

Alaska LNG Project Update

March 18, 2022



Alaska LNG Status

Strong Economics

- Alaska LNG has lower costs than its key competitors
- Cost of supply independently verified

Fully Permitted

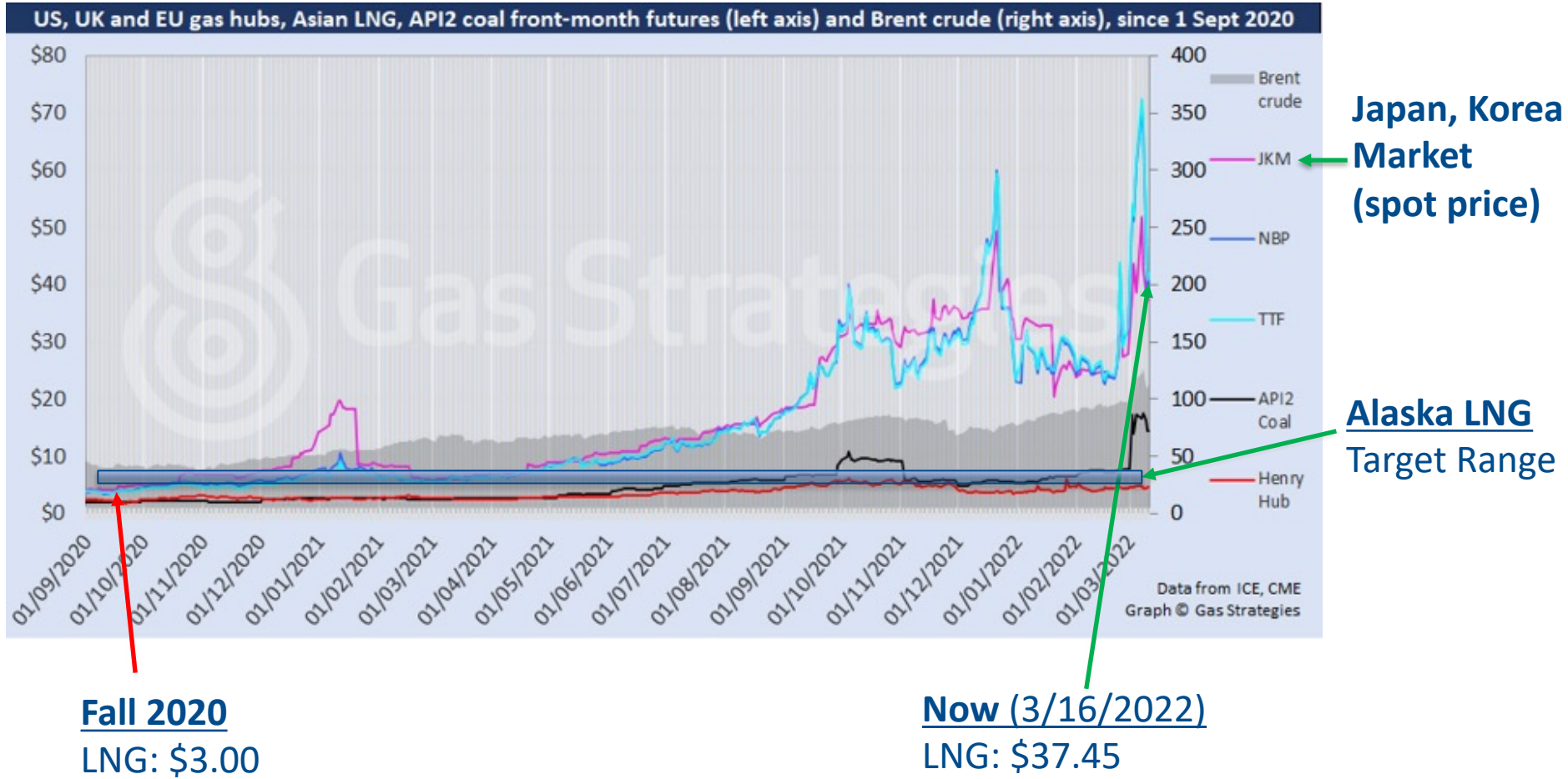
- Federal government has approved construction of Alaska LNG
- Acquiring permits took significant effort and they are valuable

Environmental Benefits

- Alaska LNG will reduce global greenhouse gas emissions
- LNG will continue to be an important energy source through energy transition



LNG Market Update



America's national security solution, energy

BY MICHAEL J. DUNLEAVY, OPINION CONTRIBUTOR — 03/03/22 09:30 PM EST
THE VIEWS EXPRESSED BY CONTRIBUTORS ARE THEIR OWN AND NOT THE VIEW OF THE HILL

2 SHARES



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Alaska is the answer to a number of critical national security questions in our nation's history. For example, during World War II, the 1,800-mile Alaska highway was built in just eight months to pry open military access to the North Pacific theater. In 1973, the OPEC oil embargo drove up the price of gasoline more than 40 percent; [Congress quickly authorized the Trans-Alaska Pipeline](#) and Alaska went on to start producing 20 percent of the nation's oil.

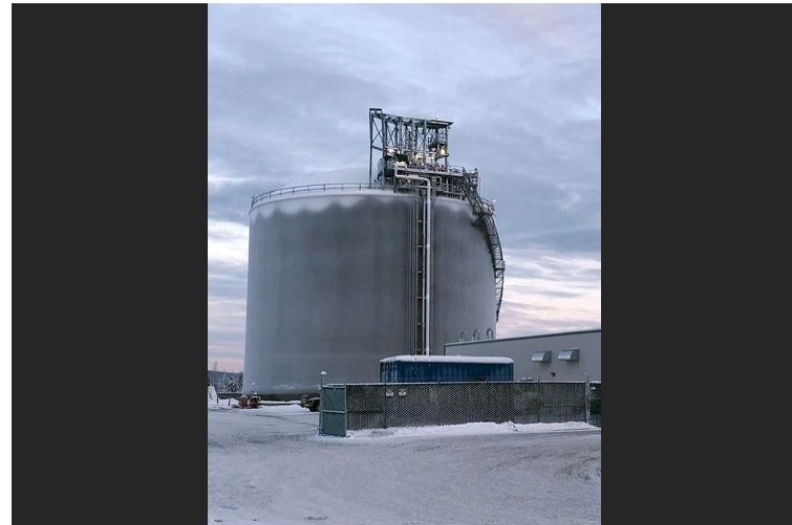
Energy security equals national security and now Russia's invasion of Ukraine threatens the world's energy supply. [Europe draws 40 percent of its natural gas from Russia](#), perhaps why Russia chose to invade in the dead of winter.

