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energy advisory

Key Issues and Recommendations: Alaska LNG and Phase I Gasline

Senate Resources Committee
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Basis of Opinion

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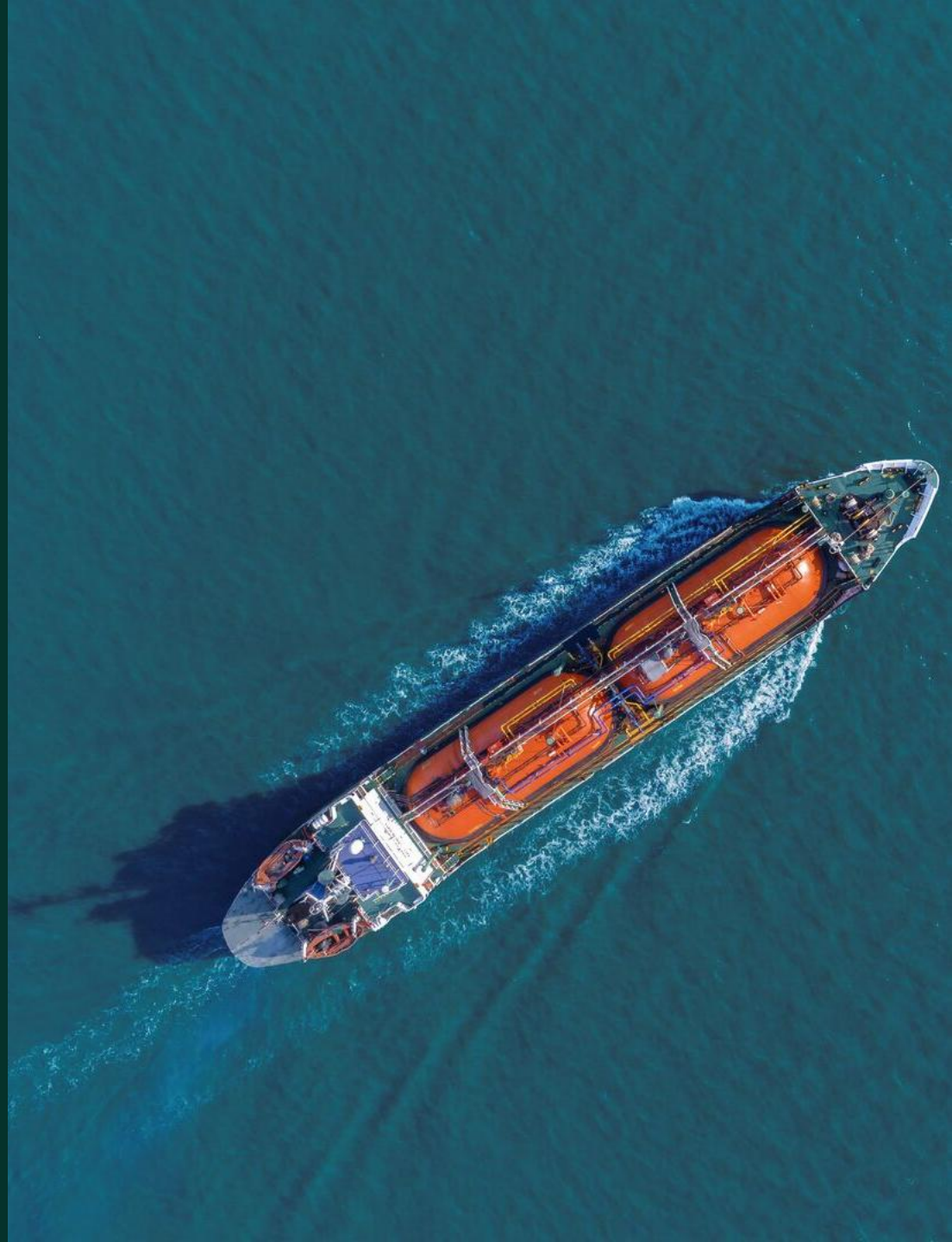
Agenda
Topics to be covered

- Lessons from other LNG projects
  - Property Tax comparison with Lower 48
  - LNG Canada and other Canadian projects
- Comparison with previous project framework agreements
- Path to FID
  - Progression of cost estimate classifications



Property Tax Concessions, Lower 48

Property Tax Incentives (Louisiana)

