

Natural Gas Solutions for Diesel Displacement

LNG THE FUEL OF TODAY

FROM THE EQUATOR TO THE ARCTIC CIRCLE

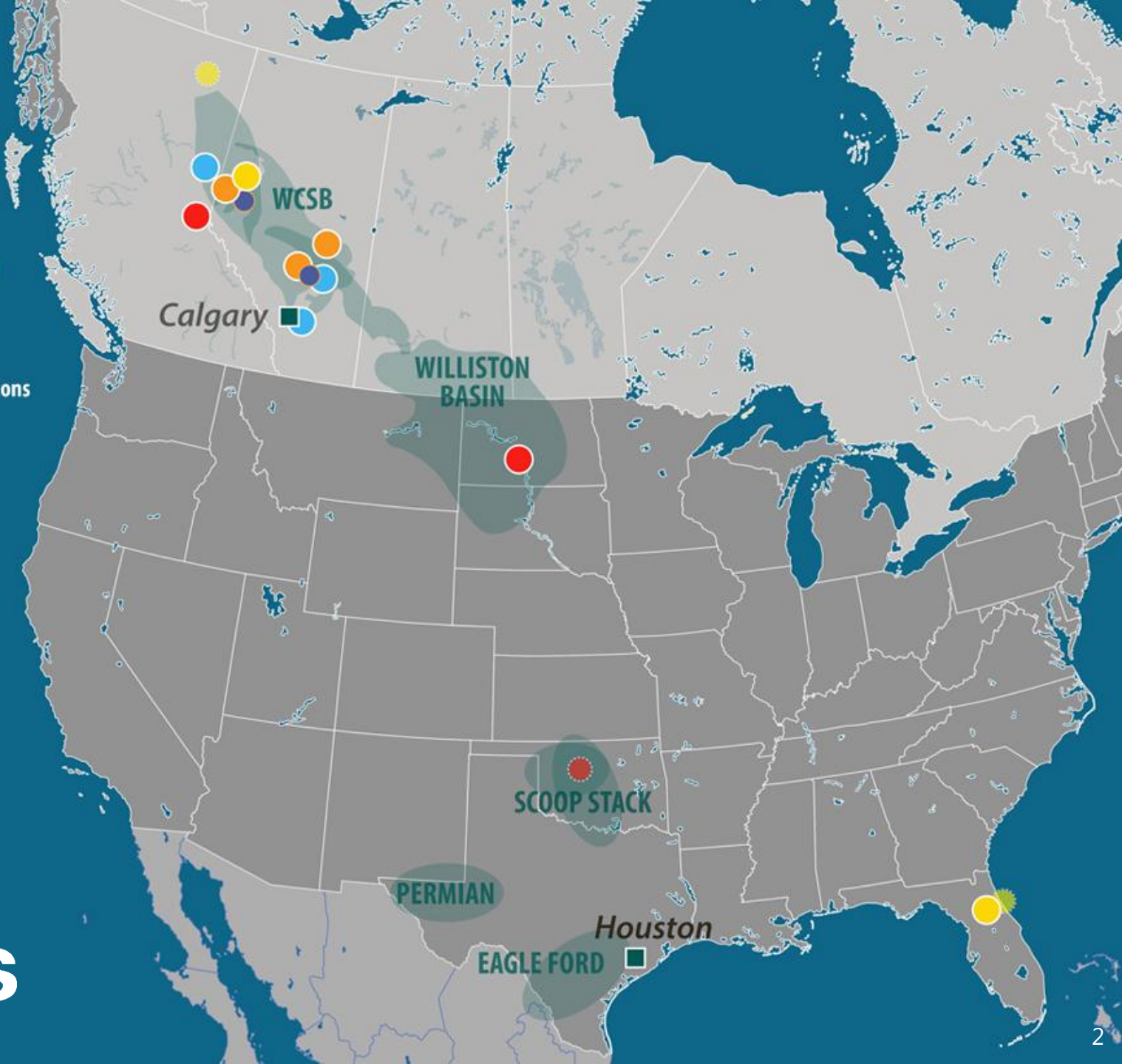
THE FUEL OF TODAY LNG



Presented by: Travis Balaski

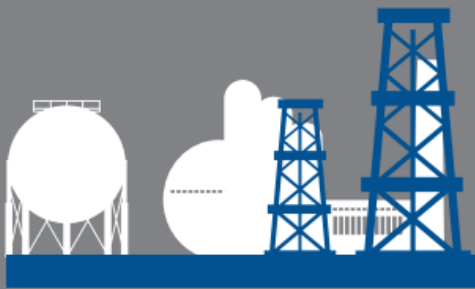
LEGEND

- LNG Facility
- Proposed LNG Facility
- CNG Operations
- Proposed CNG Operations
- CO₂ Facility
- N₂ Facility
- Oil & Gas Basin
- Transportation & Logistics Centers
- Offices



NAVIGATING NEW FRONTIERS IN ENERGY





G20 endorses the role of natural gas in energy transition

“Natural gas can play an important role in the energy transition, moving towards a low greenhouse gas emission future, and providing increased flexibility for the integration of renewable energy.”