And although the U.S. recently became the world's largest exporter of liquefied natural gas (LNG), serving allies across both the Atlantic and Pacific, our supply is still stretched thin. Today we have limited ability to meet additional European energy needs if the Russian spigot closes. A recent Wall Street Journal report [notes](#) "Given that U.S. LNG cargoes have Asian customers, where supply is also tight, there isn't infinite wiggle room."

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As Russian energy falls out of favor, a push for an Alaska gas pipeline

Amanda Bohman Mar 6, 2022 Updated 1 hr ago



A \$60 million public works project — a huge tank for storing natural gas — was completed in 2020 near Fairbanks.

Amanda Bohman/News-Miner

At the "world's premier energy event" CERAweek, starting Monday in Houston, Texas, Gov. Mike Dunleavy will be promoting the Alaska natural gas pipeline project with new hope.

World leaders are talking about sanctioning energy exports from Russia, a major global liquefied natural

LNG Market is Still Growing

- Demand growth will outpace current and planned LNG capacity
- LNG growth expected as part of energy transition as natural gas emits half the greenhouse gases as coal

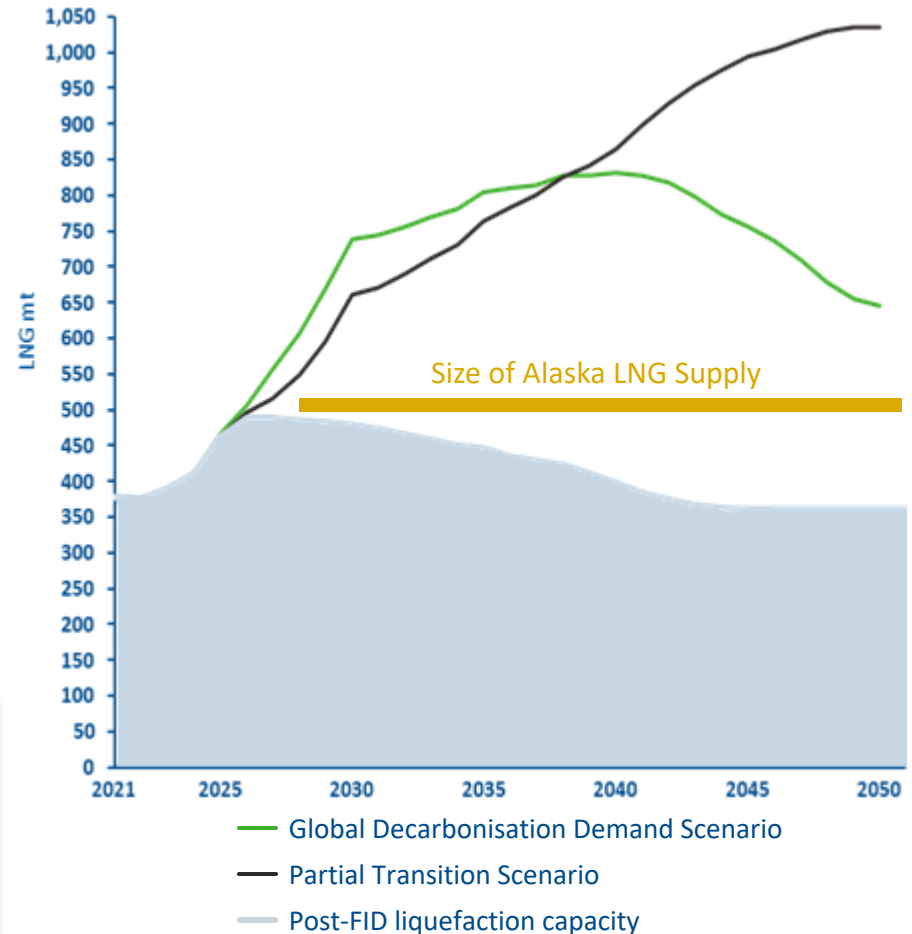
Investors and Buyers want LNG

- New LNG projects expected to be sanctioned in 2022
- Most new projects have some degree of energy transition planning
- Under both energy transition scenarios, LNG demand exceeds supply for the expected life of the Alaska LNG Project

“...raising capital for these very capital-intensive [LNG] projects has not really been that much of a challenge to the industry. I think that sends a strong signal of confidence that this [LNG] is going to be around for a while.”

-Dan Brouillette, President of Sempra Infrastructure on NPR's Marketplace (Jan 3, 2022)

Global LNG Supply/Demand Balance
Forecast, 2021-2050



Source: Gas Strategies

Wood Mackenzie Cost of Supply

Wood Mackenzie Updated their 2016 Alaska LNG Competitiveness Analysis

- Wood Mac independently calculated Alaska LNG cost of supply
- AGDC took on the recommendations from the 2016 report to reduce the cost of supply

Wood Mackenzie's 2022 Report Verified that Alaska LNG Cost of Supply is now Competitive

- Transition from 100% equity funding to non-recourse project finance with a tolling model largest driver of cost reduction
- Since 2016 report, this sort of commercial model has been used to finance the growth of the U.S. LNG industry

