

## LPG in World Markets

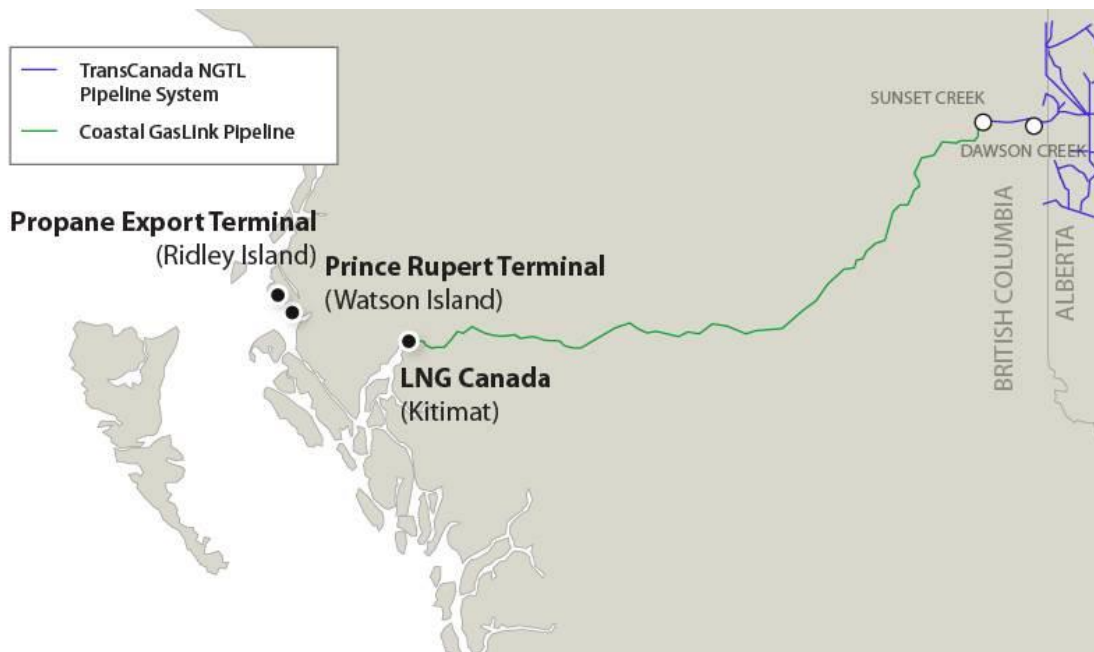
### New LNG and LPG export projects a boon for Canadian production

The LNG Canada project, after years of delay, appears to be nearing a final investment decision (FID) which after completion will provide an outlet for stranded gas in Western Canada. The project in Kitimat, British Columbia (BC), the first LNG export project for Canada, will source feedgas primarily from the natural gas liquid (NGLs) rich Montney, Horn River and Cordova plays of the Western Canadian Sedimentary Basin (WCSB). If the project moves forward, production of NGLs from the basin will increase as most of the liquids will be separated to produce the on-spec LNG. In addition, there are two proposed LPG exports projects along the west coast of Canada, one of which will come online early 2019. These projects will support higher production in the region and finally allow Canadian producers reach the premium Asian markets without sending material through the US.

Royal Dutch Shell, the main stakeholder of LNG Canada, in its 2Q earnings call in July said that the company is analyzing its portfolio of new LNG supply options to select the most competitive source of supply, and "LNG Canada is the most mature of these options." However, before making FID it needs to consider few key items with other stake holders.

The project is owned by 40% Shell, 25% Petronas, 15% by a unit of PetroChina, 15% by a unit of Mitsubishi and 5% by Kogas. It was originally supposed to make FID in 2016, but the decision has been delayed due to unfavorable market conditions caused by the downturn in oil prices and what was expected to be an LNG supply glut. But as the global LNG market is expected to face a supply shortage by mid-2020s, Shell has indicated that the window for competitive projects is reopening. Following FID, construction would take about five years before commissioning cargoes would be produced, according to industry sources.

The mayor of Kitimat recently said it is likely that LNG Canada will make FID by October on the \$30-billion (C\$40 billion) project. The project initially will have two, 6.5-MMt/y liquefaction trains, with an option to expand to four trains in the future for estimated production capacity of 26 MMt/y. To produce the initial 13 MMt/y of LNG, the facility will require about 1.7 bcf/d of feedgas.