G20 Climate and Energy Summit 2017



Global energy demand is expected to grow by

30%

between 2015 – 2040

Gas expected to make up over

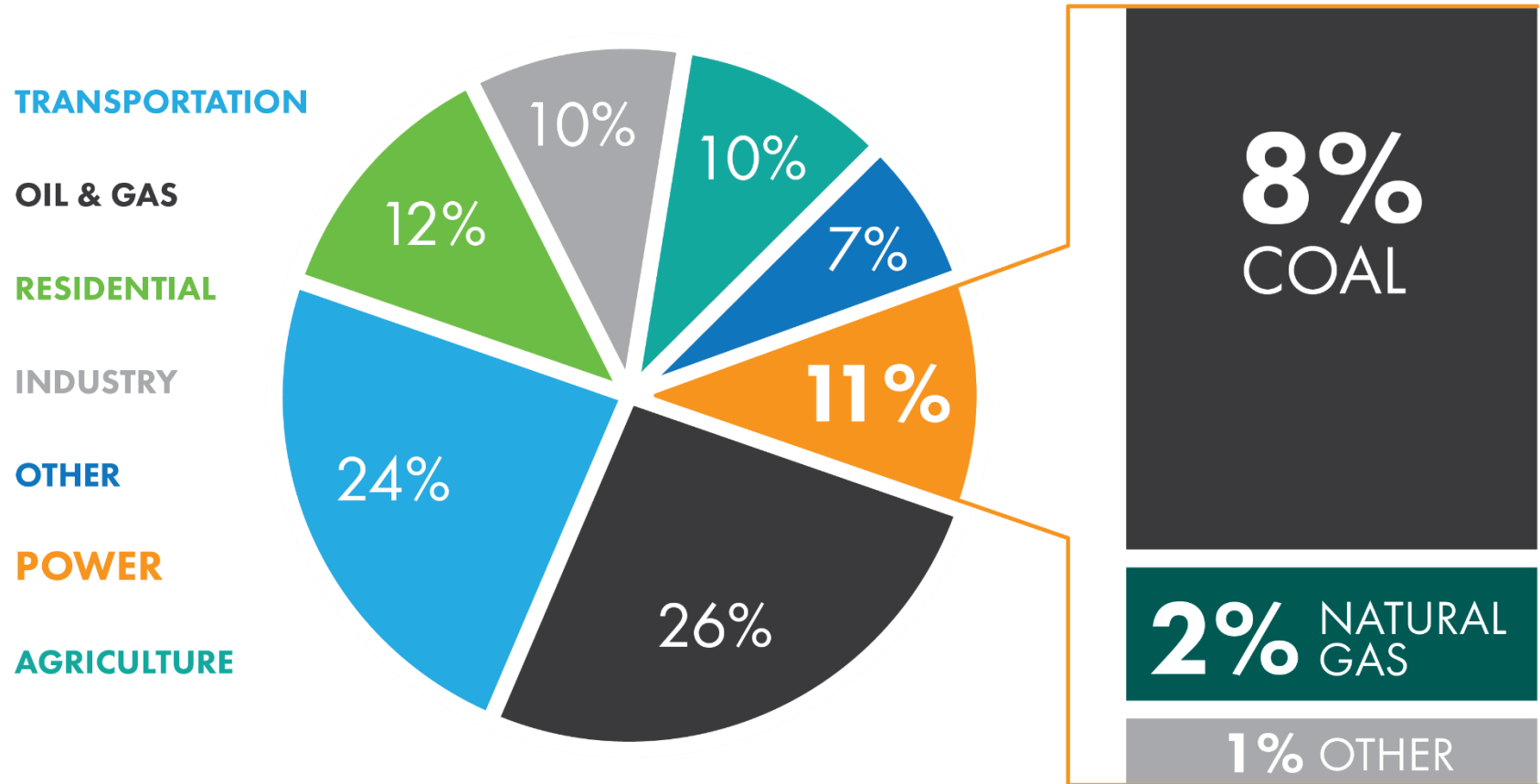
40%

of this growth

The total length of the world's natural gas pipelines would stretch to the moon and back eight times