2016 Report



2022 Update



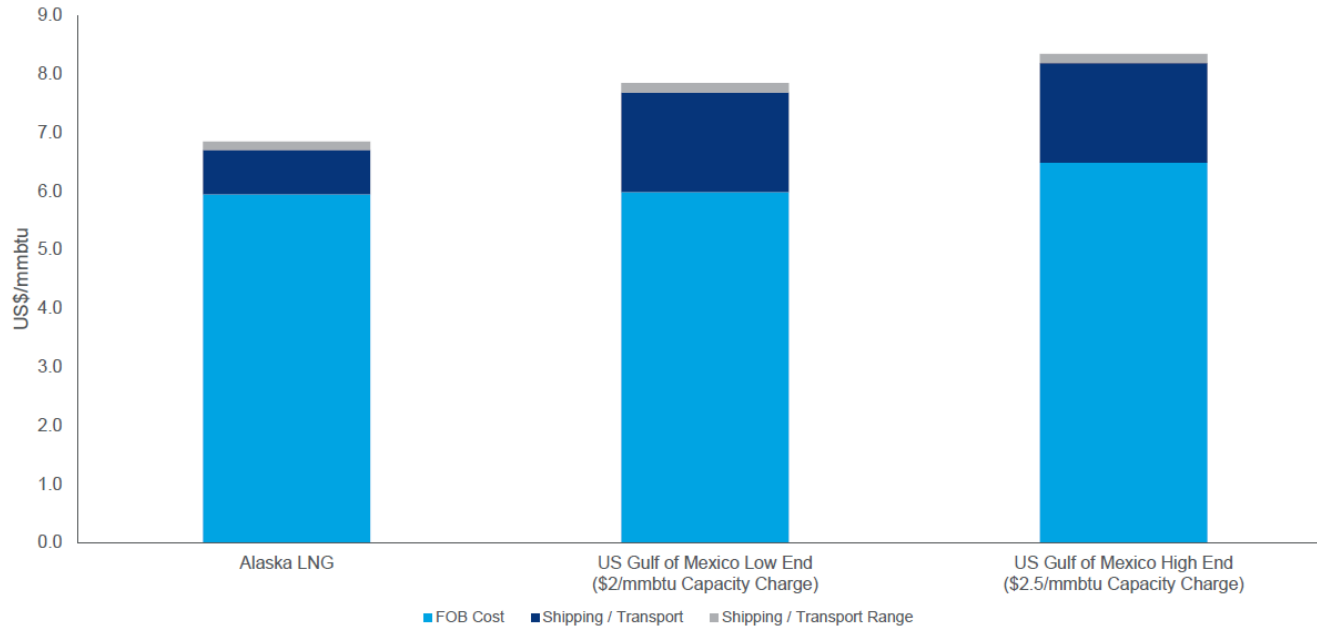
Wood Mackenzie Cost of Supply

With the cost optimization and new debt structure, Alaska LNG is competitive against US Gulf Coast LNG Projects

woodmac.com



Comparison of Breakeven cost of supply for delivery into North Asia



Source: Wood Mackenzie

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Slide from 2022
Wood Mackenzie
Alaska LNG
Competitiveness
Analysis

The full faith and credit of the United States will be pledged to pay the principal and interest on \$26.3 billion of Alaska LNG debt in the event of a default

The Infrastructure Bill includes a loan guarantee for Alaska LNG

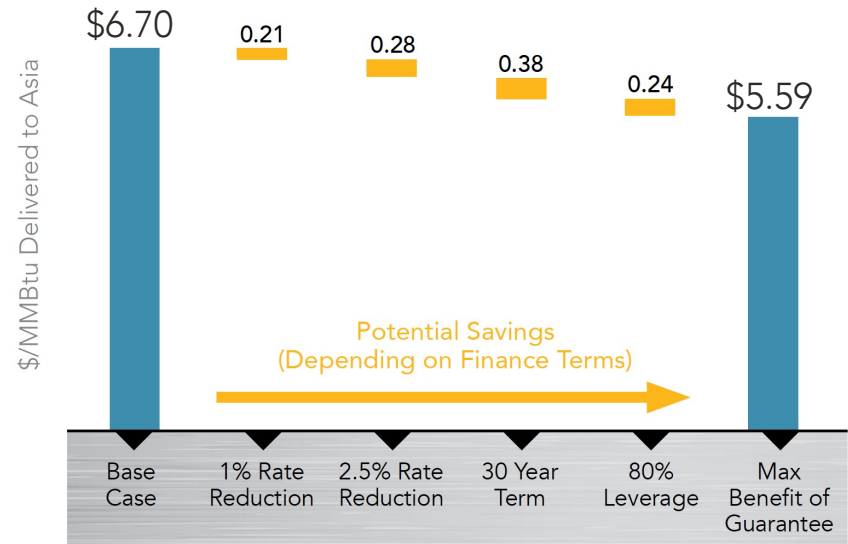
- Principle amount of debt guaranteed up to \$26.3 billion (adjusted for inflation)
- Up to 80% of the capital cost
- Term of up to 30 years
- Loan guarantee will be subject to credit terms and requirements of the loan program

Benefits of the loan guarantee

- Reduced cost of supply
- Completion risk mitigation
- Federal government support and “skin in the game”

Reduced Cost of Supply

- Interest rate reduction of between 1 and 2.5%
- Potential for longer term debt
- Potential for higher debt/equity ratio



Greenhouse Gas Emissions

A lifecycle analysis of Alaska LNG shows it reduces greenhouse gas emissions for electric power generation by more than 77 million metric tons of CO₂e per year in comparison to Asian coal derived power

Alaska LNG will have the same GHG impact as:

Eliminating



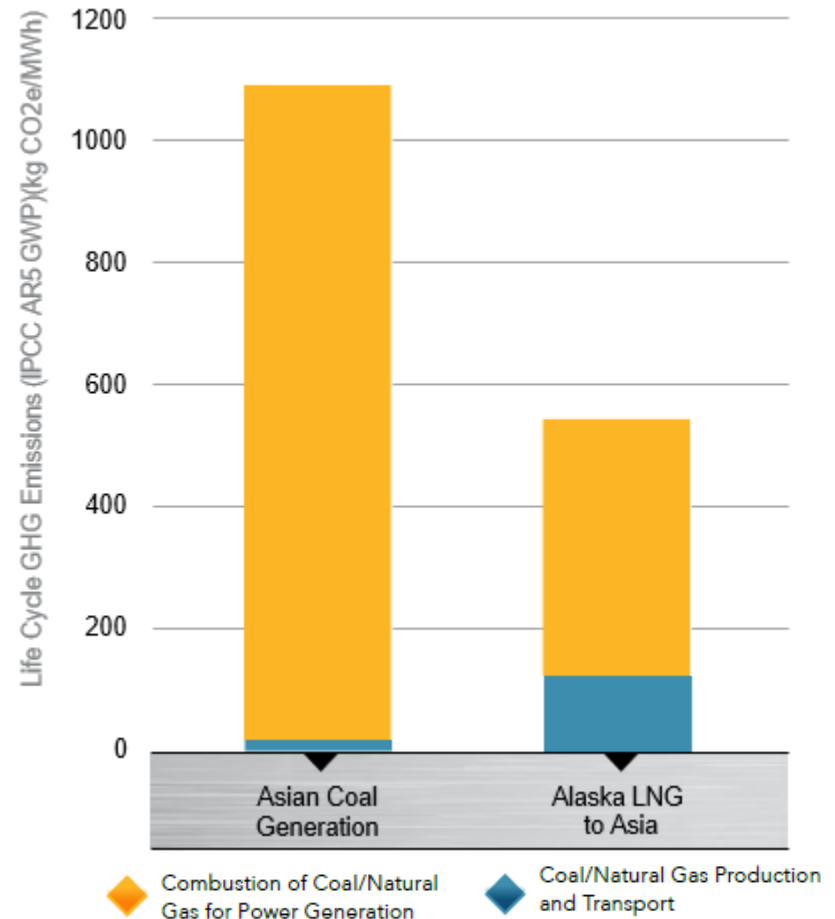
19 coal power plants

Constructing



16,000 Wind Turbines

Lifecycle GHG Emissions for Natural Gas vs. Coal Power



Source: Greenhouse Gas Lifecycle Assessment: Alaska LNG Project

Transition to Private Developers

Replacing the Producers with Infrastructure Developers is critical to improving project economics and continuing to move Alaska LNG forward

