

# Alaska Gas & LNG Advisory

## Committee Presentation

# Why Alaskan gas has not yet been monetized?

## Two structural barriers have hindered successful development:

- High overall project development cost to access viable markets
- Global competitors' ability to supply at lower prices that do not support investment in Alaskan gas

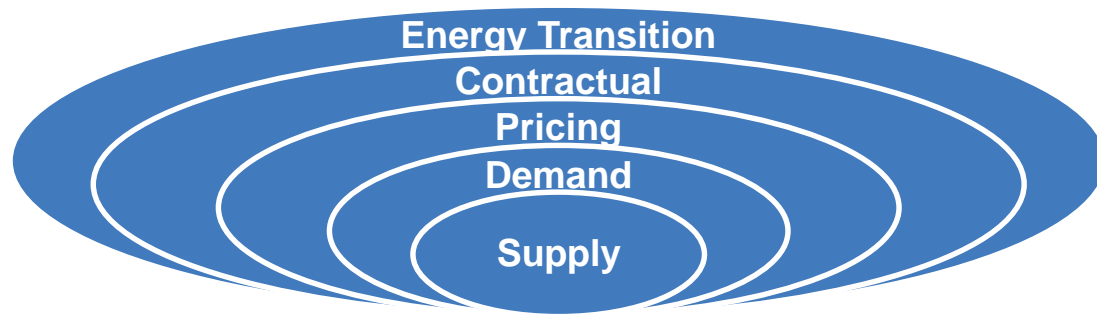
## By contrast, two structural advantages remain present in Alaska:

- The low-cost nature of the feed gas production (economics largely aided by liquids production)
- The proximity to large natural gas consumers in the Pacific, particularly China, Japan and South Korea

- Two main monetization options have been floated:
  - A pipeline to the Lower 48, either direct from Alaska, or commingled with Canadian gas
  - LNG exports from an ice-free location – mostly considering Valdez or Kenai
- In the 2010-13 timeframe, export via pipeline to the Lower 48 ceased to be a viable option, due to
  - widespread development of US low-cost unconventional gas
  - large associated gas volumes from unconventional oil production
- Since that time, the focus has been on LNG exports
  - Significant LNG price collapse during the 2018-2021 timeframe challenged the case for Alaskan LNG exports
  - currently no AK LNG export proposals are commercially advanced
  - recent global price spikes have reignited export interest