- Nominal property tax rate is 100 mills
- LNG property tax reductions are achieved through the Louisiana Industrial Tax Exemption Program (ITEP)
- Up to 80% reduction in property tax for 10 years
- Louisiana State audit estimates exemptions valued at $21 Bn

Project	Sponsor	Value
Sabine Pass	Cheniere	$4.9 Bn
Cameron LNG	Sempra	$3.7 Bn
Calcasieu Pass	Venture Global	$2.9 Bn
Plaquemines LNG	Venture Global	$834 M
Magnolia LNG	Glenfarne	$501 M

Note: Operating LNG projects, except for Magnolia LNG which is planned. Source Sierra Club, GaffneyCline Analysis

Property Tax Incentives (Texas)

Taxing Entity Rate

- County 0.30–0.45%
- City (if applicable) 0.40–0.60%
- Port authority 0.10–0.25%
- School district~1.00% (No longer available for tax concession)

- Taxable property value typically 75% of capital cost of terminal

- Pre- December 31st 2022
  - up to 10 years
  - Up to 100% relief
- 2023 and after
  - Relief limited to County, City and Port relief

Project	Sponsor	Value
Golden Pass LNG	QatarEnergy / ExxonMobil	$235 M
Port Arthur LNG (PALNG)	Sempra Infrastructure	$694 M
Corpus Christi LNG (incl. Stage 3)	Cheniere Energy	$1.23 Bn
Freeport LNG (Train 4)	Freeport LNG Development	$447 M
Rio Grande LNG	NextDecade	$373 M
Texas LNG	Glenfarne	$34 M

Including School District Tax reductions

2022 and after no School District Tax reductions

Note: Operating LNG projects, except for Texas LNG and Rio Grande LNG which are planned. Multiple sources, GaffneyCline Analysis

Property Tax Incentives (Maryland)

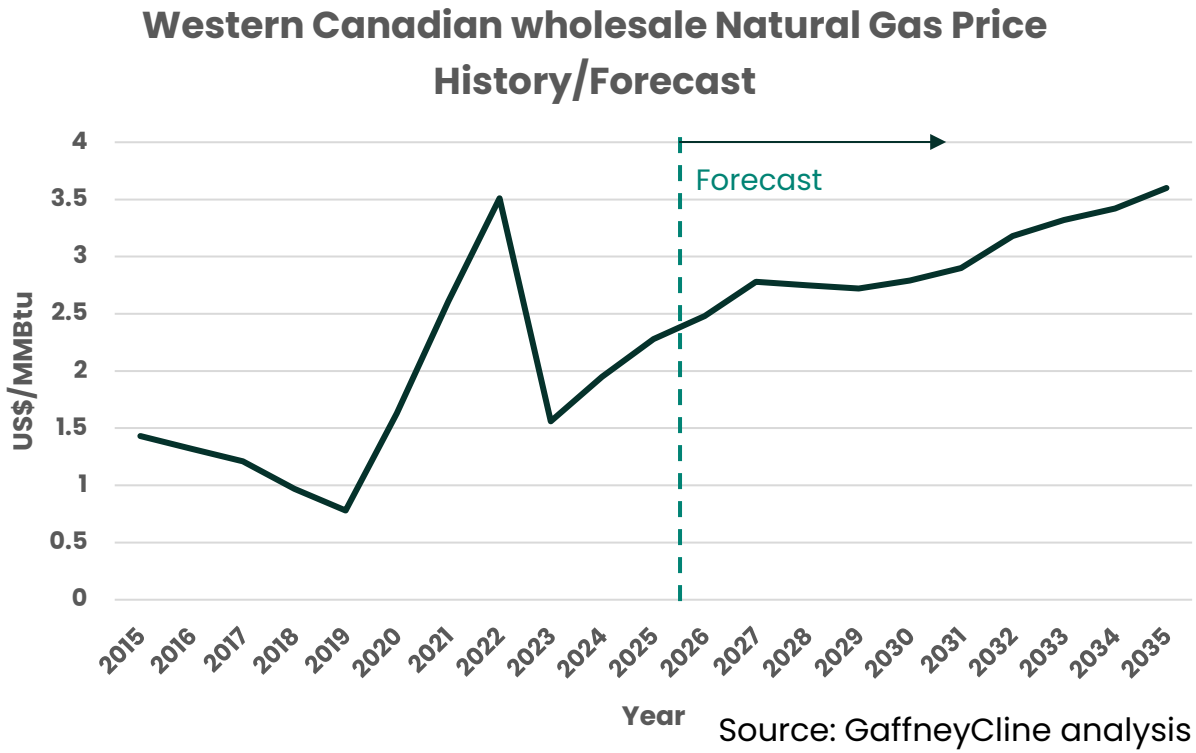
- LNG liquefaction terminals in Maryland are explicitly eligible for negotiated PILT agreements under state law.
- This statute was written with Cove Point specifically in mind, reflecting its unique scale, infrastructure, and economic importance.
- Allows the county to substitute a negotiated annual payment for standard real and personal property taxes
- Rationale for PILT:
  - Depreciation risk to county revenues
  - Potential delays or cancellation of an anchor economic project
- PILT was restructured in 2024, when the county approved an amended PILT agreement
  - fixed payment of $60 million per year
  - Runs for 15 years (tax years 2023–2038, expiring June 30, 2039)
- Estimated difference: PILT $11m higher than nominal property tax (State evaluation) or $32m less (based on consultant's valuation)