2013 - 2016

Producer Led

Producers provided initial scoping and engagement – important demonstration of producer support

2017 - 2022

State Led

State-led initial design, permitting and authorization – important demonstration of state support

2022 - onward

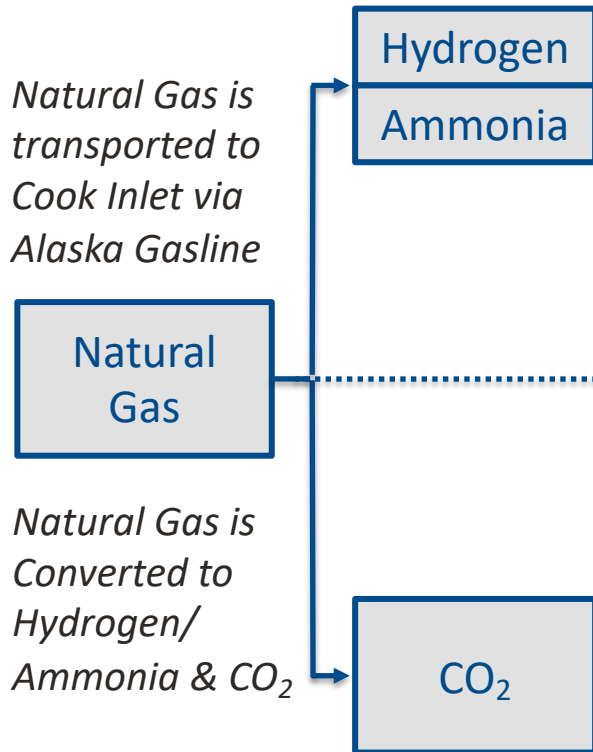
Developer Led

Handoff to infrastructure developers who require lower profits and lower risk – reduces the cost of the project and improves economics

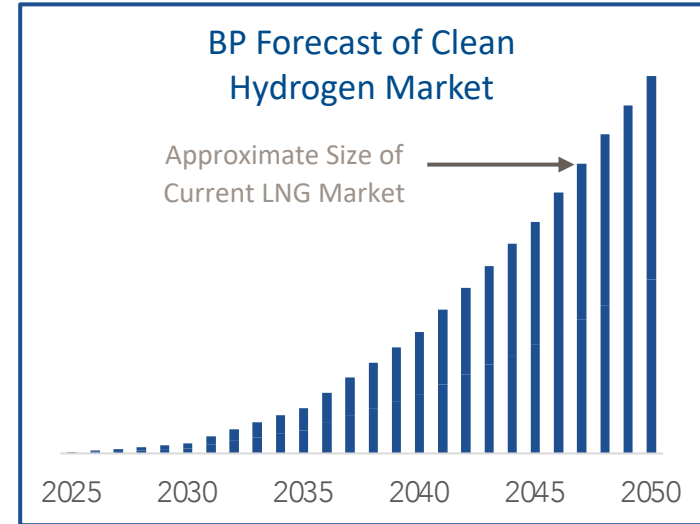
Alignment of Strategic Parties

- Advancing the structure and leadership of the project with Strategic Parties consisting of:
 - North Slope producers
 - A major pipeline developer
 - LNG buyers
 - Banks and financial corporations
- These parties have the technical and financial capacity to bring this project to completion
- Strategic parties have a combined market capitalization of \$1.25 trillion
- Focus is an LNG Facility Strategic Party with significant market capitalization and an LNG development track record

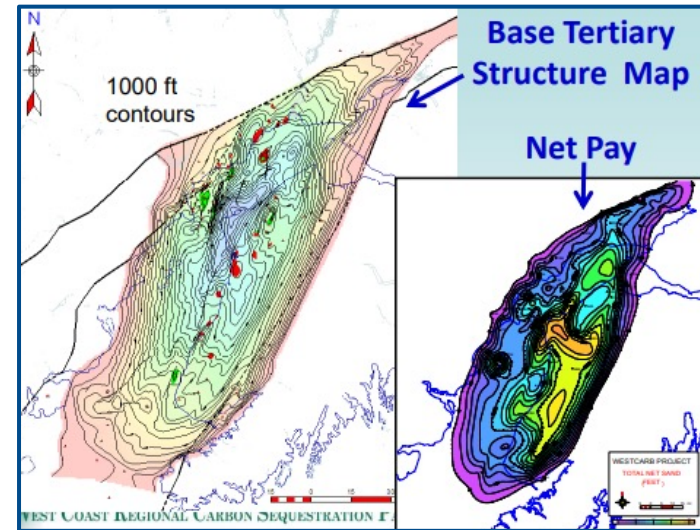
Alaska Hydrogen Opportunity



- Hydrogen/ammonia are clean energy sources
- Key Asian markets forecast rapid demand growth
- Infrastructure funding available for investment in Alaska



- Cook Inlet has the best carbon sequestration potential on the Pacific Coast of North America
- Allows for “future-proofing” Alaska LNG with transition to net-zero hydrogen/ammonia production



- Alaska LNG is economic and needed to fill projected LNG demand
- Alaska LNG will contribute to significant reductions in world-wide greenhouse gas emissions
- Alaska LNG will provide energy security for Alaska and our country's allies
- Working with world-class private-sector Strategic Parties to provide investment and lead the Alaska LNG Project forward
- Encouraging Alaskans to rally behind the project

ALASKA
GASLINE
DEVELOPMENT CORP.