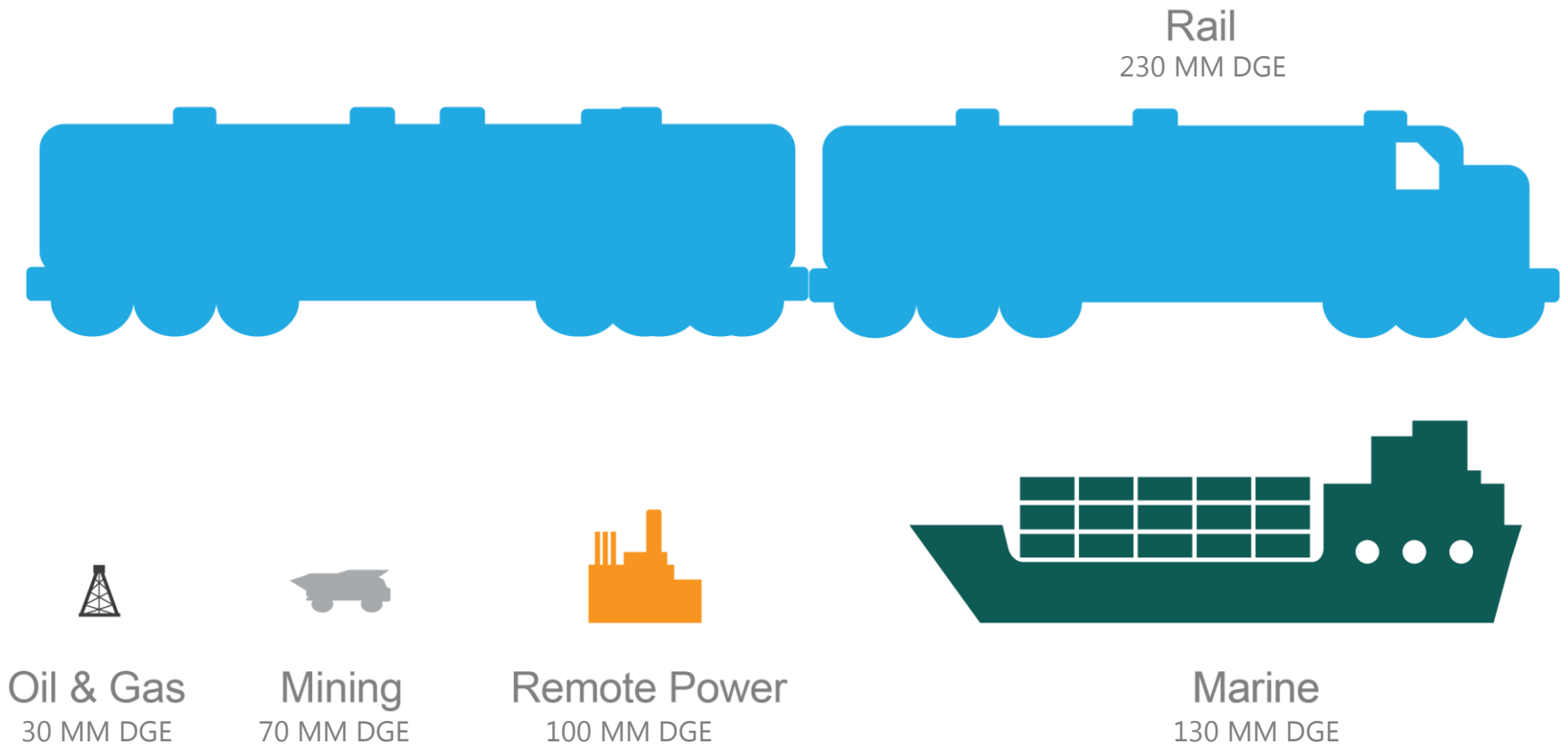


Reducing Canadian Emissions



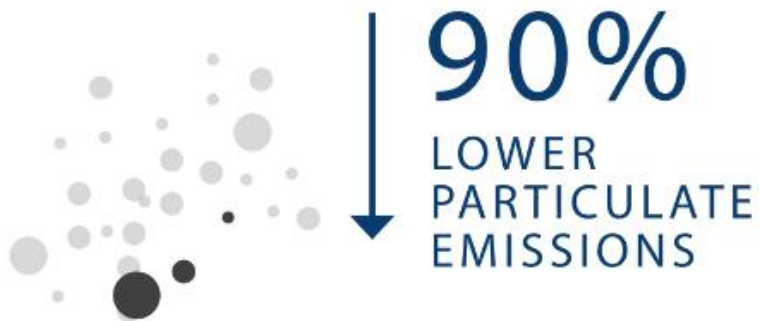
In 2015 Canada emitted 720 MT CO₂e, this would be reduced through more power generation by natural gas

Market Potential for Natural Gas Adoption by 2021





GHG and Emissions



Environmental performance and social license are critically important

* Compared with diesel; GHG emissions vary by electricity source and liquefaction technology, and include well-tank methane emissions.

