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MARCH 19, 2014

ALASKA NORTH SLOPE ROYALTY STUDY – SELECTED EXTRACT

PREPARED FOR THE STATE OF ALASKA

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ALASKA NORTH SLOPE ROYALTY STUDY

- These slides are a short and selected extract from the full 188 slide Alaska North Slope Royalty Study

- The full study is available at:
  - http://dnr.alaska.gov/commis/priorities/ak_lng.htm

- Webinars covering each of the four main scope items are available at:
  - LNG Markets
  - Supply Chain Elements
  - Fiscal Framework
  - Risk Allocation & Commercial Structure

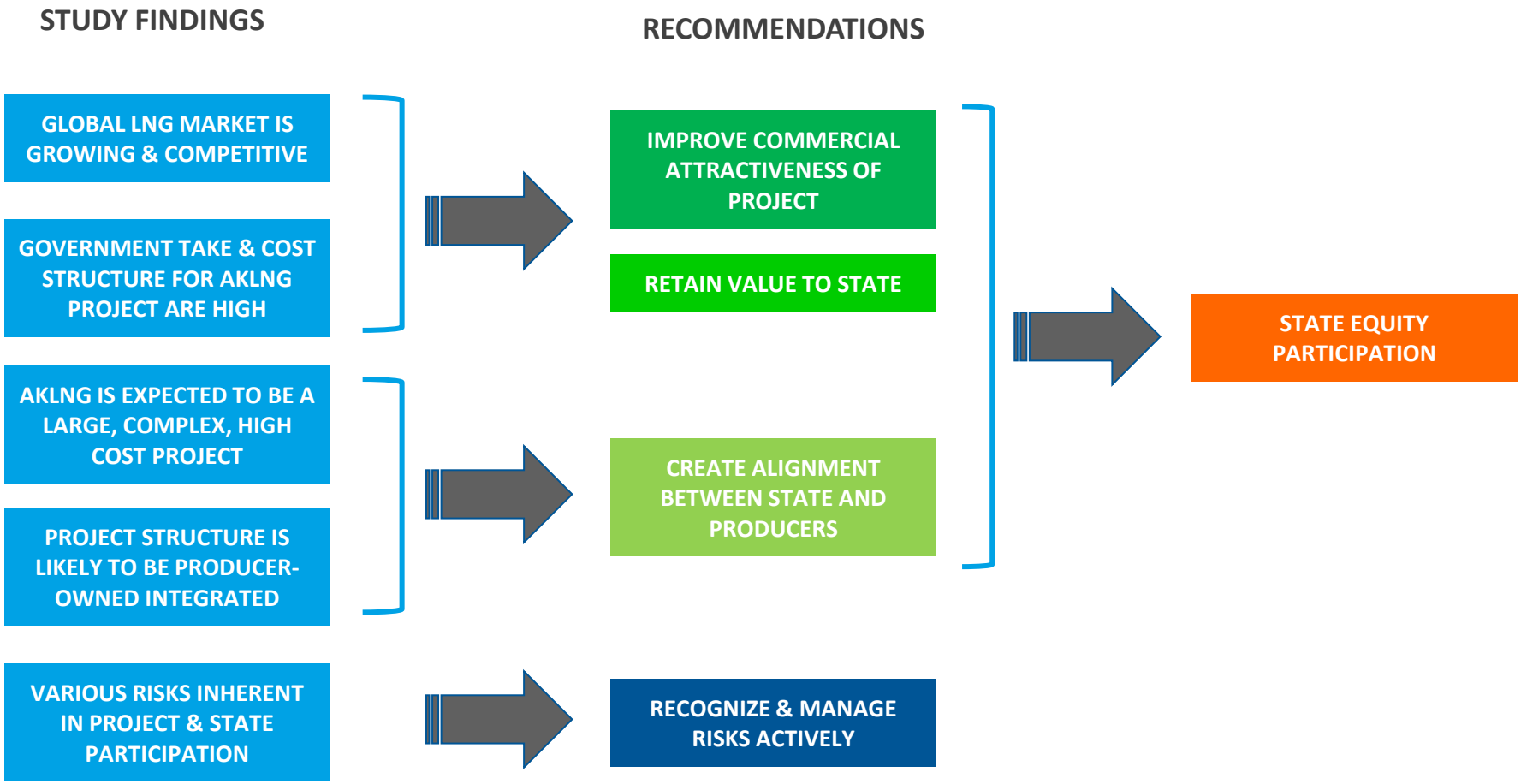
NOTES ON ALASKA NORTH SLOPE ROYALTY STUDY

- The Alaska North Slope Royalty Study was undertaken between June 2013 and November 2013 and, hence, preceded finalization of the Heads of Agreement ("HOA") between ExxonMobil, ConocoPhillips, BP, TC Alaska, AGDC, and the State Administration as well as the Memorandum of Understanding ("MOU") between the State Administration and TransCanada.
- While the study informed the State Administration as it negotiated the HOA and the MOU, the study, and this presentation summarizing it, do not analyze the specific terms within these agreements or their impacts on the competitiveness of the AKLNG project.
- Assessment of a project of the scope of AKLNG requires examination of numerous complex variables that cannot be determined with a high degree of certainty. Many reasonable scenarios can be derived where the AKLNG project is economic, and vice versa. While in most cases, a conservative approach was taken when applying forecasts and assumptions, it should be recognized that market and project related variables, that remain as yet unresolved, can modify the economics as presented here.