QILAK LNG - PROJECT UPDATE

Meet Alaska Conference

March 18th 2022

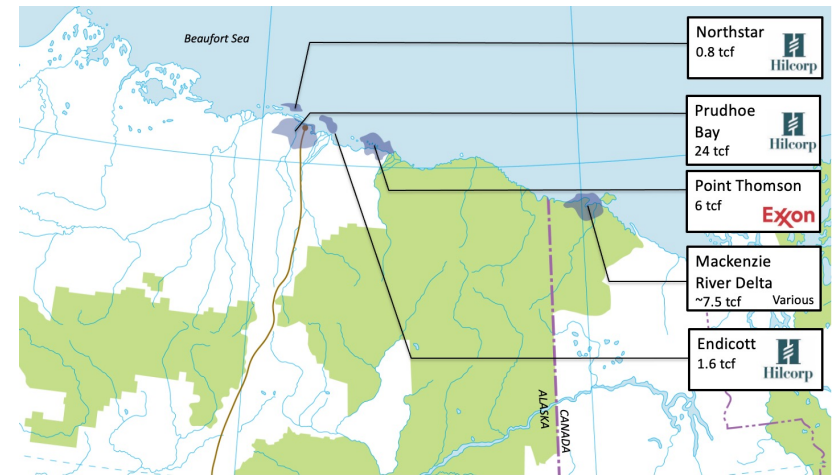
David Clarke, President



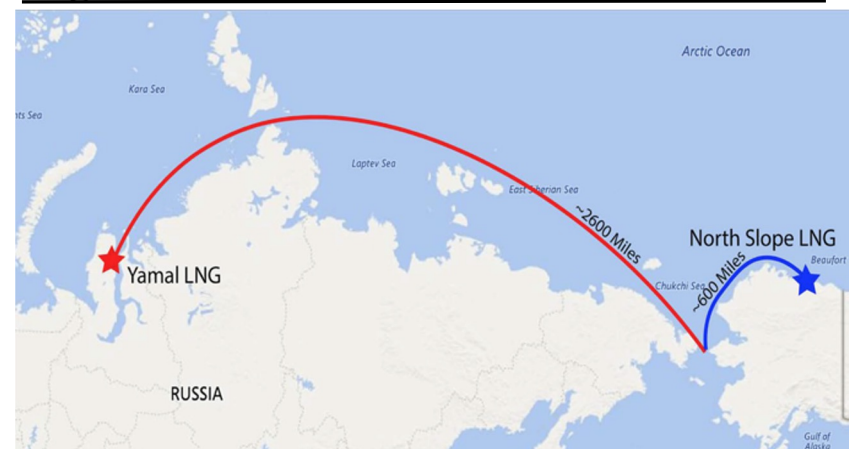
Arctic LNG is a proven concept

- Proven gas reserves of 32+ TCF across gas fields in the Alaskan North Slope with probable gas reserves of 100+ TCF
- Yamal LNG in Russia has proven the economic viability of Arctic LNG using icebreaking LNG carriers to export LNG throughout the year
- Arctic North American reserves closer to Asian end markets compared to Gulf of Mexico (via Panama) and Northern Russian coast (2,000 miles shorter distance than Yamal)
- NSLNG concept provides a number of advantages:
 - Uses incremental liquefaction plants built in a shipyard and floated into place
 - Minimal infrastructure required and standardized equipment
 - Scalability
 - 4 to 6 MTPA units
 - Design one, build many

Stranded gas reserves in North American Arctic



Significantly shorter distance to Asian markets





Yamal LNG (existing)
18 MTPA

Proposed Russian Arctic LNG projects:

	<u>MTPA</u>
Arctic LNG 2 (Novatek)	20
Arctic LNG 1 (Novatek)	13
Ob LNG (Novatek)	7
Taymyr LNG (Rosneft)	30-50
Kara LNG (Rosneft)	<u>30</u>
Total (inc. Yamal)	120-140

LNGC cargoes: 5-6/day



Arctic LNG 1 & 2 (planned)
33 MTPA



**Each GBS has a
capacity of 6.6 MTPA
LNG**

The Impacts of Covid-19

The pandemic had a dramatic negative effect on global energy markets:

1. Collapse in spot LNG prices - falling to a low of \$2/mmBTU in summer 2020
2. International travel curtailed – difficult to meet face-to-face with overseas investors and LNG buyers

The Global market for gas and LNG had radically changed in the past 4 weeks:

Consequences of the Russian invasion of Ukraine:

1. Germany canceled the Nord Stream 2 pipeline and will now build 2 LNG import terminals
2. Huge spike in spot LNG prices to record \$60/mmBTU during 1st week of March
3. LNG cargoes from US Gulf Coast to Asia diverted mid Pacific to Europe
4. Drive for more Long-Term LNG contracts to avoid risk of volatile spot prices
5. Increased European and Asian demand for North American LNG to reduce reliance on Russian gas
6. Increased opportunity for Alaska to supply Asian markets (USGC gas to Europe)

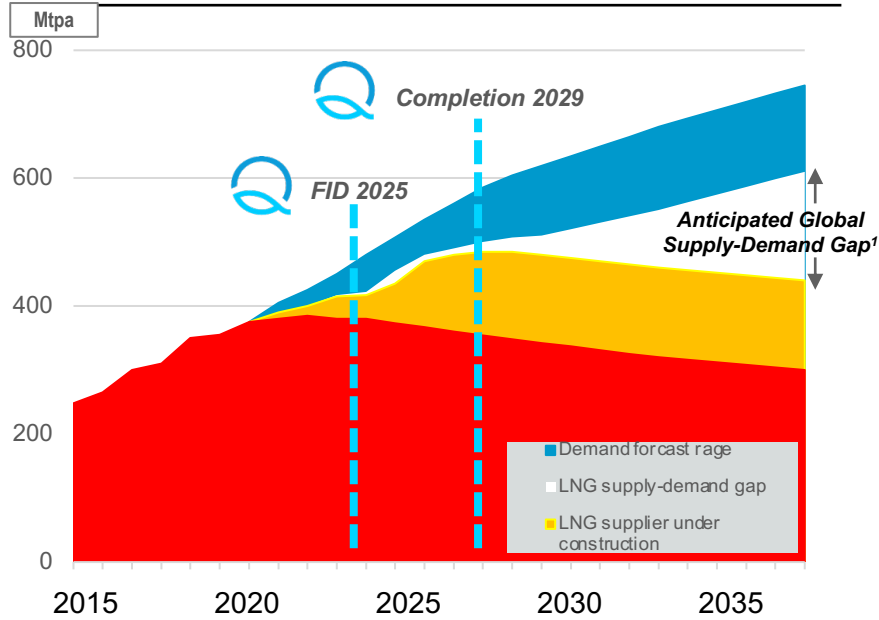
“Tough to make predictions, especially about the future” – Yogi Berra