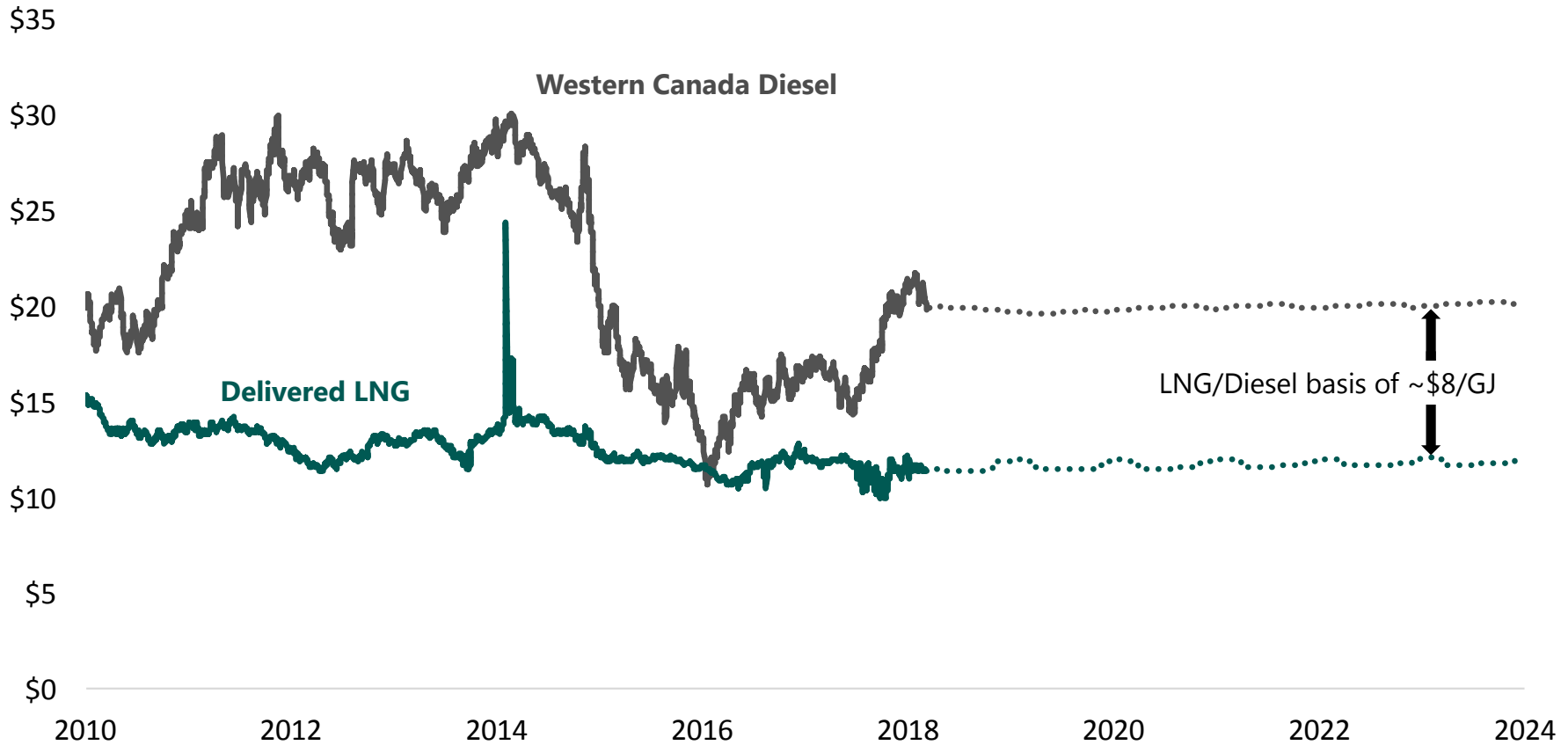


<https://vimeo.com/242947881>

GROUP 1 CARCINOGEN

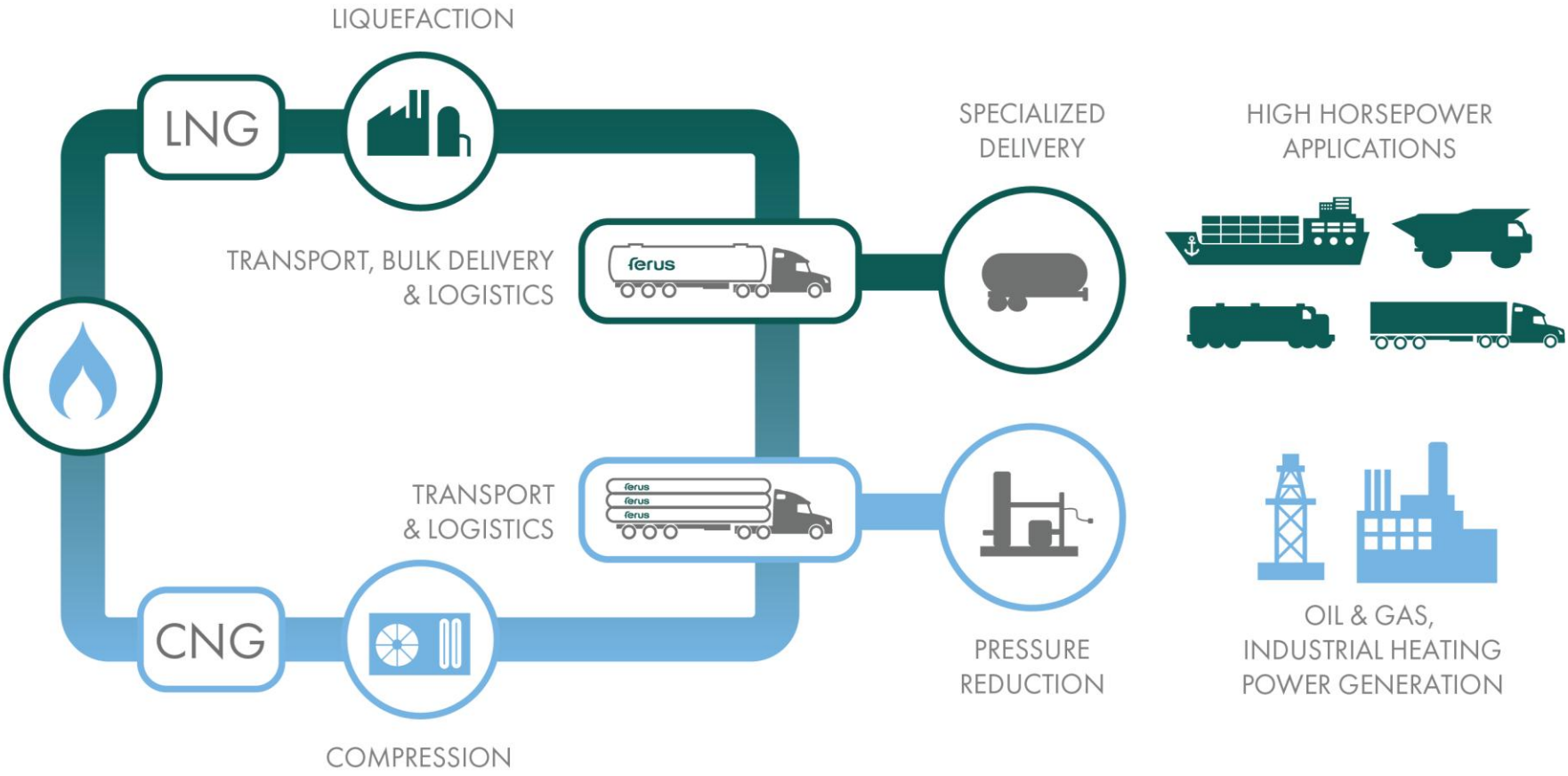
Arbitrage Opportunity – Delivered Prices