BACKGROUND & SCOPE

- The State of Alaska, Department of Natural Resources (DNR) commissioned the Alaska North Slope Royalty Study to document and understand four major commercial elements that could influence the various stakeholders' returns from the AKLNG Project:
  - LNG markets
  - Supply chain elements
  - Fiscal framework – International and Alaska
  - Risk allocation/commercial structure
- The purpose of this study is to provide information that can help the State to protect its royalty interest in the state's gas and examine how the State's fiscal terms with a particular focus on royalty terms can affect the success of the AKLNG project.
- The Study was undertaken by a team that included Black & Veatch and Daniel Johnston, Inc. under the leadership of DNR along with support and consultation by Department of Revenue (DOR). Additionally, inputs and assumptions of AKLNG Project sponsors were considered.

ROYALTY STUDY FINDINGS & RECOMMENDATIONS



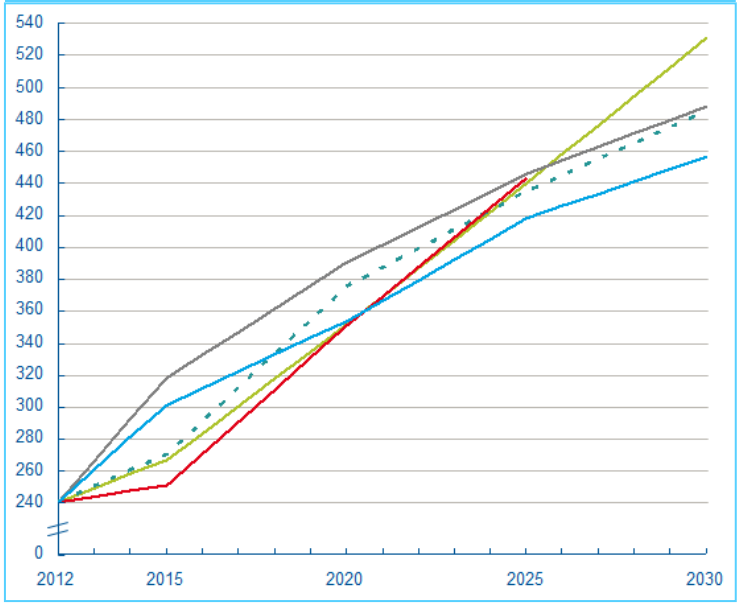
LNG MARKETS – SCOPE

- Overview of how LNG is being traded and valued in various markets that are available to AKLNG Project
- Analysis of historical and future global LNG pricing trends
- Discussion of supply and demand projections in the LNG market and implications for AKLNG Project

LNG MARKETS – KEY FINDINGS

- The LNG market is characterized by highly capital intensive projects underpinned by long-term contractual relationships across the supply chain
- The LNG market is in an illiquid, opaque market consisting of very few participants and is structured on the basis of long-term, 20+ year contracts as opposed to the global oil market which is highly liquid, extremely transparent, comprised of many participants and is structured on the basis of short term trade

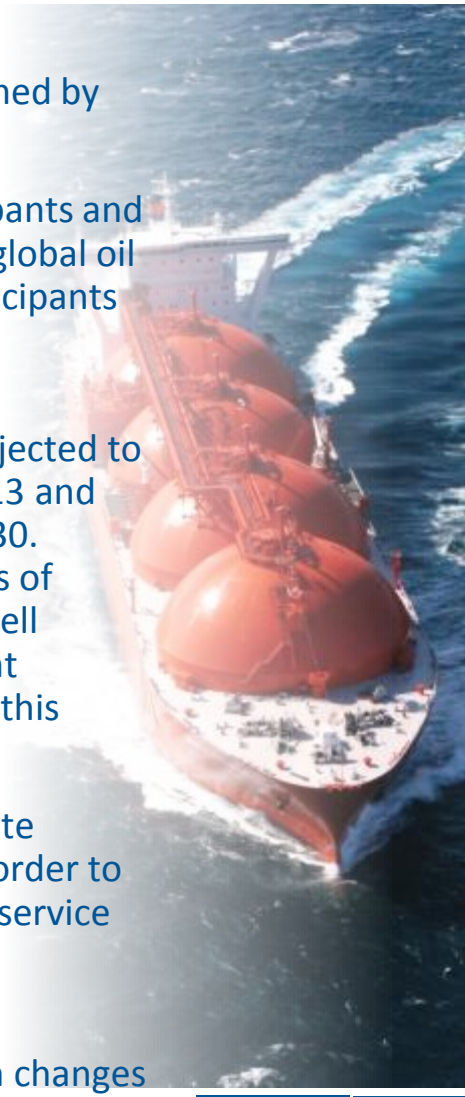
Global LNG demand – various forecasts, Mtpa



