

EXPLORING NEW SHORES: Supply and transportation of LNG from Canadian ports

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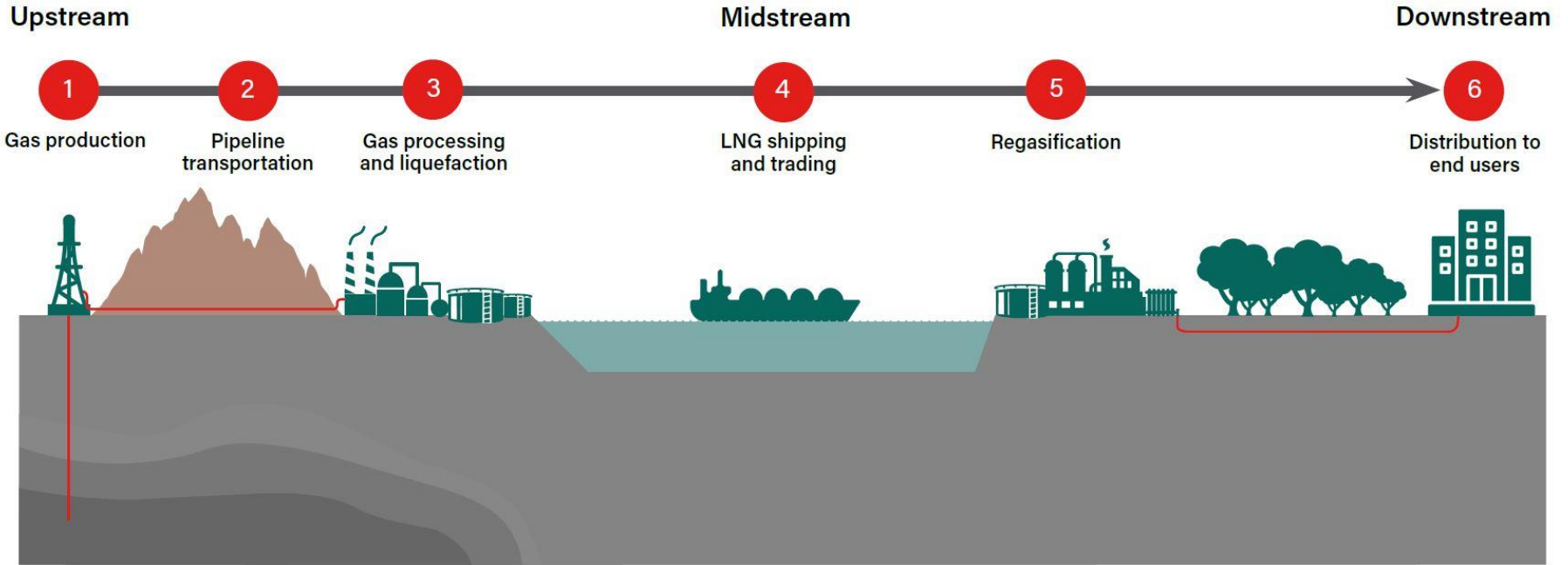
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Overview

- The LNG value chain
- Export licences
- Development of marine services and LNG bunkering in Canada
- Maritime regulations and other requirements
- Contractual issues in LNG transportation

The LNG value chain



Supply and transportation of LNG

Shore-side participants:

- Liquefaction facility operator
- LNG seller

Offtake participants:

- LNG seller
- LNG buyer
- LNG carrier owner

3

Gas processing
and liquefaction

4

LNG shipping
and trading



Export licences

- Section 343 of Part 7 of the *Canadian Energy Regulator Act*.

Prohibition — export

A person must not export oil or gas except in accordance with a licence issued under this Part or as authorized under the regulations made under this Part.

- Export licences are typically obtained from the Canada Energy Regulator (CER) by LNG terminal operators but may be used by third party offtakers
- Application to LNG bunkering

Fortis/Seaspan Marine Jetty Partnership (MJP)

The project:

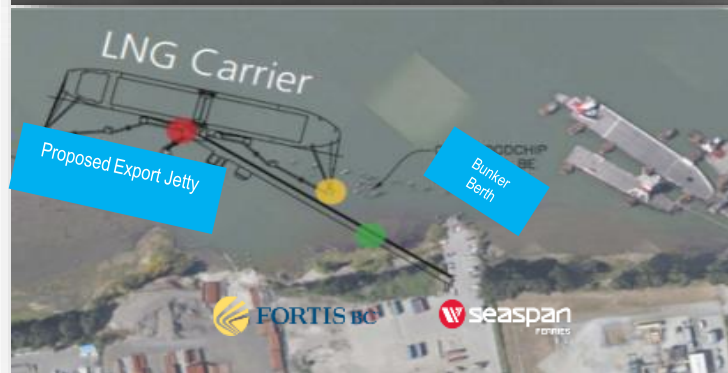
- JV/Partnership between Seaspan ULC and Fortis Inc (FEI) to jointly fund and build **LNG bunkering berth** and a potential **LNG export berth**

Berth 5 Jetty Partnership:

- JV will build the infrastructure to bring an LNG pipe from FortisBC to Seaspan Ferries berth five
- Seaspan & Fortis build the LNG bunker business through contracts for LNG with other ship owners (i.e. Seaspan, EPS, Teekay , BC Ferries etc.)