Qilak LNG is Positioned to Benefit From the Anticipated LNG Supply-Demand Gap

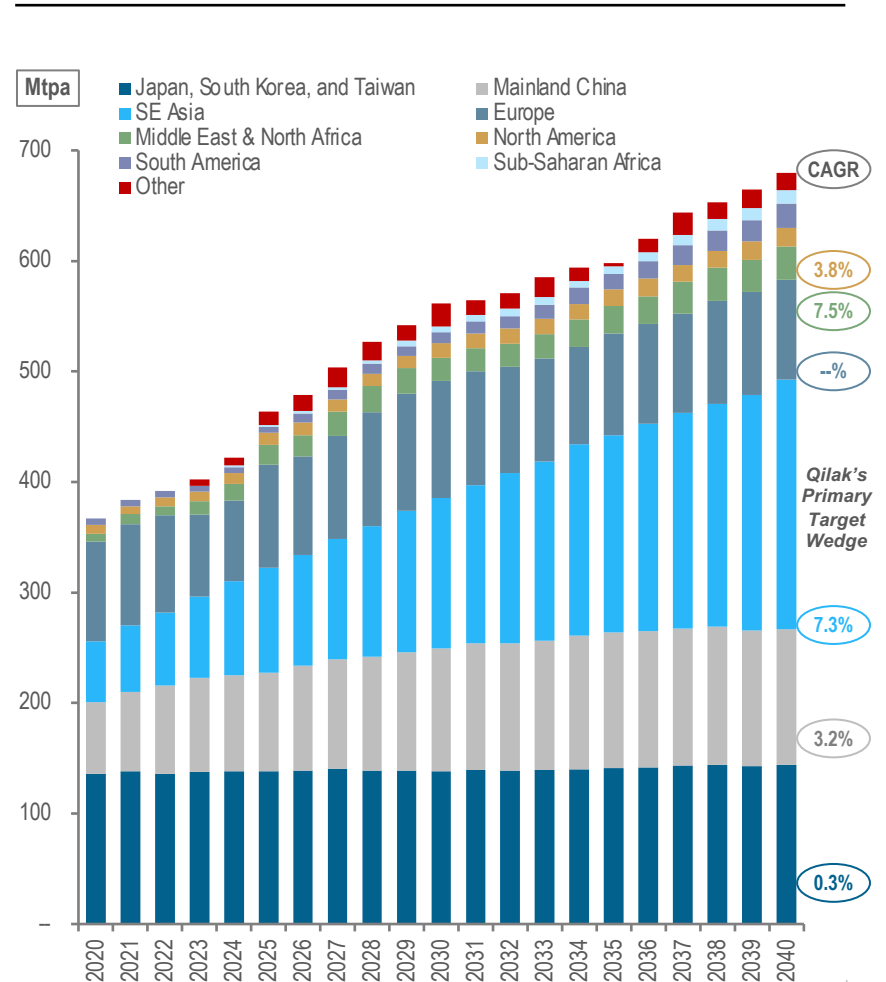


Longer-term global GDP growth, particularly in hydrocarbon-poor countries, will continue to support LNG growth, with need for significant expansion of LNG supply beginning in 2025

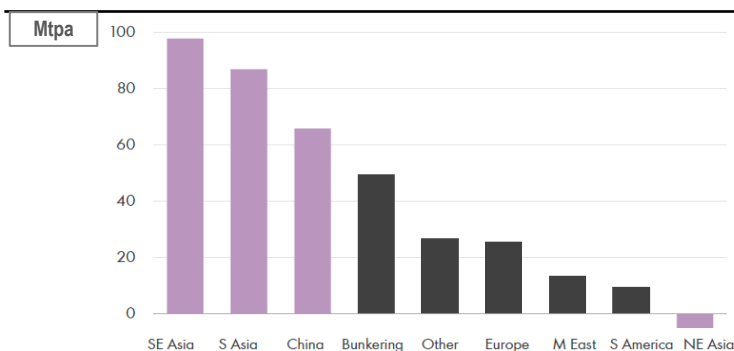
Emerging LNG Supply-Demand Gap



LNG Demand Growth Through 2040

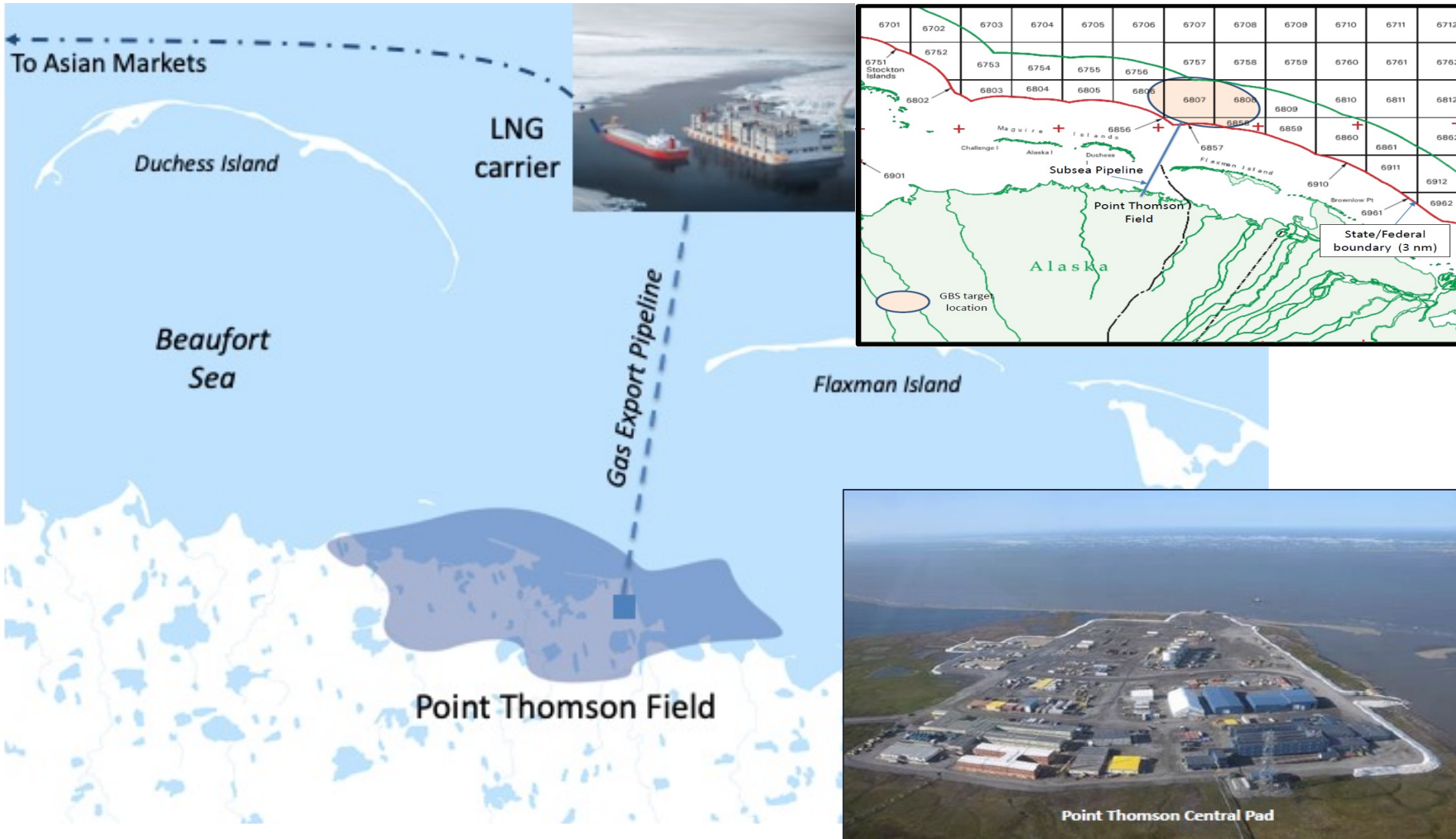


Incremental LNG demand 2020-2040




¹Source: Shell interpretation of IHS Markit, Wood Mackenzie, FGE and Poten & Partners 2021 and 2022 data