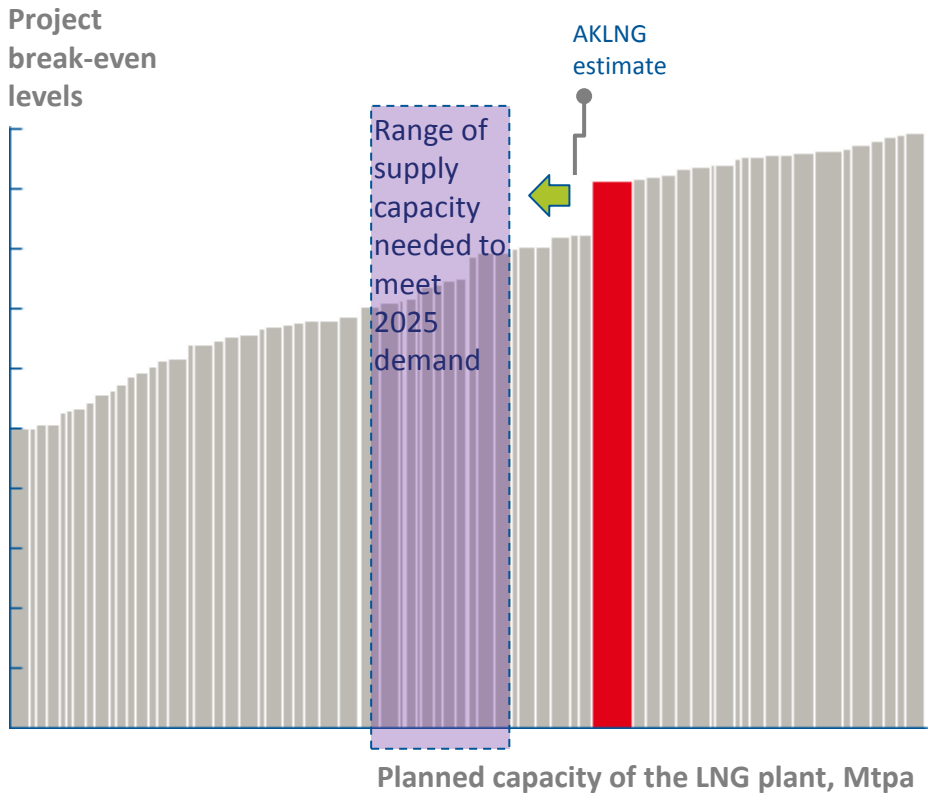
Note: Includes AKLNG, other new projects, and projects under development.

Source: Team Analysis, various demand studies

- Global LNG demand is projected to grow by 50% between 2013 and 2020 and to double by 2030. However potential sources of supply are expanding as well thereby creating significant competition for capturing this growing market
- AKLNG will have to compete successfully for buyers in order to meet its targeted 2024 in-service date
- AKLNG project could be economically feasible with changes to the project's cost structure and the state's fiscal framework



ON THE GLOBAL SUPPLY CURVE, AKLNG APPEARS TO CURRENTLY BE OUT OF THE MONEY, MODIFICATIONS REQUIRED TO COMPETE



ILLUSTRATIVE CHART, ANALYSIS DONE FOR ALL PROJECTS WITH STARTUP AFTER 2013

IMPLICATIONS:

1. **AKLNG is currently out of the money:**
   - **Alaska break-even price is US$12.3/MMBtu**
   - **Projects more economic than Alaska can provide ~340 MTPA new supply, more than required to meet global LNG demand (~250 – 300 MTPA)**
2. **AKLNG faces significant competition**
   - **There are several projects to the right in supply stack which will compete with AKLNG**
3. **However, the risk levels of competing LNG projects also needs to be considered**
   - **Due to political, resource and other risks, some in the money projects may be delayed/cancelled, leading to range of needed capacity**

[1] NPV=0 @ discounted at Weighted Average Cost of Capital

SOURCE: Team Analysis

SUMMARY: LNG MARKETS

1. The LNG market is characterized by capital intensive projects and long-term contracts across the supply chain
2. The LNG market is illiquid and opaque, with few players, in contrast with the liquid and transparent oil market
3. LNG demand is expected to grow quickly over the short and long-term, but supply sources are also rapidly expanding
4. AKLNG appears to be out of the money within the global LNG supply curve under the status quo; cost and /or fiscal modifications could enhance competitiveness

SUPPLY CHAIN ELEMENTS – SCOPE

- Overview of the current capital cost estimates for the AKLNG Project
- Review of the capital structures that are likely to be applicable to AKLNG Project
- Discussion and assessment of applicable commercial structures for AKLNG Project