# Global market context: What has changed?

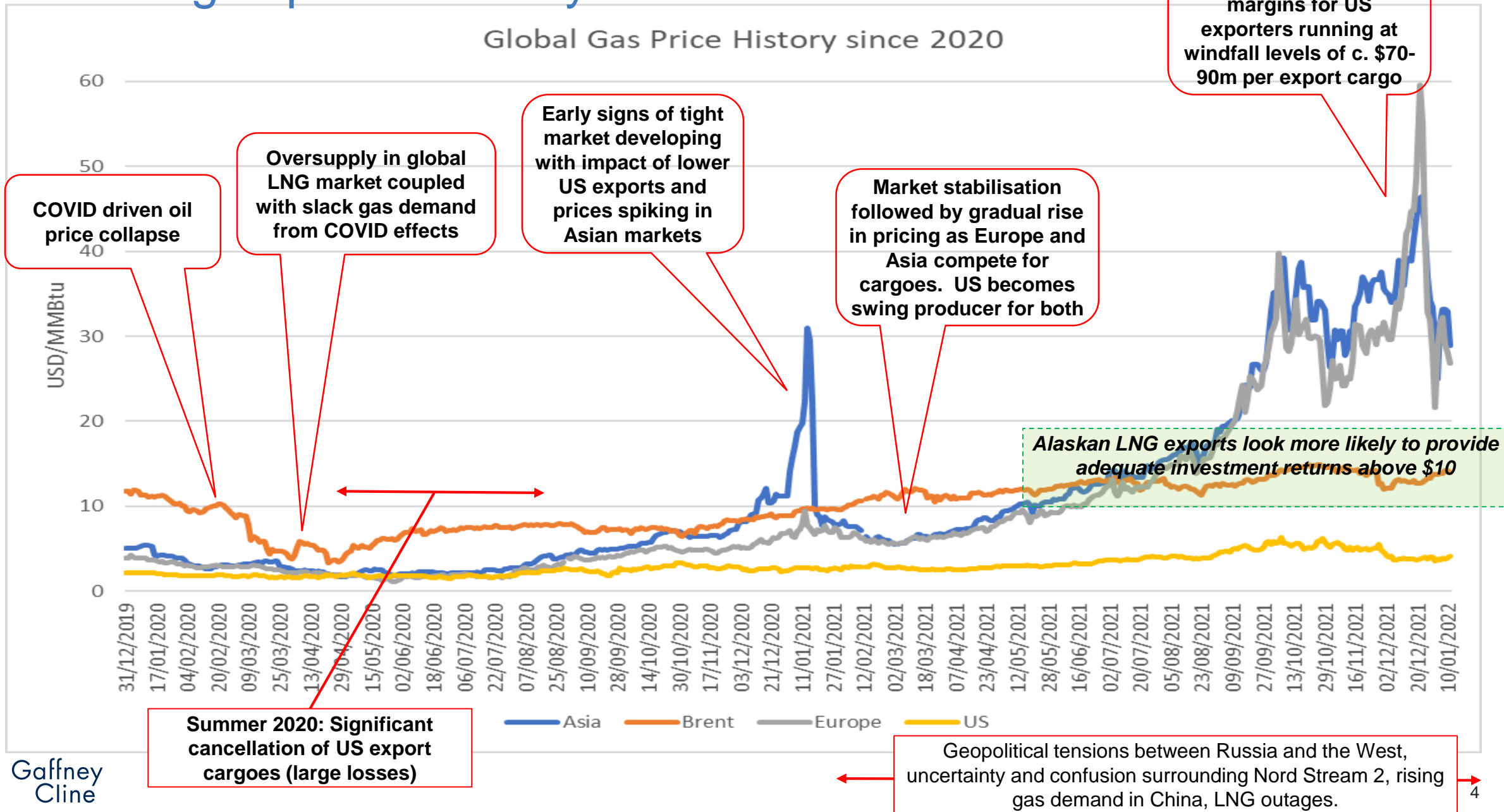
- Considerable market change since AK LNG last actively pursued:
  - IOC resource owners have stepped back from AK LNG
  - State agencies have taken the lead (2016 onwards)
- 2020-2022 have been particularly volatile:
  - Price collapse during mid-2020
  - Substantial losses (c.US\$8 MM per cargo for much of 2020) for US LNG exporters unable to recover their costs
  - Recent energy crunch and high prices means US facilities running at capacity (margins of up to US\$70-90 MM per cargo)



A mix of factors are shaking up the competitive environment:

- Energy demand increases as major economies recover from Covid-19 coupled with tight LNG supplies (partly due to project deferrals and cancellations) have led to rapid escalation in global price levels
- However, current record high (spot) prices are not sustainable in the medium to long term (see later) as major producers respond to higher prices to balance the market
- Social, economic and regulatory changes heavily focused on the reduction of carbon intensity and methane emissions
- **There are continued competitive pressures but also potential opportunities for Alaskan gas exports**

# Natural gas price volatility 2020-2022



# Current high spot prices are unsustainable in the mid to long term

- Unprecedented record price levels in global gas markets are not sustainable in the medium to long term.
- Pricing and competitive analysis for a 20+ year investment, must be based on a longer run price outlook

## LNG is a long-term business not well adapted to short term fluctuations

- Rapid fluctuations in both demand and supply complicate the investment picture
- Demonstrated by recent price collapse followed by high prices all within a 2-year period