Canadian Pacific Coast Projects

Similarities between Canadian LNG projects and Alaska

- The Canadian and Alaskan business model and economics are similar; thus, many lessons can be derived from projects in BC
- The competitive features of the project stem from **low-cost gas** and **low-cost shipping**
- Core infrastructure includes a costly long gas pipeline across varied terrain.
- Canada and Alaska are both seeking to meet demand for Eastern Pacific LNG sources (perceived as adding to supply diversity, and absence of security risks)
- Targeting major growth in Asia Pacific LNG demand

Shell CEO **Wael Sawan** June 2025



Source: GaffneyCline analysis

What is particularly attractive about LNG Canada… is the differential between AECO and Henry Hub, not to mention the proximity to Asia,..

LNG Summary
Canadian Pacific Coast

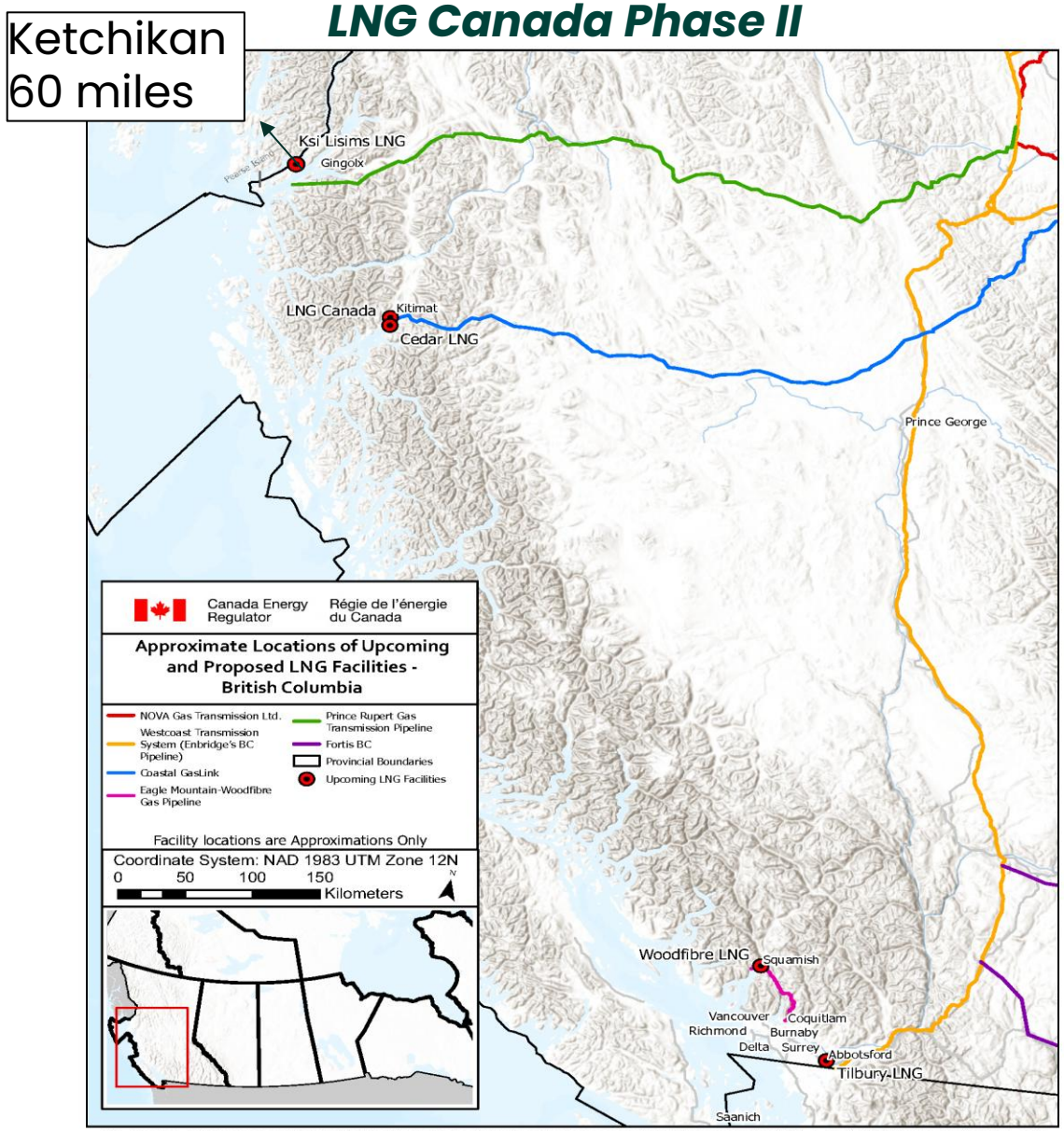
Ksi Lisims LNG – 12 MTPA
- Fiscal support but no formal stability mechanism
- Offtake:
  - Shell 2 MTPA
  - TotalEnergies 2 MTPA + equity