TransCanada has proposed building the 2.1-bcf/d Coastal GasLink pipeline to supply natural gas from the WCSB for the LNG project. Pipeline capacity could be expanded to 5 bcf/d. The company has already secured all regulatory permits and has said that it will begin construction in early 2019, pending FID on the LNG project. The pipeline will also connect with TransCanada's existing NGTL pipeline system in BC. Regulatory filing indicates that gas composition for the project will meet the National Energy Board of Canada's regulation requiring at least 85% methane.

According to Poten's calculations, to get to 85% methane on a BTU basis, all the propane, butane and condensate (pentanes+) must be stripped from the rich gas stream in Western Canada before the gas can be shipped in the pipeline. If the proposed pipeline runs near capacity after the LNG project comes online, NGL production (except for ethane) would increase to about 1.5 MMt/y. (For breakdown between propane, butane and condensate production see **LPG in World Markets** August issue)

However, it is unclear whether processing will be done near the gas production or downstream at the LNG facility. Currently, gas processing plants around Alberta and BC are operating at capacity, so new capacity will be needed to process additional gas, an industry source said. Leaving NGLs in the gas might pose a challenge as it will exceed the required specification for pipe gas.

The alternative would be to build Coastal GasLink as a dedicated line for the LNG project, allowing some NGLs to be left in the gas stream and for processing downstream at the LNG plant. LNG Canada already has units planned at the facility to store and transport separated NGLs if necessary. According to regulatory filings, the LNG project will include natural gas treatment and NGL extraction, two condensate storage tanks with total capacity of up to 25,000 m<sup>3</sup> and a loading terminal to ship NGLs and condensate to markets via rail utilizing the CN network.

According to Poten's calculation, the facility will have about 17,500 m<sup>3</sup> - 32,500 m<sup>3</sup> (9000 t - 17,000t) weekly loading capacity of condensate and NGLs. However, according to current regulatory filing if Coastal GasLink ships gas according to pipeline spec the feedgas will have little NGLs.

## Other LPG projects

There are two LPG export terminal projects in the works in Western Canada which would also support incremental production and provide Canadian producers access to the growing Asian markets without shipping material to the US. These projects also show some competitive advantage over the Gulf Coast.

AltaGas is building the 1.2-MMt/y Ridley Island Propane Export Terminal (RIPET) in Prince Rupert, B.C., providing an outlet for Canadian production to Asian markets. The project also includes 96,000 m<sup>3</sup> of storage capacity and global tank storage company Royal Vopak has a 30% interest in RIPET. Vopak also has additional land rights in Ridley Island which it can develop in the future for storage.

Japan's Astomos Energy has signed a deal to buy half of RIPET's capacity starting in 1Q 2019. Propane can be transported at the export facility using the existing CN rail network. The facility is expected to offload about 50-60 rail cars per day during operation and export 20-30 cargoes per year.

In addition, in November 2017 the midstream company Pembina Pipeline took FID for the Prince Rupert Terminal on Watson Island, BC. The terminal will have 25,000 b/d (about 750,000 t/y) LPG export capacity and is expected to be in service in mid-2020, subject to regulatory and environmental approvals. Pembina plans to source the LPG primarily from its Redwater fractionation complex in Edmonton, also utilizing the CN rail network.

LPG prices in Western Canada are discounted relative to Mont Belvieu because of lack of demand, now that exports to the US have dried up. Lower prices combined with the proximity to Asia make LPG exports to Asia from Western Canada very competitive. For example, the shipping time from RIPET to Asia is estimated around 10 days compared with 25 days from the USGC using the Panama Canal. In addition, cargoes heading to Asia from Western Canada do not have to transit through the Panama Canal adding additional cost savings.

There are also growing concerns that with increased LNG shipments from USGC to Asia, congestion at the Panama Canal has increased and as LNG exports are expected to grow even further there is potential for

lower allocation for VLGC transits in the future. That would make LPG exports from Canada an alternative as demand in Asia grows.

Canadian LPG can also be shipped to the US West Coast. Western Canadian producers already ship LPG by rail to the US West Coast, where it can be consumed domestically or shipped to markets in Asia through the Petrogas' LPG export terminal in Ferndale, Washington. It can handle exports and imports of up to 30,000 b/d (about 1 MMt/y) and can also supply LPG for US domestic consumption. The terminal has rail, truck and pipeline capability and is connected to two local refineries.

According to the US Energy Information Administration, the US West Coast received about 1 MMt of LPG from Canada by rail in 2017, up by 34% from the previous year.