## AK LNG faces a competitive environment

- Competing LNG export projects are likely lower cost. To be viable, AK LNG requires a robust long term demand picture and a project structure and finance that delivers cost of supply far lower than previously envisaged
- Forecasts will need to consider the impacts of competing LNG projects, in some cases pipeline gas projects, as well as changes in the energy mix due to energy transition

## Current period of substantial geopolitical uncertainty is affecting global prices

- Significant geopolitical uncertainty surrounding Russia and political tensions with China
- Risk to gas supplies being addressed at the highest levels of US/European diplomatic and economic circles

## Future years may well be more stable

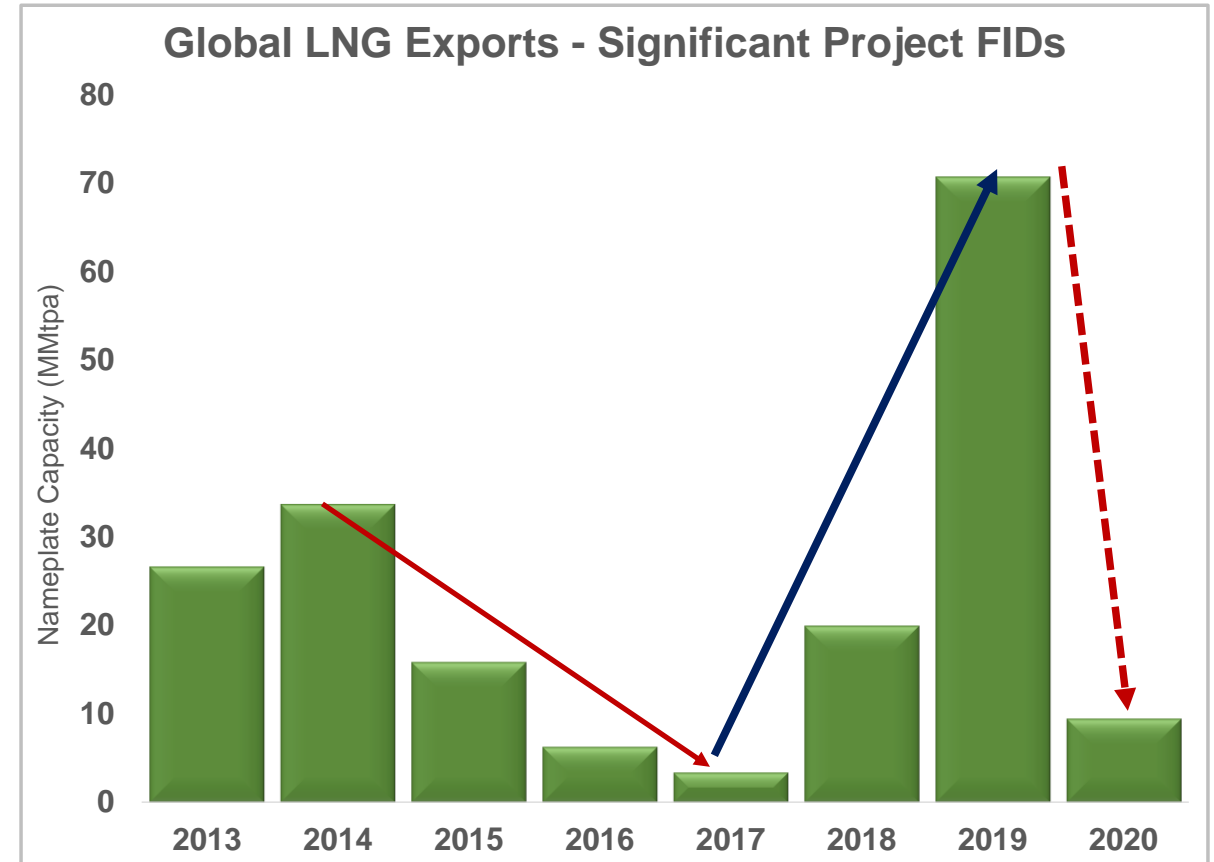
- In 5+ years, both the current geopolitical and supply concerns may have moderated
- A more stable market outlook, with more suppliers of LNG and more customers, is likely to bring greater investment