Normalized Price
(USD/GJ)



Carbon pricing provides further economic advantage of conversion to natural gas fuel

Natural Gas Supply Chain







Alaska

Northwest Territories

British Columbia

Alberta

Fairbanks

Inuvik

Tok

Beaver Creek

Stewart Crossing

Dawson City

Mayho

Carmacks

Haines Junction

Whitehorse

Ross River

Haines

Atlin

Skagway

Watson Lake

proposed for Fort Nelson

575 km

Prince Rupert

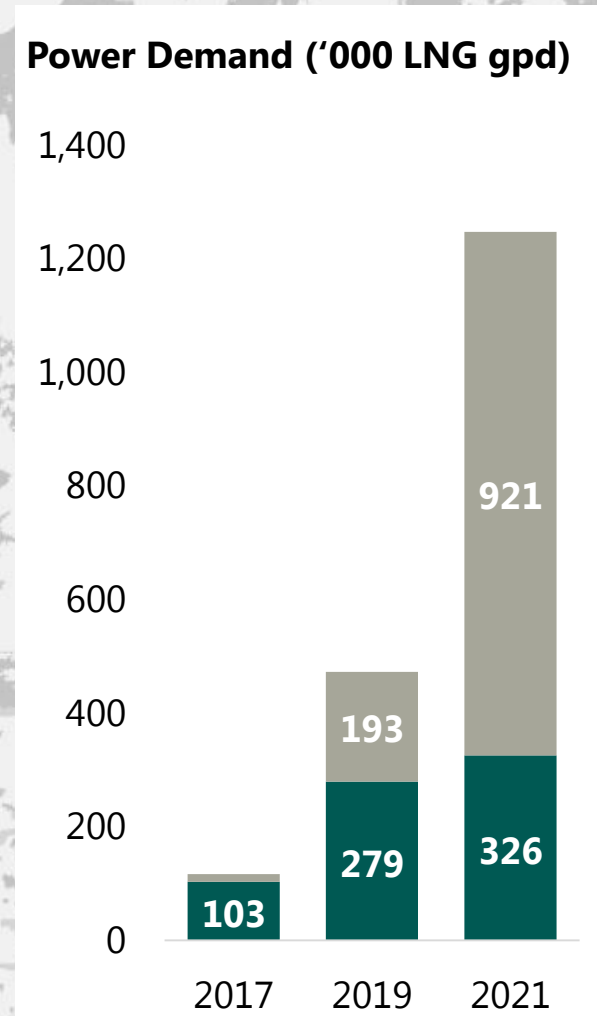