LNG Canada – 14 MTPA
- Fiscal support and stability mechanism
- Up to 28 MTPA with Phase 2
- Train 1&2 now operational

Cedar LNG – 3.3 MTPA
- Fiscal support but no formal stability mechanism
- Petronas 1MTPA tolling capacity
- ExxonMobil/ARC 1.5 MTPA

Woodfibre LNG – 2.1 MTPA
- Under Construction, expected completion in 2028

Over 30 MTPA under development or operating plus additional 14 MTPA from LNG Canada Phase II



The map is a graphical representation intended for general informational purposes only. Map produced by the CER, August, 2024, Last updated on Aug 01

Lessons from LNG Canada

- Discussions **commenced in 2013** but final fiscal package **agreed March 2018** with FID **October 2018**
- Key features of enabling legislation:
  - **Natural gas tax credit** for LNG development in British Columbia.
  - **Repeal** of the Liquefied Natural Gas Income Tax Act
  - **Discounted electricity** prices
  - BC carbon **tax exemptions**
  - A **natural gas credit** against corporate income tax
  - **Deferral of provincial sales tax** on construction
  - **Federal tax breaks** / accelerated **depreciation**
  - **Fiscal stability**
- Estimated benefit for the project: Federal **C$1.8bn** Provincial **C$2.16bn***

* https://canadian-accountant.com/content/business/lng-risks-public-purse-report

Comparison with previous AK LNG framework

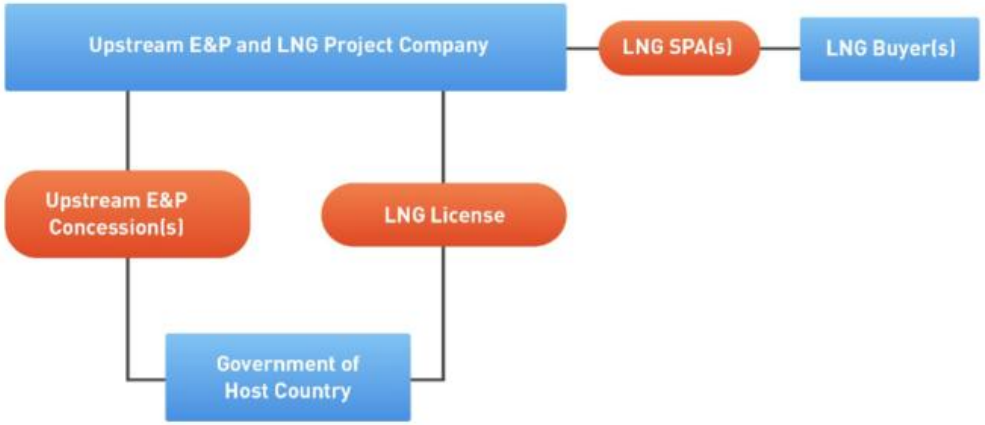
Formalising Governance Structure for LNG / Gasline