## Other features

- Current high prices make LNG unaffordable for emerging buyers
- Current LNG prices make it less competitive against coal, HFO/diesel and enhance renewables penetration
- New cost competitive supply will rapidly emerge (USGC / Qatar) to take advantage of high pricing environment

# Global market context – LNG developer perspective

- **Industry and sources of finance, impacted materially by the volatility of the last 2 years:**
  - Hiatus in 2020/21. Low prices did not support project developers and financiers investment cases
  - A number of so-called USA “second wave” projects were cancelled completely, others were delayed
  - 2H21 and early 2022 marked recovery of buyer interest
  - Significant new long term contract volumes being signed up, particularly by Asian buyers
  - Variety of challenges being met by other material export projects e.g. Mozambique, Australia
  - European concerns over Russia supply exacerbating volatility
  - Russia pursuing further pipeline exports to China, potentially displacing other LNG import potential
- Substantial FIDs in 2018-19 and further during 2022-23 (Qatar, USGC, other Africa)
  - will result in supply to meet continued demand growth
- **A new window of opportunity is potentially present for Alaska**
  - But given the energy transition, this **could be the last chance to monetise** the substantial gas resources in a **traditional manner**
  - However, AK LNG will require very large capital investments and the State will need to weigh the risks carefully



# Alaska competitive levers / risks – hurdles still remain

<b>Country Risk</b>	<ul style="list-style-type: none"><li>▪ Low, especially with US emerging as global leader in LNG supply</li><li>▪ Relationships with China have improved, deals being signed with USGC and Chinese counterparts</li></ul>
<b>Feedgas</b>	<ul style="list-style-type: none"><li>▪ High CO<sub>2</sub> in gas requires high level of processing</li><li>▪ Multiple Tcf high quality gas resource</li><li>▪ Low geological risk</li></ul>
<b>Costs &amp; Scalability</b>	<ul style="list-style-type: none"><li>▪ Substantial capital cost subject to current general global and industry inflationary pressure</li><li>▪ It will be important to reduce financing costs and this may be possible to some extent but cost savings may be offset by overall project and industry cost inflation</li><li>▪ Scalable. Potential to start small and expand? Challenging given large processing and pipeline costs</li></ul>
<b>Shipping</b>	<ul style="list-style-type: none"><li>▪ Proximity to Asia</li><li>▪ Avoidance of Panama Canal bottleneck</li></ul>
<b>Project Structure</b>	<ul style="list-style-type: none"><li>▪ Various alternatives exist with the State assuming different project cost and risk/return profiles under each</li><li>▪ A liquefaction tolling arrangement lowers the commodity price risk to the investor, and could well be a consideration against the previously considered integrated and merchant structures</li></ul>
<b>Competitiveness</b>	<ul style="list-style-type: none"><li>▪ Competing projects are supplying increasingly cost competitive LNG at prices AK may struggle to meet</li><li>▪ More optimistic breakeven prices for AK LNG are reliant on substantial capex and finance cost reductions</li></ul>
<b>Partners &amp; Financing</b>	<ul style="list-style-type: none"><li>▪ Despite exit of BP, reputable upstream players with new entrants still seeking to deploy capital</li><li>▪ Financing of fossil fuel extraction under increasing pressure and sharper focus on energy intensity</li><li>▪ Offtakers potentially interested in financing</li></ul>
<b>Other non economic factors are important to potential buyers</b>	<ul style="list-style-type: none"><li>▪ Maintaining a geographically diverse portfolio is important (diversification away from ME, Australia and US)</li><li>▪ Contractual flexibility increasingly important</li><li>▪ Reliability and longevity of supply (multiple Tcf)</li><li>▪ Destination free clauses for gas marketing</li></ul>