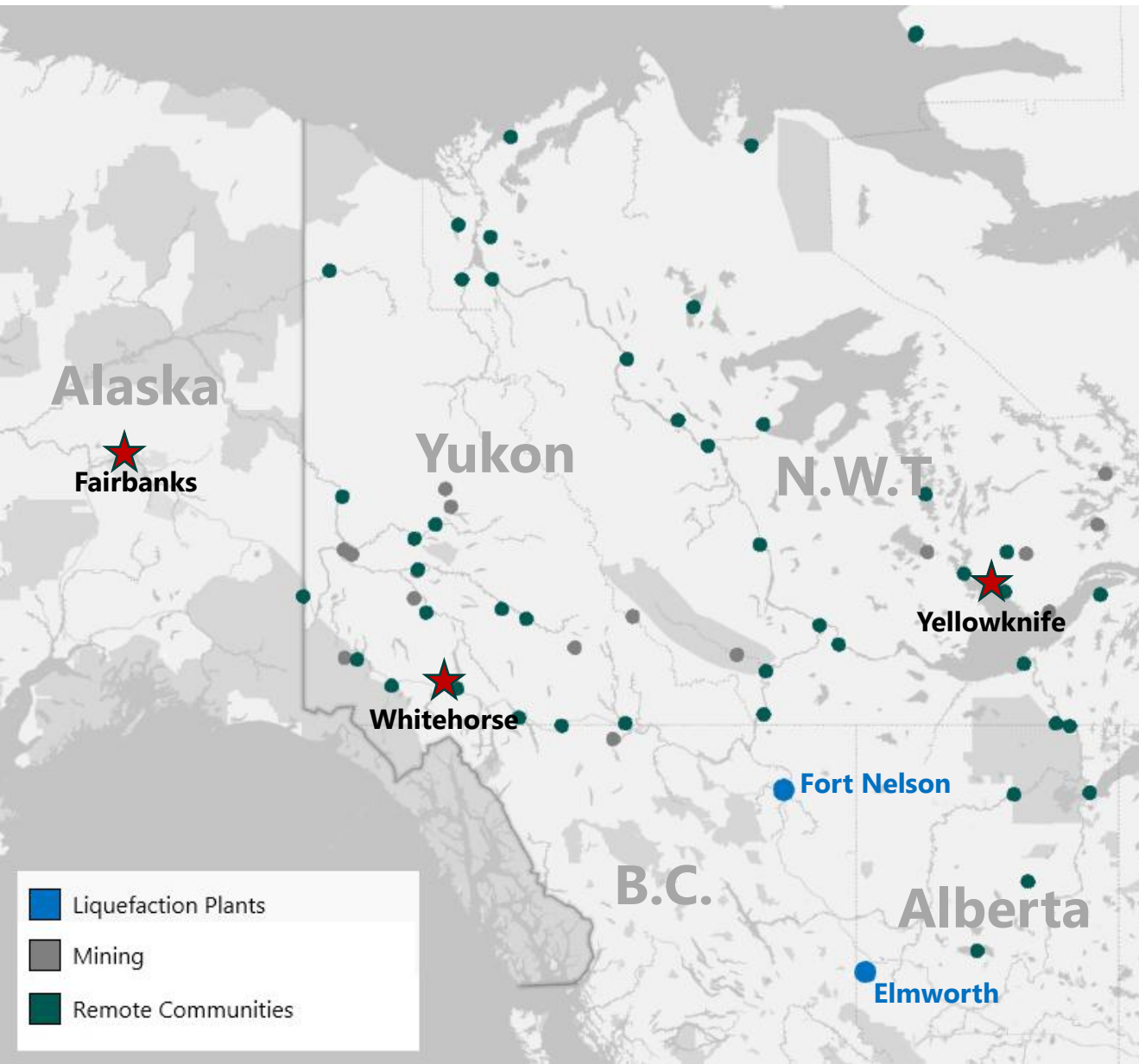
Fort St. John

Elmworth I

Grande Prairie

Fort McMurray

Mining and Remote Power Opportunities





SELWYN CHIHONG
MINING LTD.

CASINO
BUILDING OUR FUTURE TOGETHER

Through strategic partnerships Ferus is leveraging opportunities for LNG in northern Canada for remote power generation.



YUKON
ENERGY

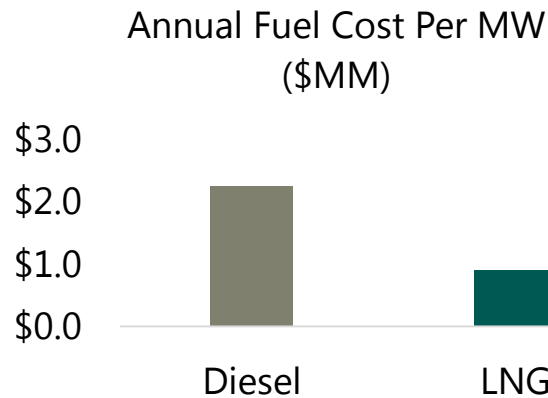
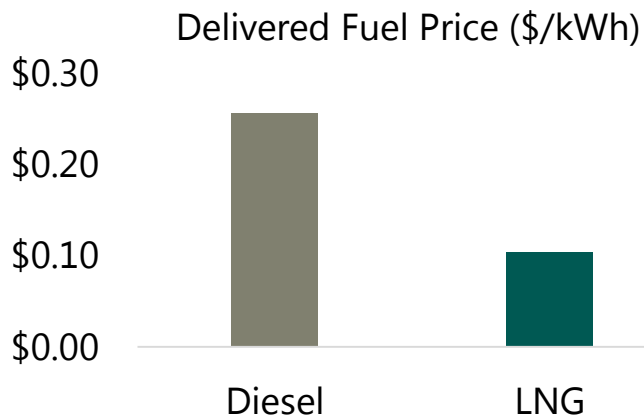


