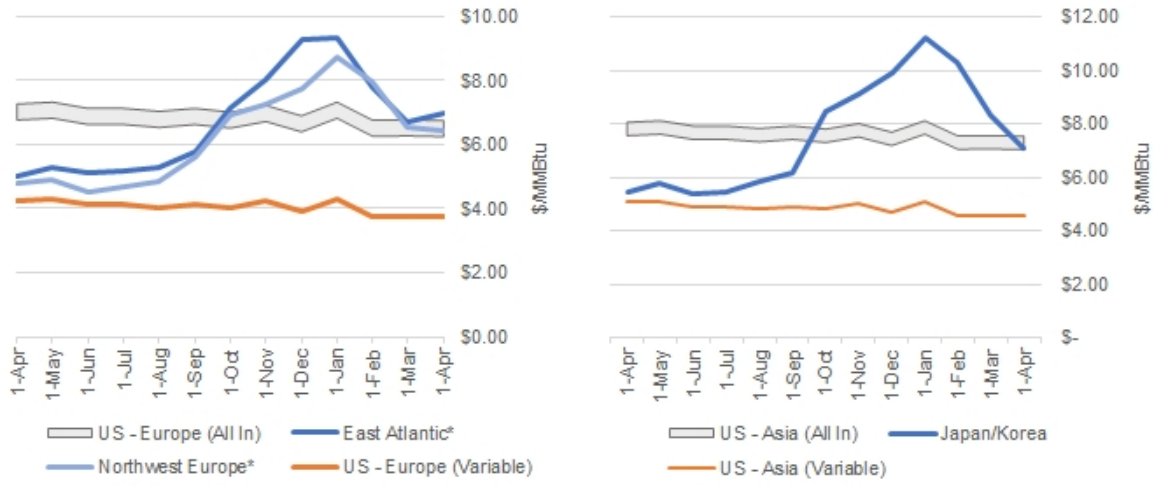
suppliers, whose gas resources have no market other than LNG, typically require buyers to take *all* contracted cargoes, and frequently require buyers to take cargoes to specific delivery points, US sellers have no such restrictions. As such, increasingly flexible and seasonal LNG buyers find greater synergy with the US contract structure that allows buyers to either take or defer volumes, or even market cargoes in higher-value countries. As Figure 1 illustrates, the variable cost of US LNG (Henry Hub times 1.15 plus shipping) in Asia and Europe is essentially always economically competitive with other LNG sources (orange line), while the grey bar illustrates the range of "all in" prices for next wave facilities. While Western European LNG prices typically are not high enough to justify new investment year-round, Asian LNG prices remain in excess of the level needed to sign new offtake agreements with US export projects.

Figure 1 - LNG Price Competitiveness in Europe and Asia



Source: EIA, Platts, Height analysis

If prospective exporters, project financiers, and portfolio companies can be creative, the stability and flexibility of Henry Hub-linked contracts should continue to compare favorably to oil-linked and LNG spot pricing. As the US attempts to sort out trade-related concerns with countries like China, Mexico, and Korea – all major buyers of US LNG – we believe some exporters have a distinct opportunity to capitalize on these negotiations to secure offtake commitments.

A small example of this dynamic is unfolding with respect to Freeport LNG's expansion train and the Republic of Lithuania. Yesterday, Trump met with Lithuanian President Dalia Grybauskaitė, around the same time that Lithuania released a Memorandum of Agreement with Freeport LNG. The MOU was prepped beforehand and represented a clear effort on Lithuania's part to help curry favor with the Trump administration. Korean gas utility KOGAS, entered similar agreements last June ahead of President Moon Jae-in's visit with Trump, although these announcements have yet to solidify into offtake agreements.

Trade negotiations and Trump's clear "America First" policy platform will keep attention on US LNG exporters, but challenges remain with regards to how sellers might execute on a contract with a Chinese buyer. Most export

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projects require third party financing, which implies that contracts are often particularly conservative. Project financiers typically prefer long term (15-20 year) offtake commitments with creditworthy counterparties or higher contract costs to cover the increased risk. With regards to China, concerns about credit quality may be replaced with anxiety over trade tensions and retaliatory actions that China could take in response to US tariffs on Chinese goods. In practice, while we believe substantial volumes of US LNG will likely flow to China, US projects may require intermediaries to facilitate sales of US gas to Chinese buyers.

Project Finance and Contracts – Risks and Opportunities

We expect that sophisticated buyers have the bandwidth to take additional volumes from the US into a marketing-style portfolio, both to serve their own demand and to capture the arbitrage between prevailing LNG prices and the cheap Henry Hub-linked price. This model, similar to Cheniere Energy's (**LNG**) contracts with Gas Natural Fenosa, GAIL, and Centrica, allows US gas exports to continue growing and serving markets around the world. In our view, low-cost projects like NextDecade's (**NEXT**) Rio Grande LNG and the brownfield expansion at Sempra's (**SRE**) Cameron LNG are attractive options for this model.

Tellurian (**TELL**) is attempting to do something a bit different with their Driftwood LNG facility. Rather than depending on third party financing to raise capital, TELL hopes to bring its buyers in as equity investors in an integrated gas business. At the price of $1,500 per ton of capacity, buyers can take an equity position in both upstream gas production, midstream, and liquefaction activities. So far, TELL has not disclosed any agreements with potential buyers, and we view Chinese companies as risky partners in this structure. The Trump Administration continue to expand the role of the Committee on Foreign Investment in the United States (CFIUS), and it may well be inclined to use CFIUS powers to block Chinese buyers from taking a role in TELL's project. At a minimum, the CFIUS risk is a unique problem for TELL, and it might encourage Chinese buyers to look elsewhere if they wish to obtain capacity in a US project. To be sure, Tellurian is not the only entity that wishes to diminish its exposure to project finance markets; Cheniere is seeking more freedom with financing its third Corpus Christi train, and Shell and Energy Transfer Partners (**ETP**) could strike a new deal to move ahead with the Lake Charles facility.