BASELINE AKLNG PROJECT COST RISES TO $45 BILLION (2013$) COMPARED WITH $27 BILLION ESTIMATE DURING AGIA

Supply Chain Element	2008 Estimate[1]	2013 Updates	
		State's Estimate	Producers Estimate
GTP	$5 Billion	$10 Billion	$10 - $15 Billion
Pipeline	$8 Billion	$12 Billion	$10 - $15 Billion
LNG	$14 Billion	$23 Billion	$17 - $24 Billion
Total	**$27 Billion**	**$45 Billion**	**$37 - $54 Billion**

- Capital costs for large energy projects including LNG projects have risen, driven by growing demand and competition for manufacturing capacity, equipment and skilled labor from resource extraction industries
- Capital cost pressures are expected to remain high for the AKLNG project given its complexity and location and the global competition for resources

[1] Capital cost for a 2.7Bcf/d LNG project estimated by the State's Technical Team during AGIA proceedings.

COMMERCIAL STRUCTURE OF PROJECT INFLUENCES RISK AND CONTROL

- The commercial structure of the LNG project affects the operations and financing costs of the GTP, pipeline, LNG plant, and the shipper
- The AKLNG Project is expected to have an integrated or hybrid-integrated project structure with the same owners across the upstream, midstream and LNG plant
- For large, complex and costly LNG Projects, an integrated structure creates alignment of interests between owners and increases project control and efficiency
- However, concentrated vertical control makes expansions and entry of new participants difficult
- Achieving alignment of interest between the State and Producers is especially key in an integrated structure to be able to influence the factors important to the State - commercial viability of AKLNG project, open access, expandability, and transparency across the supply chain