# Producers will need a robust investment case to monetize gas

## Perspectives on North Slope gas sale / purchase prices

- Prudhoe Bay's investment case was driven by oil sales
  - Capital investment will have fully or largely depreciated
  - Prudhoe Bay gas blow-down represents free cashflow for the producers, other than opex and minor capital enhancements
  - However, producers will still target generating a return on an imputed capital value represented by the existing infrastructure
- Point Thompson economics are driven by condensate production, with gas re-injection
  - there may be a trade off between maximizing that and producing natural gas in the medium to long term for LNG

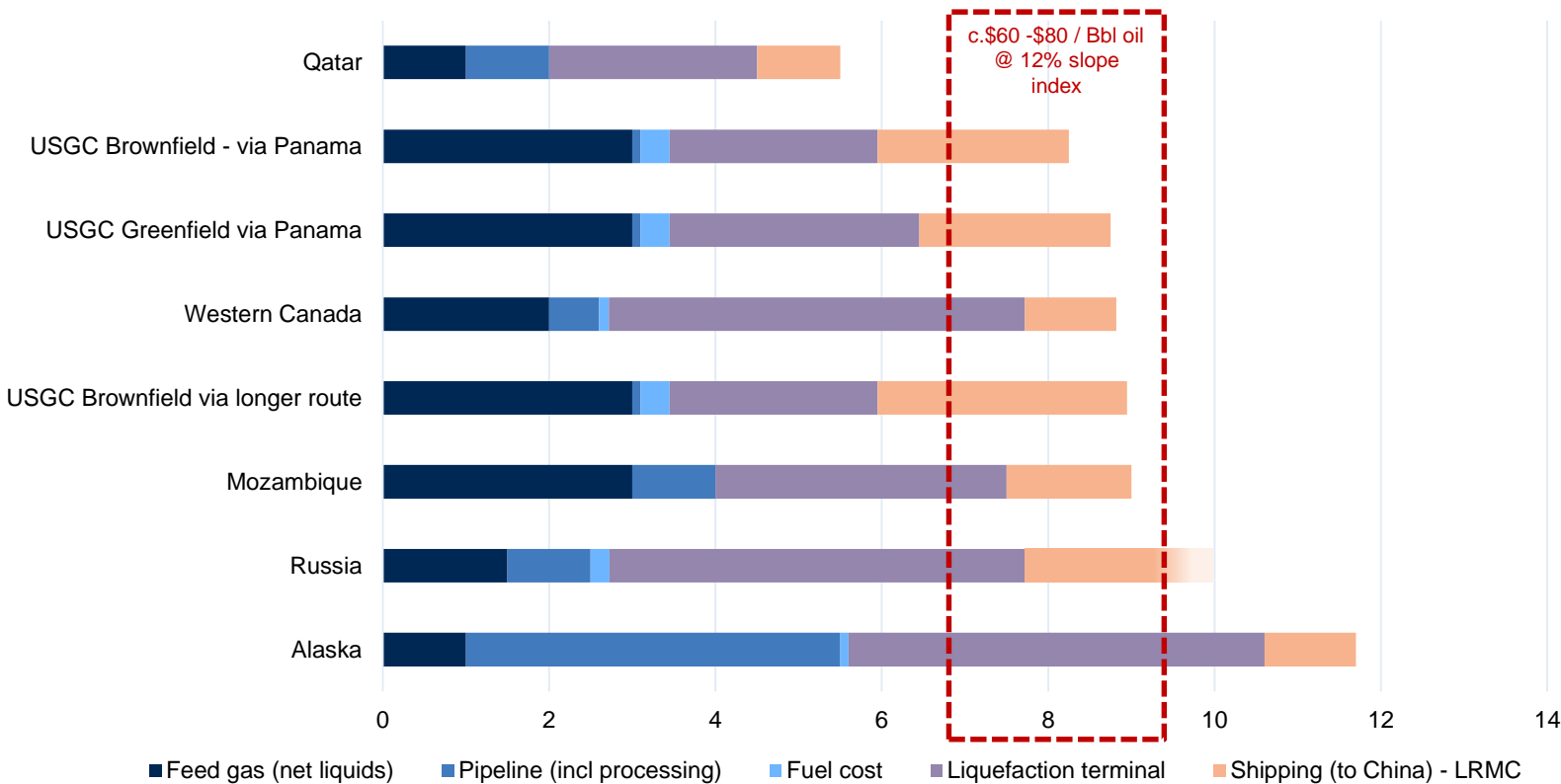
## Incentivization of gas production

- Past monetization was driven by liquids. A shift towards gas monetization marks a significant change and producers will have to be presented with a compelling investment case to monetize the gas
  - Unless this occurs, producers continue to be incentivised to maximise liquids production
  - Investors and producers will also be comparing the Alaskan investment opportunity with other low-cost gas projects around the world
- Gas monetization has the potential to deliver substantial revenues
  - For illustration, assuming 18 Tcf of gas can monetized via LNG, incremental LNG sales revenue of \$150-180 Bn are possible
  - Even netting off substantial capital investment in the LNG infrastructure, there is likely substantial NPV potential
  - Allowing upstream producers to participate in broader LNG project returns, may lead to ability to negotiate a lower upstream feed gas price



# High level guideline project economics compared to other global sources of LNG – breakeven analysis to China (central case)

Estimates of delivered LNG to China (\$/MMBtu)



- Alaska is competitive from a feed gas and freight cost perspective