POWER MARKET Yukon Energy



POWER MARKET Inuvik

Western Copper and Gold – Casino Project

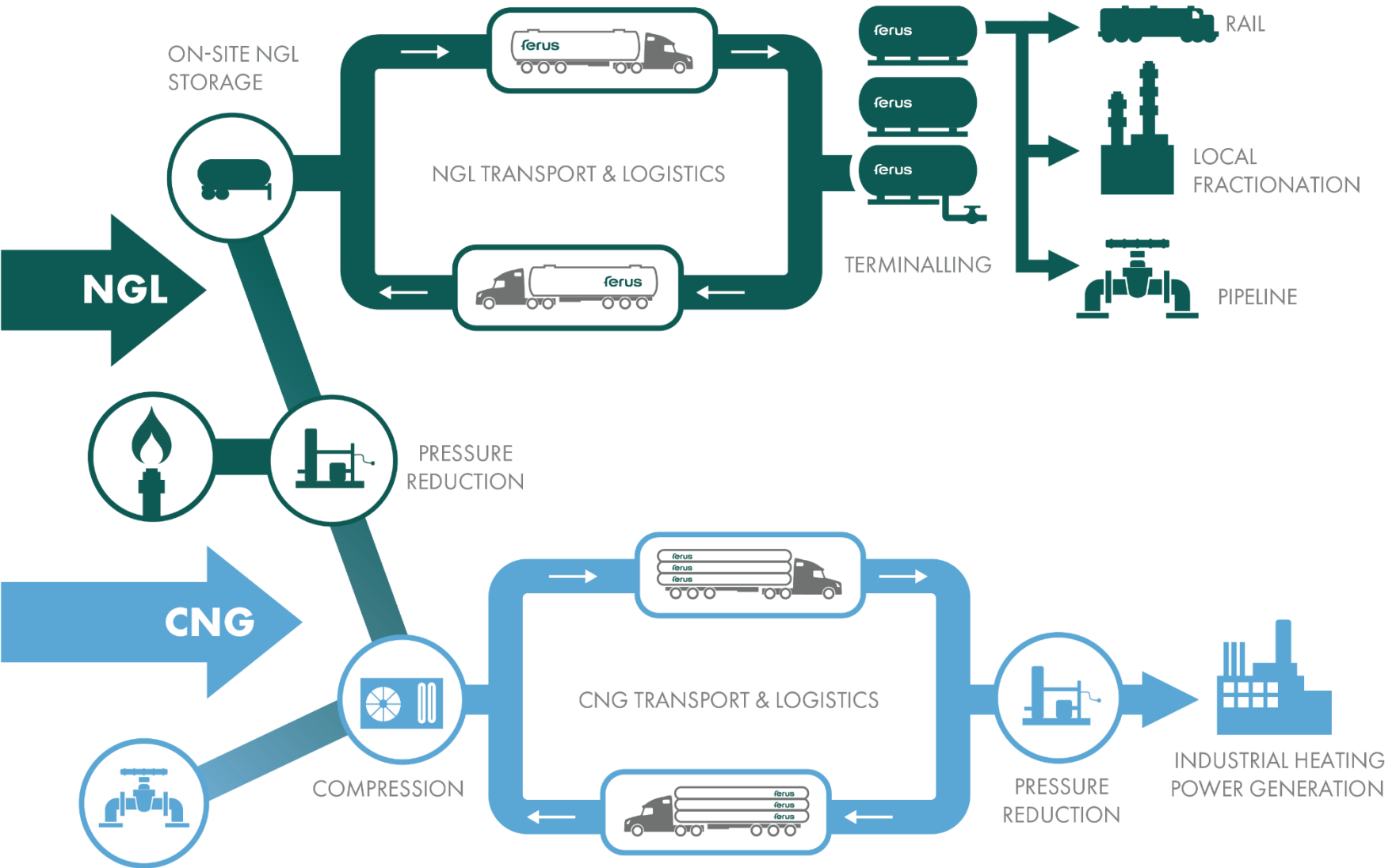


Key considerations for LNG supply to remote mines and communities



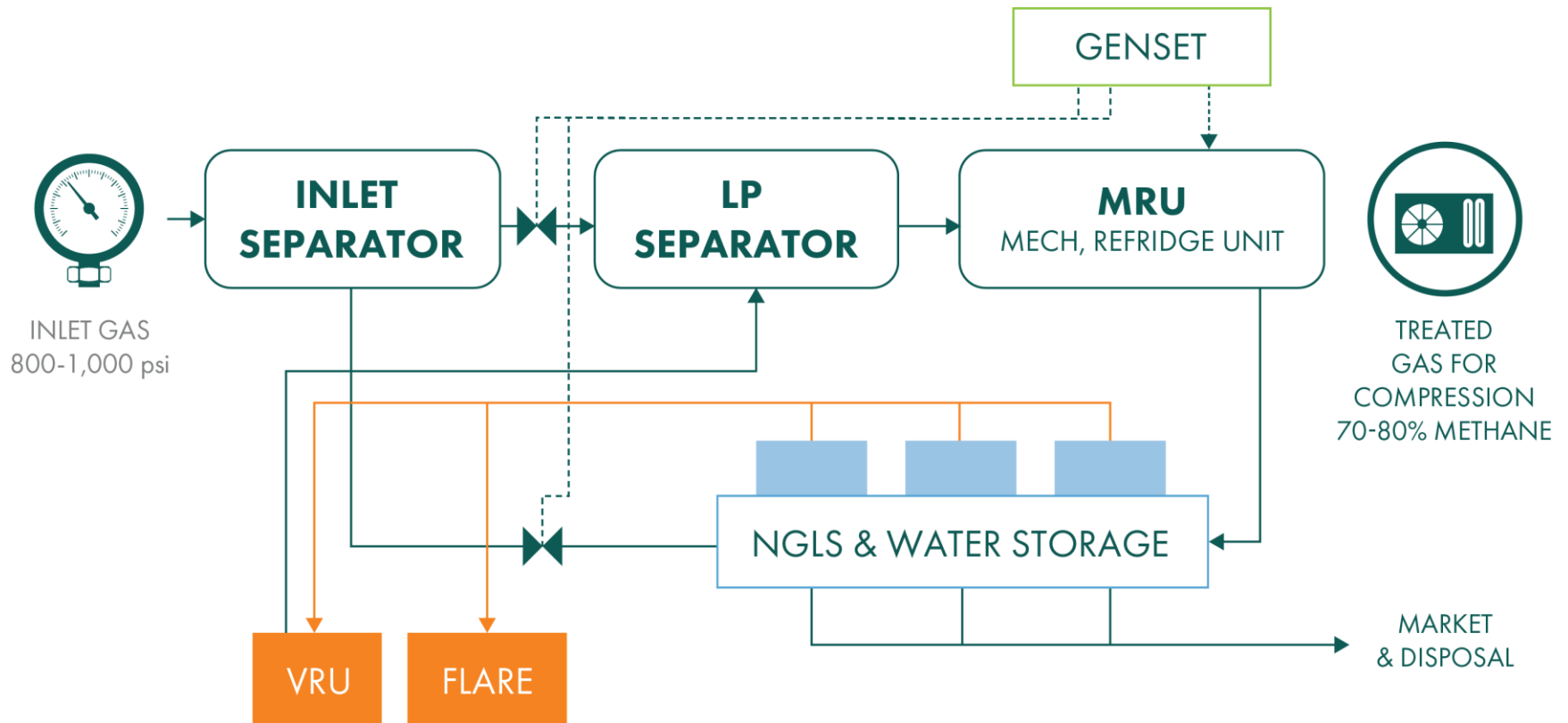
- Equipment Redundancy
- Access
- LNG storage
- Load balance with diesel
- Security of liquefaction supply
- Optimized logistics
- Local opportunity
- Renewables

Mobile Midstream: Gas Capture & CNG Supply



Gas Treatment Facility

High pressure gas stream from the well removes requirement for boost compression on site



CNG Operations





ferus

Natural Gas Fuels

G22045

NATURAL GAS,
COMPRESSED
NON-ODORIZED



CNG Operations



Reliable, fully-integrated natural gas fueling solution

Inuvik Delivered CNG Pricing Using Local Gas

	Cost (\$/GJ)	Cost (\$/DLE)