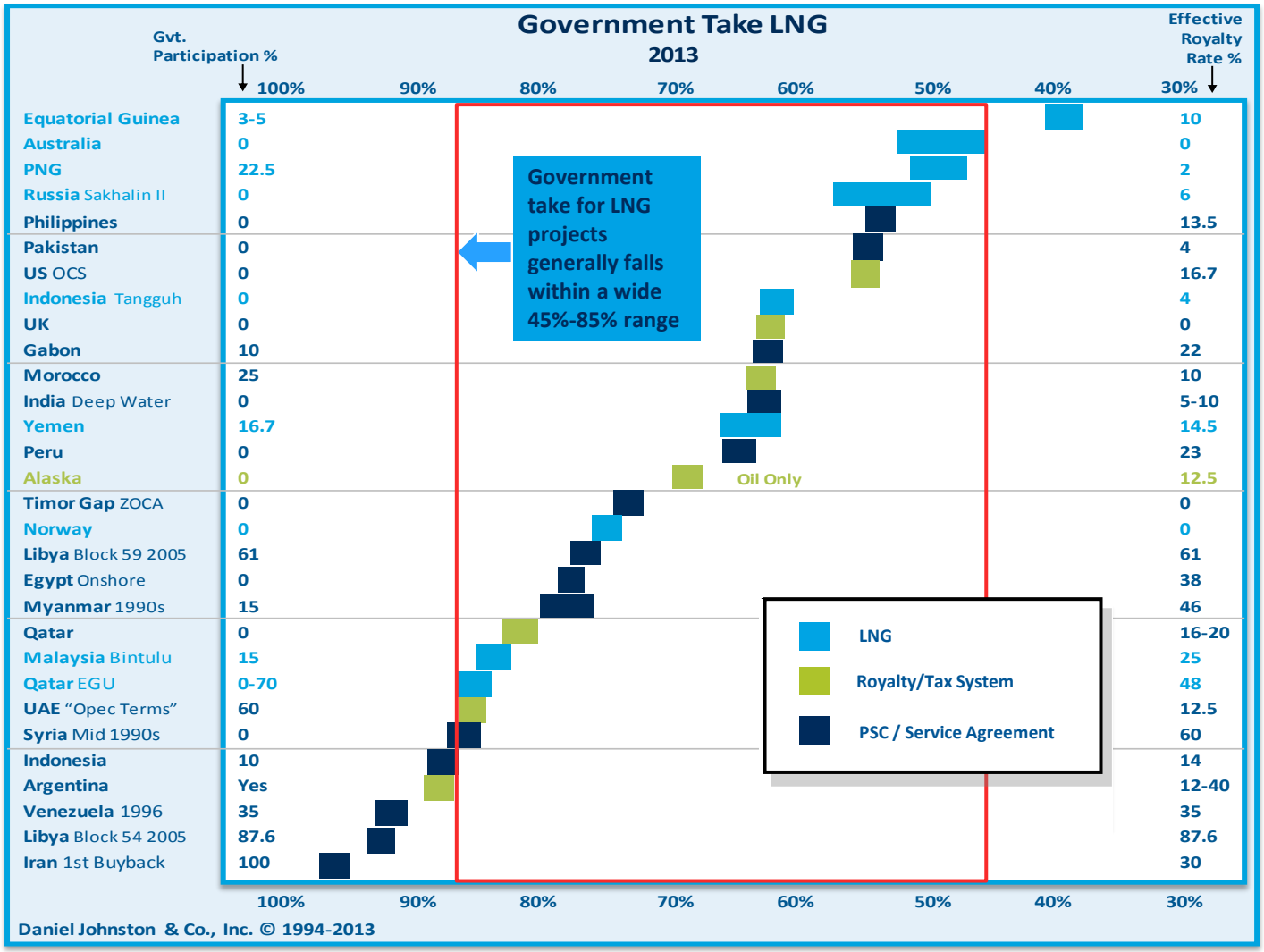
SUMMARY: SUPPLY CHAIN ELEMENTS

1. Capital costs for AKLNG project are likely to remain uncertain through the development of the project
2. Total midstream project cost estimates from the AKLNG project sponsors range from $37-$54 billion
3. Complex LNG projects typically have an integrated commercial structure to give sponsors maximum control
4. AKLNG is expected to have an integrated structure; ensuring alignment of interests between the State and Producers is challenging and critical with a Producer-owned integrated project

FISCAL FRAMEWORK – SCOPE

- Overview of the fiscal structures relevant to LNG projects worldwide and comparison with AKLNG Project
- Discussion and analysis of incentives that State could provide to help facilitate the AKLNG Project
- Assessment of how Alaska can leverage its royalty ownership position – royalty in kind relative to royalty in value

GOVERNMENT FISCAL TAKE FOR LNG PROJECTS INDICATES A RANGE BETWEEN5 45% AND 85% FOR LNG PROJECTS - AKLNG IS EXPECTED TO FALL AT THE HIGH END OF THIS RANGE



Government take in Alaska is expected to be between 70%-80% under SB21/MAPA fiscal structure with significant Federal Government share

VARIOUS ALTERNATIVES FOR THE STATE TO INCENTIVIZE THE PROJECT WHILE PROTECTING ITS INTERESTS WERE CONSIDERED

FISCAL INCENTIVES – REDUCTION IN ROYALTY, PRODUCTION TAX, PROPERTY TAX

- While fiscal incentives help the project's economics, the significant midstream costs limit their impact

ROYALTY IN KIND

- RIK represents an incentive to Producers and likely improves commercial viability of AKLNG Project
- Significant risks for State that need to be addressed

DIFFERENT EQUITY PARTICIPATION ALTERNATIVES

- State investing to achieve 100% ownership of the pipeline
- State investing 12.5% in entire project but not modifying royalty and taxes
- State making an equity investment in the project and taking its royalty and tax as gas

RIK COULD CREATE ADDITIONAL RISK AND COST FOR THE STATE RELATIVE TO RIV

- **Taking its royalty in kind could potentially expose the State to significant risks including:**
  - The State may need to build its own marketing organization to take care of origination, logistics, contract administration, accounting, etc. if it chooses to market the gas
  - State would face challenges in competing with the Producers who have well established LNG marketing expertise and global portfolios
  - State would be subject to counterparty risk in all of the contracts it enters into across the LNG supply chain
  - State would need to make firm capacity commitments along the LNG supply chain, which could total up to $1 billion per year
    - State could realize negative royalties if the LNG price is too low
  - State would face production volume risk (if production exceeds or falls short of its sales commitments)
- **Producers have the experience of dealing with market uncertainties and would need to help the State address these risks if an RIK path is pursued**

SUMMARY: ALASKA FISCAL FRAMEWORK

1. AKLNG project's government take, at 70-80%, is high for a project of this complexity, and estimated IRR of approximately 15% may be insufficient for Producer investment relative to their alternatives