- Project appears to be moving to a more active phase of development.
- A formalization of project structure and governance will be needed
- Heads of Agreement and other documentation from 2014 may provide guidance:
- Key questions include:
  - Who are parties to any project framework agreement?
  - Is Enabling Legislation envisaged?
    - Other enabling agreements?
  - How is gas to Alaskans priced and other key terms
  - Jobs for Alaskans/Alaskan Hire Agreement
  - State revenues and tax framework
  - Drivers for other industries based on “low cost natural gas”
  - State participation
  - Supply points for Interior

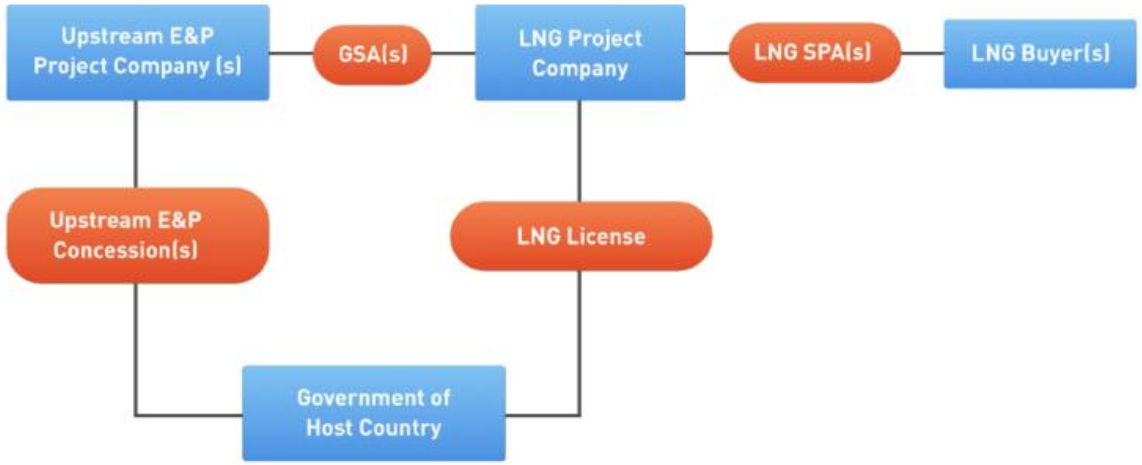
SB 138 Concept vs. Current Structure

- The MOU governing the original AK LNG project was based on an “integrated model”, from gas production through to LNG disposition.
- The current structure is understood to be closer to a “merchant model”
  - Equity participation can differ along the LNG value chain
- Implications for Tax as Gas (TAG) and Royalty in Kind (RIK)
- State equity participation no longer directly linked with its entitlement to gas

Integrated Structure



Merchant Structure



The Path to FID

FID Pre-requisites

Significant announcements were made by Glenfarne on January 22nd regarding the Phase I Gasline development.

As these announcements are assessed in the coming days, further insights may become available.

The following slides were prepared prior to the announcements, but are still considered useful background and understanding.

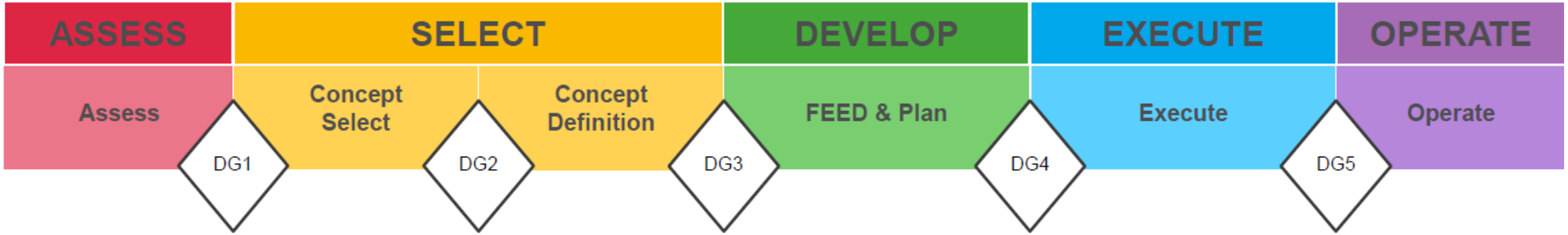
FID Pre-requisites

To take FID, key aspects of the AKLNG project must be considered:

- Phase 1 will comprise the pipeline transporting gas to the state domestic market
- Subsurface (gas availability) risk is low
- Facilities capital costs are large and a dominant part (84%) of the overall cost of supply

The FID decision package must provide coverage of all project work streams to demonstrate readiness to proceed.