COMMODITY	\$3.00	\$0.11
PARASITIC/NGL GAS	\$2.89	\$0.10
GAS TREATMENT	\$3.74	\$0.13
COMPRESSION	\$5.31	\$0.19
TRANSPORTATION	\$4.19	\$0.15
STORAGE AND PRESSURE REDUCTION	\$0.59	\$0.02
OTHER	\$0.26	\$0.01
TOTAL	\$19.99	\$0.71

Annual Fuel Savings (\$'000,000)

		DIESEL PRICE			
		\$0.90/L	\$1.00/L	\$1.10/L	\$1.20/L
Annual Demand	450,000 GJ/y	\$2.4	\$3.6	\$4.9	\$6.2
	500,000 GJ/y	\$2.6	\$4.0	\$5.4	\$6.8
	550,000 GJ/y	\$2.9	\$4.4	\$6.0	\$7.5
	600,000 GJ/y	\$3.2	\$4.8	\$6.5	\$8.2
	650,000 GJ/y	\$3.4	\$5.2	\$7.1	\$8.9
	700,000 GJ/y	\$3.7	\$5.6	\$7.6	\$9.6
	750,000 GJ/y	\$3.9	\$6.1	\$8.2	\$10.3

Assuming an annual demand in Inuvik of 550,000 GJ and a delivered diesel price of \$1/L, **the cost of fuel would decrease ~30% or \$4.4MM annually**





LNG is no longer the fuel of tomorrow.
LNG is the fuel of today