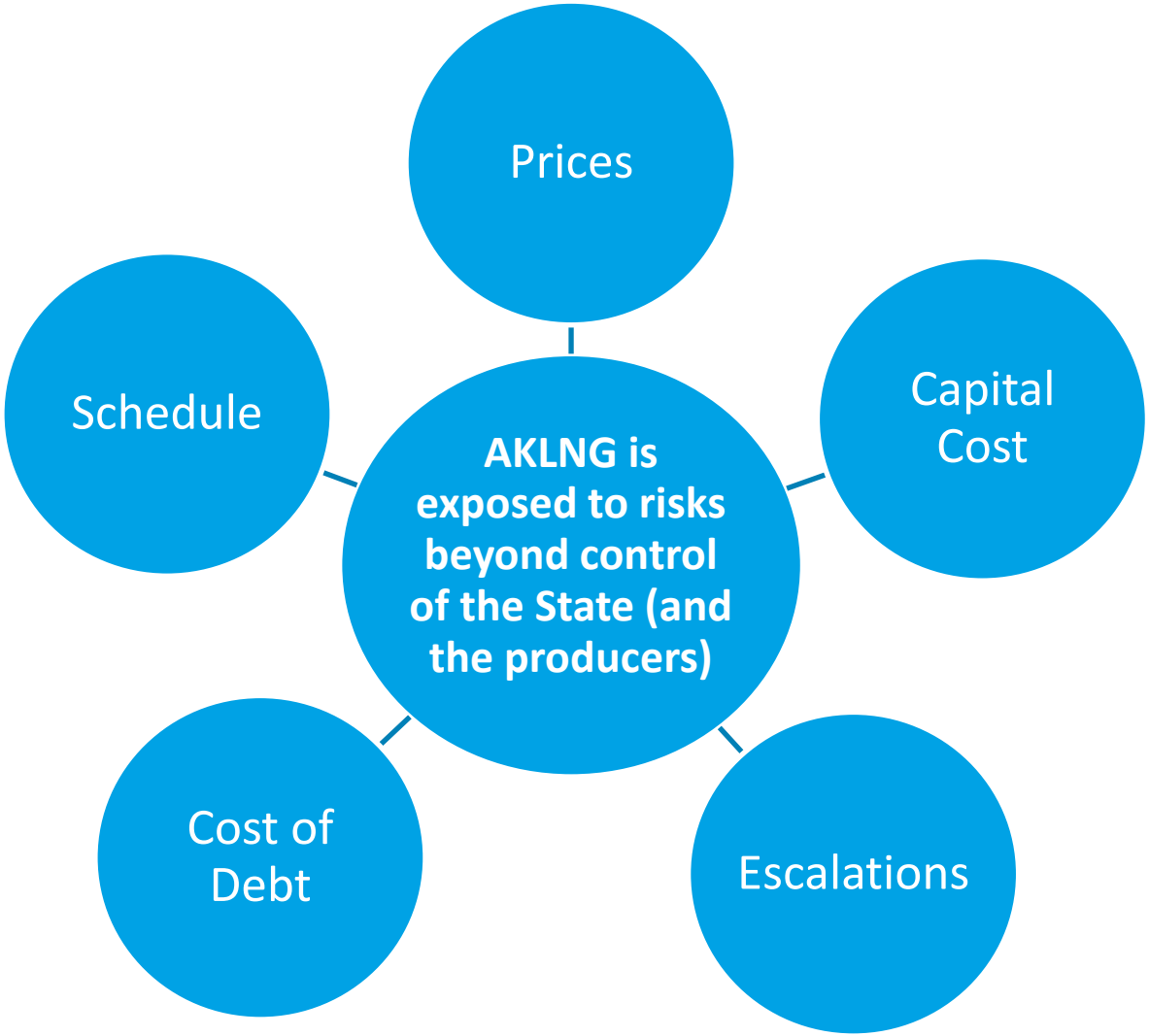
2. Well designed incentives to lower project costs and modify fiscal structure can help make the AKLNG project competitive in market

3. The State taking its royalty as RIK could result in a substantial increase in risk & potential loss of value for the State – Producers have more experience managing associated risks