- However, main challenges to the project are high processing, pipeline and liquefaction costs
- Infrastructure costs and financing need to be driven down
  - To enable Alaska to compete in the \$7-9/MMBtu range in the long run and ensure adequate return
- China is a focal point not only for LNG projects but also potentially pipeline gas from Russia

**Required cost reduction**

# Financing challenges / potential investors in AK LNG project

- Banks, insurers, pension funds and traditional oil companies have been publicly announcing reduced appetite to finance fossil fuel extraction

## Financing Challenges

1. Features that create particular hurdles to financing:
  - Investor pressure against continued conventional fossil fuel extraction
  - CO2 handling issues, 800 mile proposed gas pipeline, required permitting, and energy intensity of processing and liquefaction
  - Large and diverse Alaskan / Arctic ecosystem, attracts scrutiny from international nature preservation bodies
2. Any development plan needs to thoroughly address and provide solutions (to above hurdles)

## Potential Investors

- Recent concerns regarding potential disruption of gas supplies to Europe has amplified the importance to gas buyers globally of diversifying their sources
- The withdrawal of governments from treaty based bi-lateral LNG supply arrangements may reverse
  - Economic and security policy will dictate a more secure and reliable source of natural gas
  - This diplomacy based approach may again become relevant to AK LNG development
- World scale projects such as Alaska LNG continue to be desirable for large financial institutions and pension funds
  - Whether or not a state-to-state alliance/funding route is available
  - Provided the carbon intensity of the project is low enough
- However, every investor will face the same challenges