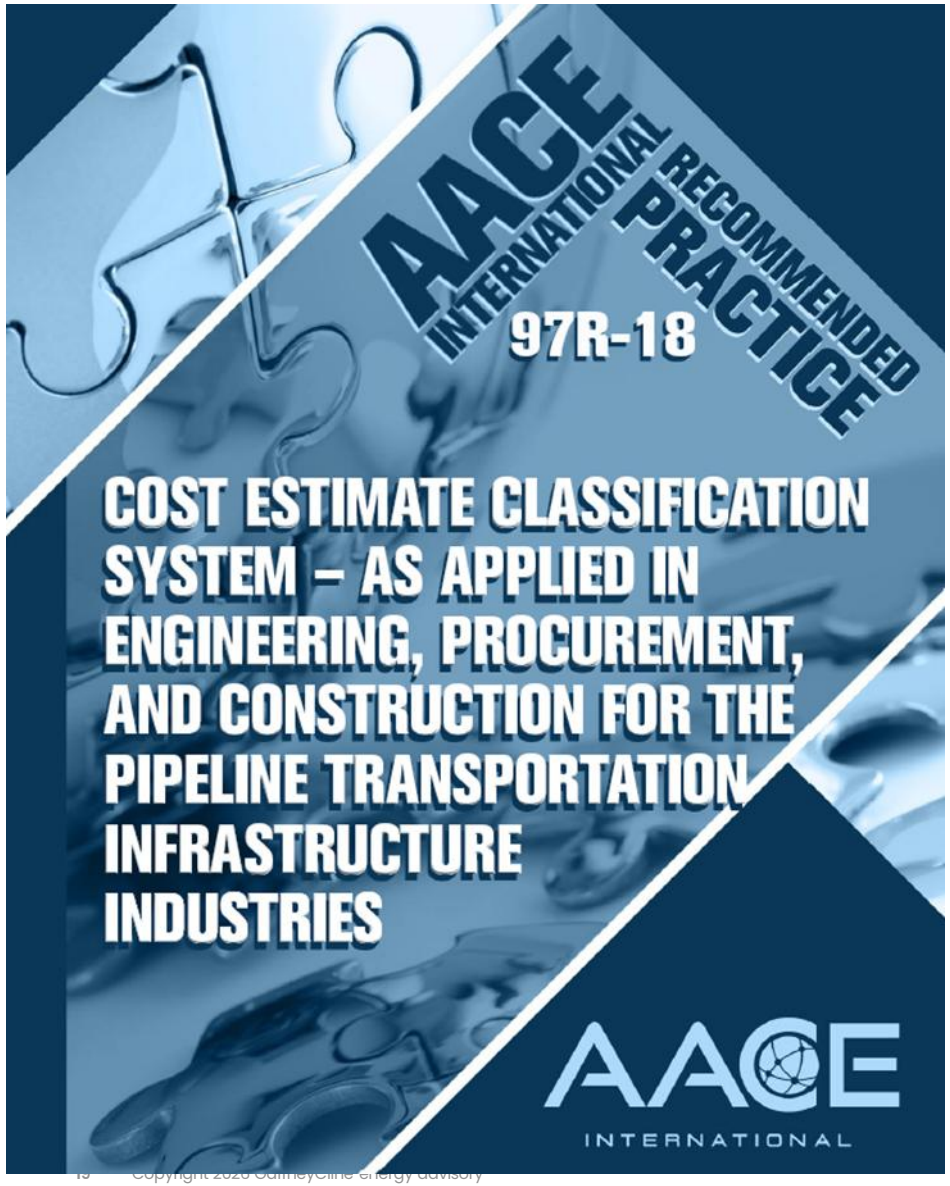
Project Management Framework Pre-FID



Large projects are typically managed within a "Stage-Gate" process where project phases are controlled at "Decision Gates" (DG). FID is normally taken at DG4. The DG support package will address:

- Project technical scope (project specification, key design documents)
- Cost and schedule- base, risk analysis, contingencies, and allowances
- Project execution plan- staffing, contracting, procurement, logistics, etc
- Legal, permits, and regulatory framework
- Commercial framework, economics, and business case
- Financing- phasing, coverage, risk management, assurance, etc.
- Stakeholder management