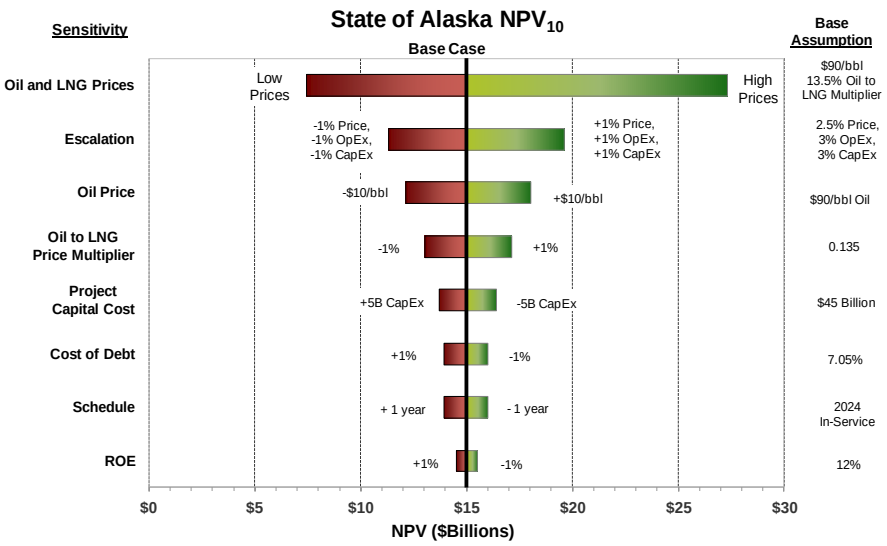
RISK ALLOCATION & COMMERCIAL STRUCTURE – SCOPE

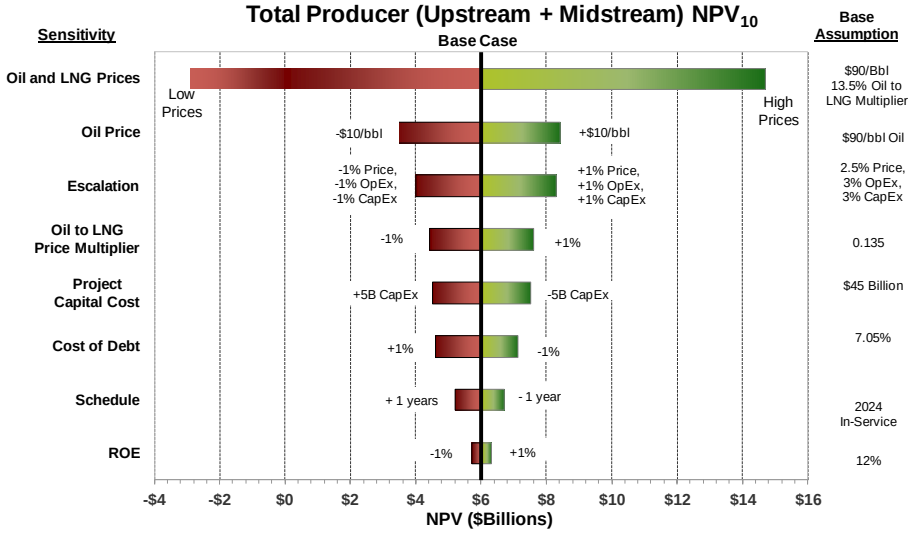
- Overview of key risks that could impact the AKLNG Project stakeholders and risk management
- Assessment of alternatives for financial, equity participation by State in AKLNG Project

THERE ARE VARIOUS UNCERTAINTIES RELATED TO THE AKLNG PROJECT THAT COULD IMPACT THE ECONOMIC BENEFITS TO THE DIFFERENT STAKEHOLDERS



RISK ANALYSIS - PRICE AND CAPITAL COST RELATED UNCERTAINTIES EMERGE AS THE KEY FACTORS DRIVING THE PROJECT ECONOMICS





The State's value from the project could be ~50% lower or ~90% higher than the baseline projections with price changes

Similarly, the Producers' value from the project could go negative or be ~150% higher than the baseline projections with price changes

[1] Base Price = $90/bbl oil price in $2013; LNG Price per MMBtu = 0.135*Oil Price + $1
High Price = $120/bbl oil price in $2013; LNG Price per MMBtu = 0.15*Oil Price + $1
Low Price = $60/bbl oil price in $2013; Henry Hub Price = $4/MMBtu in $2013; LNG Price per MMBtu = HH+$6
[2] The escalation sensitivity captures a variation in the assumption related to annual change in capital costs, operating costs and oil and gas prices

RISK ALLOCATION AND MANAGEMENT

Cases of risk allocation

- Cost and time **risks in project execution** depend on the nature and extent of project organization apart from market factors
  - Of the **recent LNG projects**, most have a **single operator** for upstream, transport and liquefaction
  - **Integrated project** case has been successful in **high cost project execution** (Snøhvit case example)

Cases of risk mitigation

- **Market risk management** is executed by LNG projects in two ways:
  - **Pre-FID commitments**: Majority of project volumes are contracted before FID to ensure market. Example: Gorgon, APLNG
  - **End user participation**: Several projects have equity stake of end buyers providing ensured-market for corresponding equity volumes. Example: Tangguh, Sakhalin II