# Global push for decarbonisation and effect on AK LNG project

- **Rapid rise in market interest “net zero” LNG, or lower carbon intensity LNG, creates opportunities for Alaska**
  - To re-enter the market with lower carbon credentials, which are increasingly going to have a price/value impact on LNG exports
- **Alaskan natural gas production from the North Slope has a high CO<sub>2</sub> content:**
  - CO<sub>2</sub> removal and location of CO<sub>2</sub> storage will be a pivotal feature
  - CO<sub>2</sub> removal of trace quantities will also be necessary for the pipeline transport and liquefaction process
  - High-cost gas treatment plant (cleaning, dehydration and compression) located in Prudhoe Bay required
  - The economics of CO<sub>2</sub> in the context of AK natural gas exports will become a dominant feature
- **Federal policies need to be leveraged if possible**
  - The [Infrastructure Investment and Jobs Act](#) contains changes which would allow loan guarantees and other advantages not previously available for a project aimed at LNG exports
    - A federal loan guarantee may drive down debt cost which is important to achieve financial viability
    - The potential for a loan guarantee does not mean Alaska is pre-qualified for a federal loan guarantee, only that an Alaska LNG project is now eligible to apply
    - AK LNG will compete with other energy projects for financial support
  - The [Build Back Better Bill](#), if passed, contains provisions to increase the 45Q tax allowances that could be used to offset CO<sub>2</sub> capture associated with the North Slope gas production, potentially facilitating aspects of a lower carbon LNG concept

# Potential role for State of Alaska – takeaways

- Examples from state involvement globally in LNG suggest the following could be possible approaches:

	STRENGTHS	WEAKNESSES
Fiscal Incentives Upstream	<ul style="list-style-type: none"> <li>▪ Creating fiscal incentives to lower the breakeven cost of gas production from the North Slope, rendering a lower feedstock price and a more robust natural gas value chain from wellhead to the customer.</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Lower E&amp;P tax revenues offset by employment and investment along LNG value chain</li> </ul>	<ul style="list-style-type: none"> <li>▪ May result in positive economic outcome for gas producers, in excess of those needed to create a sustainable investment case for LNG</li> </ul>
Carbon Capture and Sequestration (CCS)	<ul style="list-style-type: none"> <li>▪ Facilitation of a Carbon Capture and Sequestration (CCS) project designed to capture Federal Tax benefits and lower the costs of natural gas processing and LNG feedstock</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Would facilitate investment, jobs and a leadership position for Alaska in CCUS technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capital investment may not be fully supported by direct Tax credits</li> <li>▪ Would require a structure whereby the credits could be usable</li> </ul>
Project / Financial Structuring	<ul style="list-style-type: none"> <li>▪ Financing of processing/liquefaction plant in exchange for a tolling fee from upstream producers</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Tolling structure would avoid major exposure to oil/gas price volatility and could be consistent with long term Permanent Fund type conservative fiscal management</li> </ul>	<ul style="list-style-type: none"> <li>▪ Would require gas producers to address LNG market and ensure sales pricing to support the tolling fee</li> </ul>
Fiscal Incentives Low Carbon Gas Utilisation	<ul style="list-style-type: none"> <li>▪ Fiscal incentives to promote the development of low carbon energy exports based on Alaska's vast Natural Gas resource, potentially geared around Hydrogen, Ammonia exports, and other products such as low or zero carbon aviation fuels.</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ Has the potential to replace oil and gas economic benefits in the longer term, and place Alaska in a leadership position for net-zero fuels</li> </ul>	<ul style="list-style-type: none"> <li>▪ Long term and complex undertaking</li> <li>▪ Needs to be economically accretive and will depend on higher global carbon pricing</li> </ul>

Several options could include a Federal loan guarantee which could transfer default risk and achieve more favorable rates.

# Recommendations / focus areas

To maximise potential for major gas exports to drive economic growth:

- Foster environment that **minimizes wellhead breakeven cost**
  - Balanced and competitive fiscal terms
- Develop **creative and stable project structure**
  - Align interests of State, gas producers and project lenders
- Leverage **Federal policies** to develop lower carbon energy technologies / investments:
  - Tailor to low carbon developments supporting natural gas exports
- Creating **supportive State policies for low carbon monetisation** technologies
  - Blue Hydrogen, Blue Ammonia and CCUS
- Leverage green and other financing and credit mechanisms to **lower the cost of debt**
  - To offset substantial pre-productive capital needs



Gaffney  
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