Cost Estimation Framework AACE 97R-18



The American Association of Cost Engineers (AACE) provides Recommended Practises covering a range of industrial and infrastructure projects

AACE 97R-18 addresses Pipeline Transportation and Infrastructure Projects

The document covers:

- Cost Estimate Classification
- Characterization of estimate class (Class 1 to 5)
- Estimate input checklist and maturity class
- Supporting references and appendices

AACE 97R-18 Cost Estimate Classes

	Primary Characteristic	*Secondary Characteristic*		
ESTIMATE CLASS	**MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES** Expressed as % of complete definition	**END USAGE** Typical purpose of estimate	**METHODOLOGY** Typical estimating method	**EXPECTED ACCURACY RANGE** Typical variation in low and high ranges at an 80% confidence interval
Class 5	0% to 2%	Concept screening	Cost/length factors, parametric models, judgment, or analogy	L: -20% to -50% H: +30% to +100%
Class 4	1% to 15%	Study or feasibility	Cost/length, factored or parametric models	L: -15% to -30% H: +20% to +50%
Class 3	10% to 40%	Budget authorization or control	Semi-detailed unit costs with assembly level line items	L: -10% to -20% H: +10% to +30%
Class 2	30% to 75%	Control or bid/tender	Detailed unit cost with forced detailed take-off	L: -5% to -15% H: +5% to +20%
Class 1	65% to 100%	Check estimate or bid/tender	Detailed unit cost with detailed take-off	L: -3% to -10% H: +3% to +15%

Table 1 – Cost Estimate Classification Matrix for the Pipeline Transportation Infrastructure Industries

When do we take FID?

Where are we now?

ALASKA LNG

In-State Natural Gas Supply

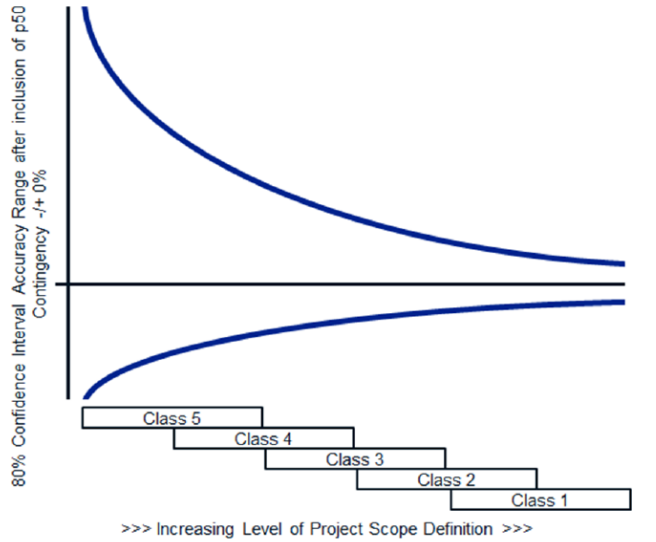


Figure 1 – Illustration of the Variability in Accuracy Ranges for Pipeline Transportation Infrastructure Industry Estimates

AACE 97R-18 Input Checklist (1/2)

MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES	ESTIMATE CLASSIFICATION				
	CLASS 5	CLASS 4	CLASS 3	CLASS 2	CLASS 1
	0% to 2%	1% to 15%	10% to 40%	30% to 75%	65% to 100%
GENERAL PROJECT DATA:					
A. SCOPE:					
Project Scope of Work Description	P	P	D	D	D
Site Infrastructure (Access, Construction Power, Camp etc.)	NR	P	D	D	D
B. CAPACITY:					
Flow and Commodity Characteristics	P	P	D	D	D
Electrical Power Requirements (when not the primary capacity driver)	NR	P	D	D	D
C. PROJECT LOCATION:					
Station, Terminal and Tie-in	P	P	D	D	D
D. REQUIREMENTS:					
Codes and/or Standards	NR	P	D	D	D
Communication Systems	NR	P	D	D	D
Environmental Monitoring	NR	NR	P	P	D
E. TECHNOLOGY SELECTION:					
N/A					
F. STRATEGY:					
Right-of Way (ROW)	P	P	D	D	D
Contracting / Sourcing	NR	P	D	D	D
Escalation	NR	P	D	D	D
G. PLANNING:					
Logistics Plan	P	P	P	D	D
Integrated Project Plan[1]	NR	P	D	D	D
Project Code of Accounts	NR	P	D	D	D
Project Master Schedule	NR	P	D	D	D
Regulatory Approval & Permitting	NR	P	D	D	D
Risk Register	NR	P	D	D	D
Stakeholder Consultation / Engagement / Management Plan	NR	P	D	D	D
Utility Coordination / Agreements	NR	P	D	D	D
Work Breakdown Structure	NR	P	D	D	D
Startup and Commissioning Plan	NR	P	P/D	D	D