State participation and implications

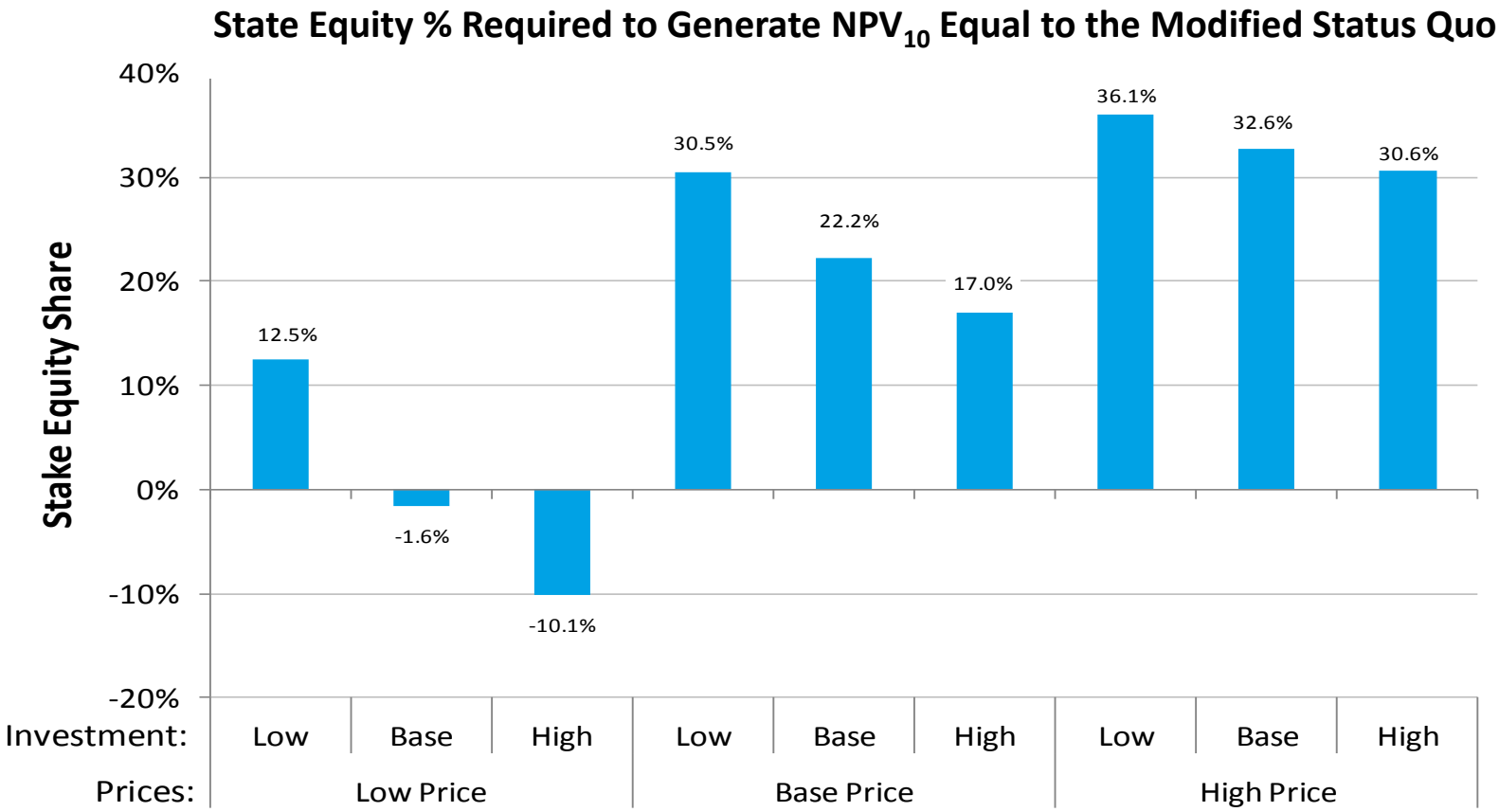
- Where the **Government participates** in LNG projects is usually **via NOCs** with LNG majors who bring in LNG project experience
- **State's equity participation** in the project **can allow** state to capture an **upside** in prices but exposes it **further** to a **down-side**
- Examples: Snøhvit, Yemen LNG, Angola LNG

SOURCE: Team Analysis

EQUITY PARTICIPATION BY THE STATE OF ALASKA COULD HAVE TANGIBLE BENEFITS FOR THE PROJECT AS WELL AS THE STATE

- To the extent that the State transfers value to the Producers through a modification of fiscal terms as an incentive for the AKLNG project, **obtaining an equity interest in the project in exchange for that transfer of value** is more beneficial to the State than a simple reduction in fiscal take
- Greater **alignment of economic interests** between the State and Producers
- State ownership **lowers the upfront capital cost** to Producers creating potential economic uplift
- Allows for **TCPL equity participation** and operation of the pipeline and GTP
- Equity in all phases could facilitate greater **transparency in the AKLNG Project**
- Allows State to influence **access for third parties** in the most critical potential bottlenecks of the project – pipeline and marine terminal
- Equity investment in the supply chain, while allowing SOA a seat at the table, **does not necessarily provide for a vote in the decision making process**
- **Joint Venture Agreement structuring** is critical

STATE EQUITY PARTICIPATION BETWEEN 20% AND 30% OFFERS NPV_{10} AT OR ABOVE THE MODIFIED STATUS QUO LEVELS FOR THE STATE



* SB21/MAPA fiscal structure as currently applicable does not include production credits for gas. This analysis assumes a modified status quo wherein the production credits are extended to reflect a $5/BOE credit for gas, similar to the credit extended to new oil production

The level of State equity investment required to equal total state NPV_{10} under status quo varies with market conditions

SOA EQUITY INVESTMENT IN AKLNG CREATES RISK EXPOSURES THAT NEED TO BE CONSIDERED AND MANAGED

- **Cost overruns and cash calls above appropriation level**
- **As an equity owner, the State assumes all Force Majeure risk throughout the GTP, pipeline and LNG terminal**
- **State has no control over upstream operations and volumes produced by the Producers**
  - Could have excess or insufficient capacity relative to volumes produced
  - Balancing production volumes and volumes through the supply chain on a short-term and long-term basis
- **If the State assigns its equity position to a third party such as TransCanada and contracts for capacity with this third-party, the State will likely have to provide credit support to the entity that would assume the state's equity share in the midstream through long-term commitments for capacity**
- **State would be responsible for all demand charge obligations throughout the life of the contract regardless of gas supply availability and market conditions**
  - Possible that revenues earned on LNG sales would not offset costs of treating, transport and liquefaction resulting in negative cash flows to the State

SUMMARY: RISK ALLOCATION & COMMERCIAL STRUCTURE

1. AKLNG faces various risks that could affect the economic benefits; prices and capital cost are key
2. Direct equity participation by the State can offer benefits to all parties involved in the project; accompanying risk profile changes should be managed
3. Various commercial terms related to equity participation will determine whether the State can achieve its transparency and access objectives

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