Qilak LNG Terminal location



- Qilak LNG 1 proposes a Gravity Based Structure (GBS) 6-9 miles offshore Point Thomson, with site selected for navigability (water depth) and avoidance of subsistence whale hunting



One-quarter of the journey will likely require icebreaking for part of the year, with following of leads and avoidance of pressure ridges playing a key role



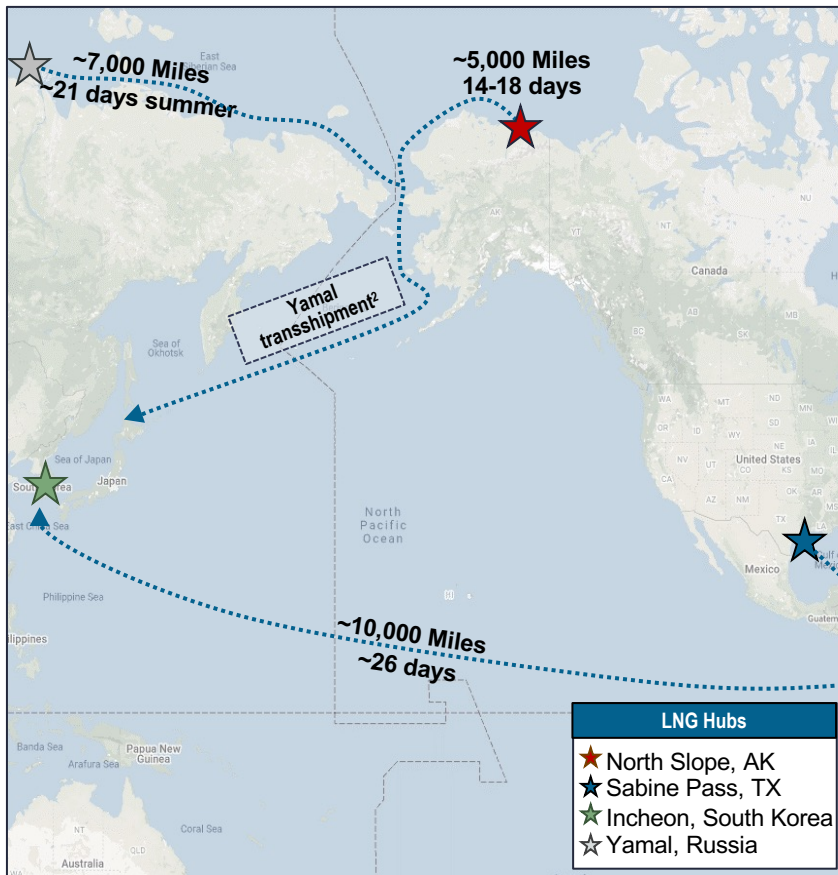
Remaining three-quarters of journey is “open water,” where the vessel faces forward and travels at speed



- The Yamal LNG project has 15 Mk 1 vessels in operation. Another 21 of the Mk 2 design will be required for the Arctic LNG 2 project
- Qilak LNG will require 3 to 5 vessels depending on LNG destination

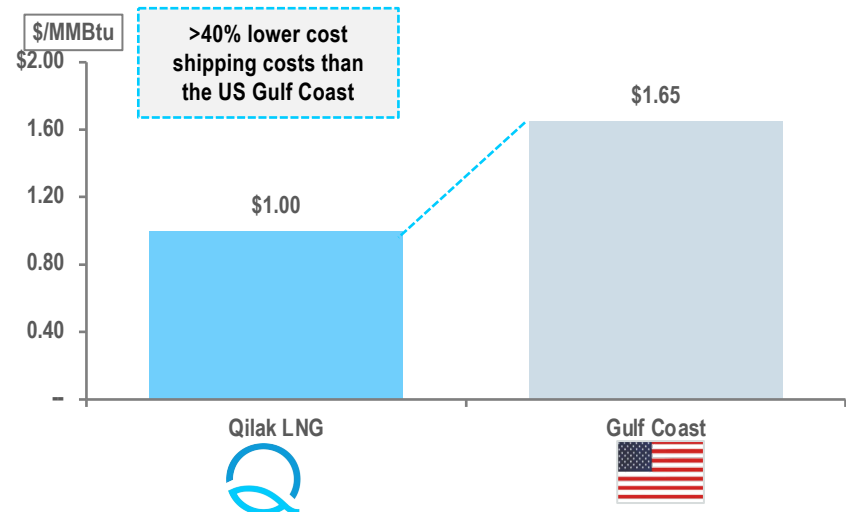
Lower upstream costs from a prolific conventional source and proximity to Asian demand provide a differentiating LNG proposition