AACE 97R-18 addresses Pipeline Transportation and Infrastructure Projects: Estimate input checklist and maturity class

Reviewing data from the Alaska LNG website

Note that the Glenfarne website provides limited additional information

<u>Key question is whether the Alaska LNG project description can be confirmed as the FID basis?</u>

AACE 97R-18 Input Checklist (2/2)

MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES	ESTIMATE CLASSIFICATION				
	CLASS 5	CLASS 4	CLASS 3	CLASS 2	CLASS 1
	0% to 2%	1% to 15%	10% to 40%	30% to 75%	65% to 100%
GENERAL PROJECT DATA:					
H. STUDIES:					
Routing Options	P	P	D	D	D
Topography and/or Bathymetry	P	P	P/D	D	D
Environmental Impact / Sustainability Assessment	NR	P	D	D	D
Environmental / Existing Conditions	NR	P	D	D	D
Meteorology and/or Oceanographic / Subsea	NR	P	D	D	D
Soils and Hydrology	NR	P	D	D	D
TECHNICAL DELIVERABLES:					
Hydraulic Design	S	P	C	C	C
Piping Discipline Drawings	S	P	P	C	C
Piping Schedules	S	P	P	C	C
Route Alignment Sheets	S/P	P/C	C	C	C
Route Mapping / Survey	S/P	P/C	C	C	C
Design Specifications	NR	S/P	C	C	C
Electrical One-Line Drawings	NR	S/P	C	C	C
Instrument List	NR	S/P	C	C	C
Utilities Systems Plans including Relocation	NR	S/P	C	C	C
Construction Permits	NR	S/P	P/C	C	C
Geometric Layout. Alignment, Profile, Cross Section	NR	S/P	P/C	C	C
Land / ROW Title Negotiation	NR	S/P	P/C	C	C
Civil / Site / Structural / Architectural Discipline Drawings	NR	S/P	P	C	C
Crossings and Borings Designs and Drawings	NR	S/P	P	C	C
Demolition Plan and Drawings	NR	S/P	P	C	C
Erosion Control Plan and Drawings	NR	S/P	P	C	C
Station / Terminal Interface Design	NR	S	P	C	C
Electrical Schedules	NR	NR/S	P	P/C	C
Instrument and Control Schedules	NR	NR/S	P	P/C	C
Instrument Datasheets	NR	NR/S	P	P/C	C
Electrical Discipline Drawings	NR	NR	S/P	P/C	C
Instrumentation / Control System Discipline Drawings	NR	NR	S/P	P/C	C

Table 3 – Estimate Input Checklist and Maturity Matrix (Primary Classification Determinate)

Based on a screening of the information available in public domain (i.e. not a comprehensive review of current project progress documentation), I would assess the Alaska Gasline Development project as a robust AACE Class 5 estimate

This does not address the LNG project, compressor stations, or gas supply and treatment scope

Pegasus-Global “Open Questions” and “Recommendations” are endorsed

Project commercial and financing basis is not covered in the AACE structure, but forms a critical aspect of any FID

Factors Affecting Pre-FID Schedule

The time required for the “Select” and “Develop” (or Define) phases can vary widely, depending on:

- Project economic attractiveness- highly profitable projects can take FID quickly, marginal projects often require better definition and may have to recycle back to through concept selection
- Project non-technical aspects (regulatory, stakeholder, financing) are affected by external influences
- Project scale, complexity, and innovation

Upstream mega-project Pre-FID phase can vary from less than 4 years to over 50 years

Measures to assure FID

FID timing can be defended with:

- Robust FID decision support package subject to readiness review(s)
- Probabilistic cost and schedule risk analysis
- Project risk analysis and risk allocation in place (e.g. loan guarantees, tariff and volume commitments, EPC contract scope and terms tendered and prices received, gas supply and marketing agreements matured, financing structure in place, etc.)
- Contingency (cost and time) allocated (Base to P50 or P90) consistent with risk analysis findings
- Transparency and involvement of key stakeholders

Questions?