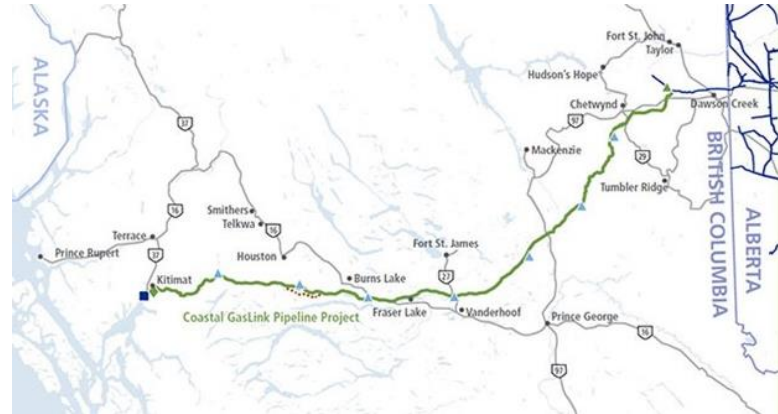
Tilbury Export Jetty Partnership:

- After an export customer is secured by Fortis, the JV builds an export berth on the existing Fortis waterlot
- Fortis Inc site expansion to 3 MTPA is required for export business to be built and jetty constructed



LNGC – Project overview

- Largest private investment in Canadian history (\$40B)
- First FID for an LNG export terminal in Canada
- First major marine contract award to a First Nation JV company
- Project will employ over 75 people to support the marine operations
- Largest LNG export terminal in the world
- Longest tug escort of LNG tankers in the world (159NM)
- Goal: The safest project on Earth



LNGC – Operations

- Phase one | 170 liftings per year
- Phase two | 350 liftings per year
- Escort both in bound and out bound ships
159 NM
- Harbour tugs operate in Kitimat only, one tug stands ready throughout loading of ships
- Escorts refuel with LNG after each round trip
- Tug support from maintenance base located in Kitimat
- Dry dockings heavy maintenance done in Vancouver



LNGC – Operations

Escort operations:

- 159 NM in and out
- 6 - 8 knot tethered operations at critical turns
- 2 X 40m tugs with 100T Bollard pull 10,000 HP with phase one and three tugs with phase two
- Run along Escort 13 knots both in bound and out bound ships
- On a tethered escort at eight knots arrest accomplished at twice the length of the ship
- Escorts loiter for next in bound before returning, possibly 24 hrs
- Escorts refuel with LNG after each round trip (fuel supplied by LNGC)
- Continuous five person crew 24/7 operations



LNGC – Operations

Harbour operations:

- Two operating tanker berths built on site of EuorCan wharf site
- Tug basin at ex Methanex jetty
- Harbour tugs 3 x 30m 65T BP
- Tugs crewed 24/7
- Four person crews in Harbour ops Engineer for transits to Vancouver
- One tug stands by loadings from buoy near berth
- Escort Tugs can substitute or assist in berth operations



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Jurisdiction

- Navigation and Shipping are Federal responsibilities under section 91(10) of the Constitution Act, 1867 (UK) 30 & 31 Victoria c.3 – marine transportation falls under Federal jurisdiction
- Cooperative Federalism means that Provincial – in this case – B.C. law can apply if it does not conflict with Federal Regulation and does not impinge on Federal approvals, which applies particularly to environmental issues
- Terminals in particular can be subject to provincial laws as the demarcation line between navigation and shipping versus provincial matters can become blurred
- LNG Canada's terminal has an Environmental Assessment Certificate from B.C. with 24 conditions to be complied with independent of any Federal conditions
- Additionally, First Nation rights can also impede or prevent developments notwithstanding section 91(10)

Bunkering

- Federal jurisdiction as it relates to the fueling of ships for their operation though still can be subject to provincial environmental concerns
- Provision of LNG bunkers to deep sea vessels arguably involves export of LNG and is therefore under the jurisdiction of the CER
- The regulatory regime for deep sea bunkering is still a work in progress and, while an export licence is not required to supply oil bunkers pursuant to an exemption by the CER, there is as of yet no equivalent exemption for LNG bunkers supplied to deep sea vessels

Contractual issues in LNG transportation

- Maritime contracts are complex arrangements. A typical scenario for one shipment is as follows:
 1. contract between the shipowner and the shipper/consignee under a master's bill of lading
 2. contract between shipowner and charterer
 3. contract between charterer and shipper/consignee
 4. contract between shipowner/charterer and terminal facility
 5. contract between shipowner/charterer and tugs
 6. contract between shipowner/charterer and pilots
- Important that the contracts in 1 to 4 are back to back as much as possible

Contractual issues in LNG transportation

Seaworthiness:

- Some conditions such as the seaworthiness of the vessel should clearly be for the shipowner

Jurisdiction:

- Whenever possible the jurisdiction in all of the shipping contracts should be the same

Tugs:

- Tugs are usually hired by the owner or charterer though sometimes by the terminal facility
- Usually operate under the UK Towage conditions which, in essence, absolves the tug company of liability for anything it does wrong

Pilots:

- Pilots are usually hired by the owner or charterer though the owner is responsible under the Pilotage Act RSC 1985, c P-14 for their fees
- The liability of a pilot is limited to \$1000.00
- The master, i.e. owner, is liable for the acts of a pilot

Conclusions

- The development of LNG export and LNG bunkering capacity in Canada will result in increasing numbers of vessels loading LNG and operating in Canadian waters
- These projects depend on marine operations involving many participants, engaging a broad range of maritime and export laws and other requirements, and necessitating a complex web of interrelated contractual arrangements
- This is just one element of the LNG value chain, requiring alignment with other elements

Questions



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