Qilak LNG is ~2,000 Miles Closer to Market than Yamal

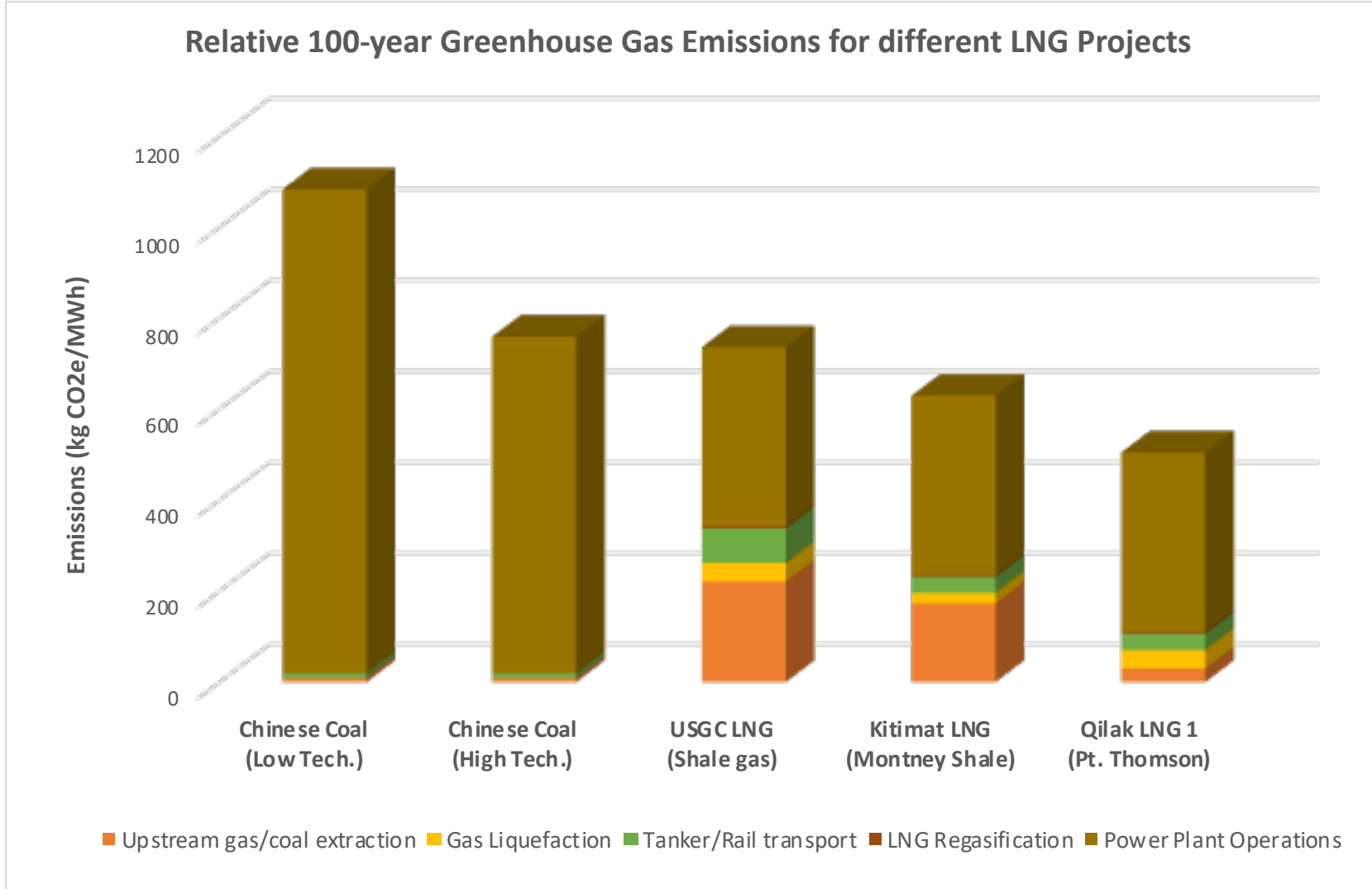


Qilak LNG Shipping Costs Superior to USGC LNG

- 50% shorter route to Asian markets
- Avoids the Panama Canal fees and bottlenecks
- Fewer vessels required due to shorter distance
 - ~5,000 miles from Qilak LNG to Asia
 - ~10,000 miles from USGC to Asia
- Capability to ship year-round has been demonstrated by performance data from Yamal LNG and shipping simulations



GHG Emissions for Chinese Power Generation: Local coal versus LNG sourced from USGC, Kitimat and Qilak LNG



Alaska can provide “**greener**” LNG than any other North American supplier

Key Issues to be resolved during Feasibility Study

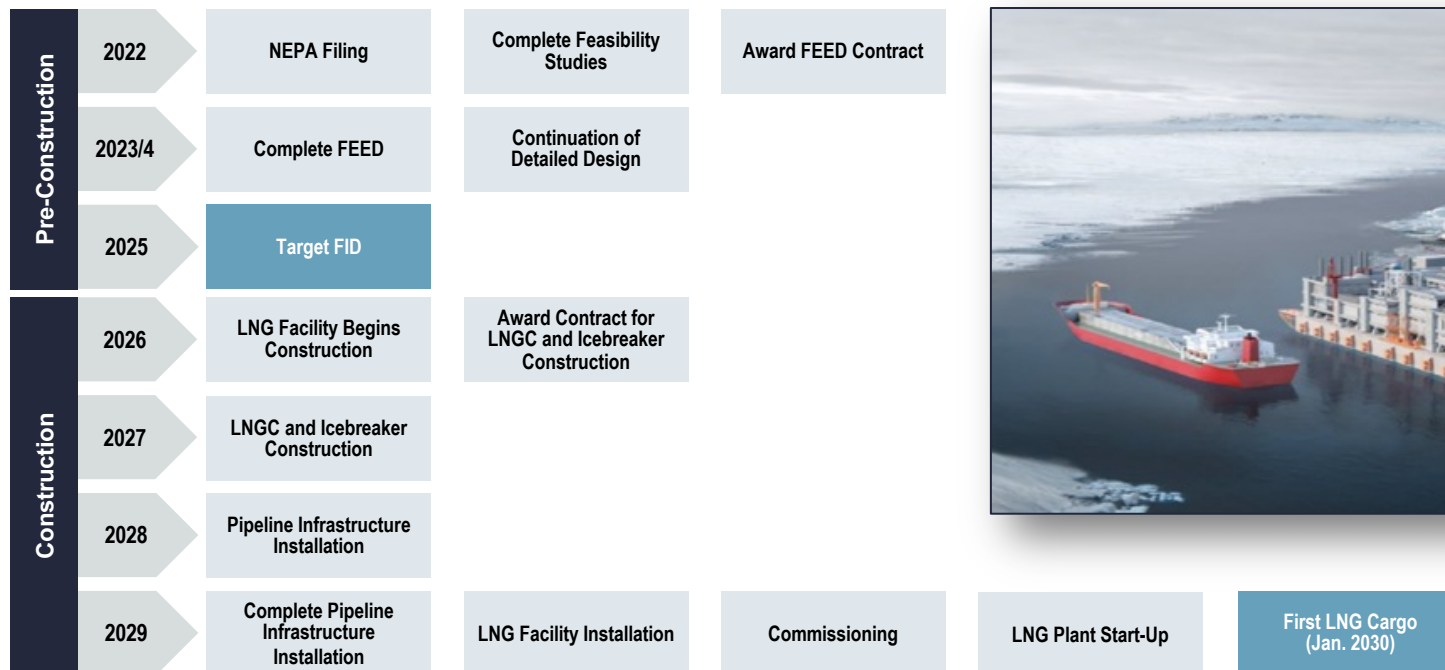
Technical

1. Optimal LNG capacity and storage
2. Detailed LNGC shipping simulation to determine –
 - a. number of vessels required
 - b. optimum vessel configuration (Mk III design)
3. Refined project Capital and Operating costs

Commercial

1. Build investor consortium
2. Negotiate Gas Sales Agreements
3. Negotiate LNG Sales Agreements

Project Timeline



“Natural gas is one of the mainstays of global energy. Where it replaces more polluting fuels, it improves air quality and limits emissions of carbon dioxide.”

Dr. Fatih Birol, IEA Executive Director