China LNG Consumption: Imported and Domestic Sources

In 2017, Beijing set clean energy targets with a goal of generating 10% of the country's energy with natural gas by 2020 and 15% by 2030. We estimate this would require China to increase natural gas consumption by 38% —or 12 bcf/d—from 2016 levels to meet its 2020 goal. China plans to increase domestic production, pipeline imports, and LNG imports to reach consumption targets. However, we expect the vast majority of Chinese gas demand will be met by LNG imports from Qatar, Australia, and the U.S. (*See Figure 2, next page*).

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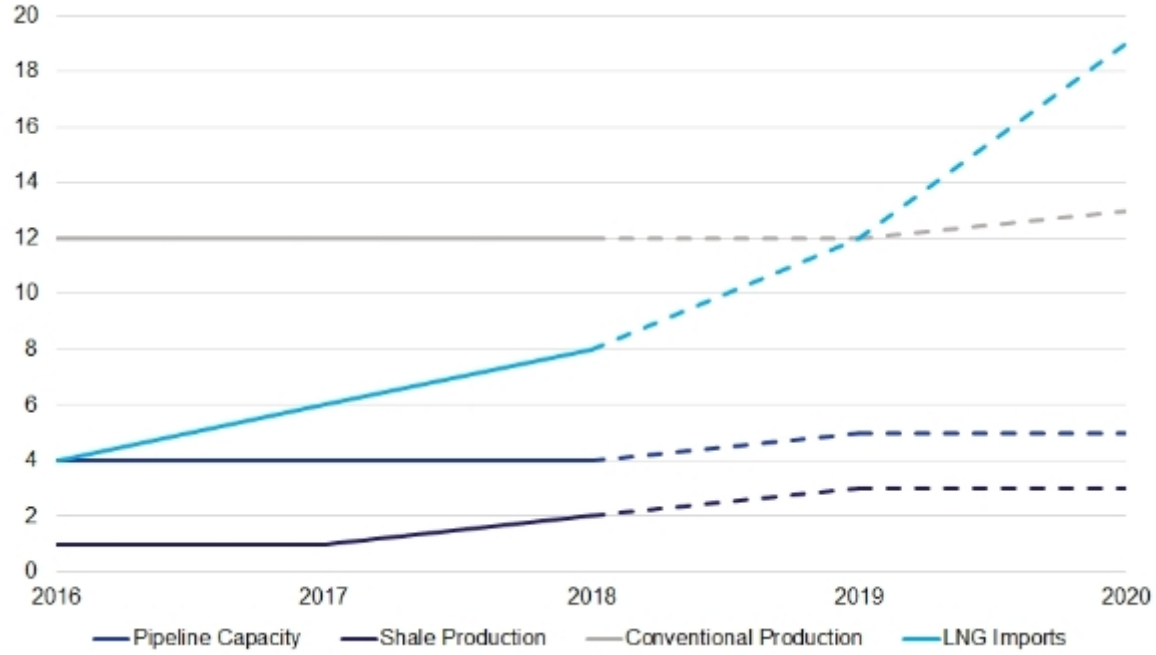
Figure 2 - China's Increasing Reliance on LNG Imports (Bcf/d)



Source: EIA, IEA, China's 13th Five Year Plan, Height analysis

While the EIA estimates China sits on the largest recoverable shale reserves in the world, extraction is extremely expensive given geological and technological challenges. Water scarcity, high land costs, and high-sulfur content plague Chinese natural gas development. China would need gas prices to rise significantly for the level of production Beijing would like to be feasible. We expect China will leverage the international market to drive up gas prices to incentivize domestic production.

Even with new projects on the horizon, pipeline imports will not be able to supplement domestic production at the level necessary to meet China's targets. Imports from China's chief supplier, Turkmenistan, dropped 14 percent year-over-year in January 2018 and 4 percent from December. Shipments from Uzbekistan and Kazakhstan also dropped from December to January—42 percent and 24 percent, respectively. The Power of Siberia—the first pipeline to connect Russia and China—is expected to begin service in December 2019 and deliver up to 38 billion cubic meters of gas annually for 30 years. However, the project is not expected to run at full capacity until 2025.

Conclusion

We expect U.S. LNG exports will provide an area for trade cooperation between the U.S. and China after the two countries exchange initial blows with dueling tariffs. In negotiating with China, the U.S. will push for deficit-busting trade concessions. Further opening the Chinese market to U.S. LNG could reduce the deficit by tens of billions of dollars per year. Moreover, increasing LNG trade volume with China is in line with both Trump's "energy dominance" platform and China's clean energy goals.

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COMPANIES MENTIONED IN THIS REPORT

Energy Transfer Partners LP (ETP), Cheniere Energy Inc (LNG), Liquefied Natural Gas Ltd (LNGLY), NextDecade Corporation (NEXT), Sempra Energy (SRE), Tellurian Inc (TELL)

RISKS

The legislative and regulatory agendas are subject to change at the discretion of leadership. Unprecedented economic conditions could instigate unanticipated and/or sweeping shifts in policy. Predicting the future is a hazardous endeavor and economic / market forecasting is an imprecise science. Actual outcomes may differ substantially from our forecasts. The predictions and opinions expressed herein are subject to change at any time.

ANALYST CERTIFICATION

We, Katie Bays and Clayton Allen, certify with respect to each security or issuer covered in this research report that (i) the views expressed in this research report accurately reflect our personal views about those subject securities or issuers and (ii) no part of our compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by us in this research report.

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