



25th world gas conference
"Gas: Sustaining Future Global Growth"

Exports of LNG from North America

Commercial, Legal and Regulatory
Considerations in Launching a New LNG
Export Project

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June 2012

Kuala Lumpur



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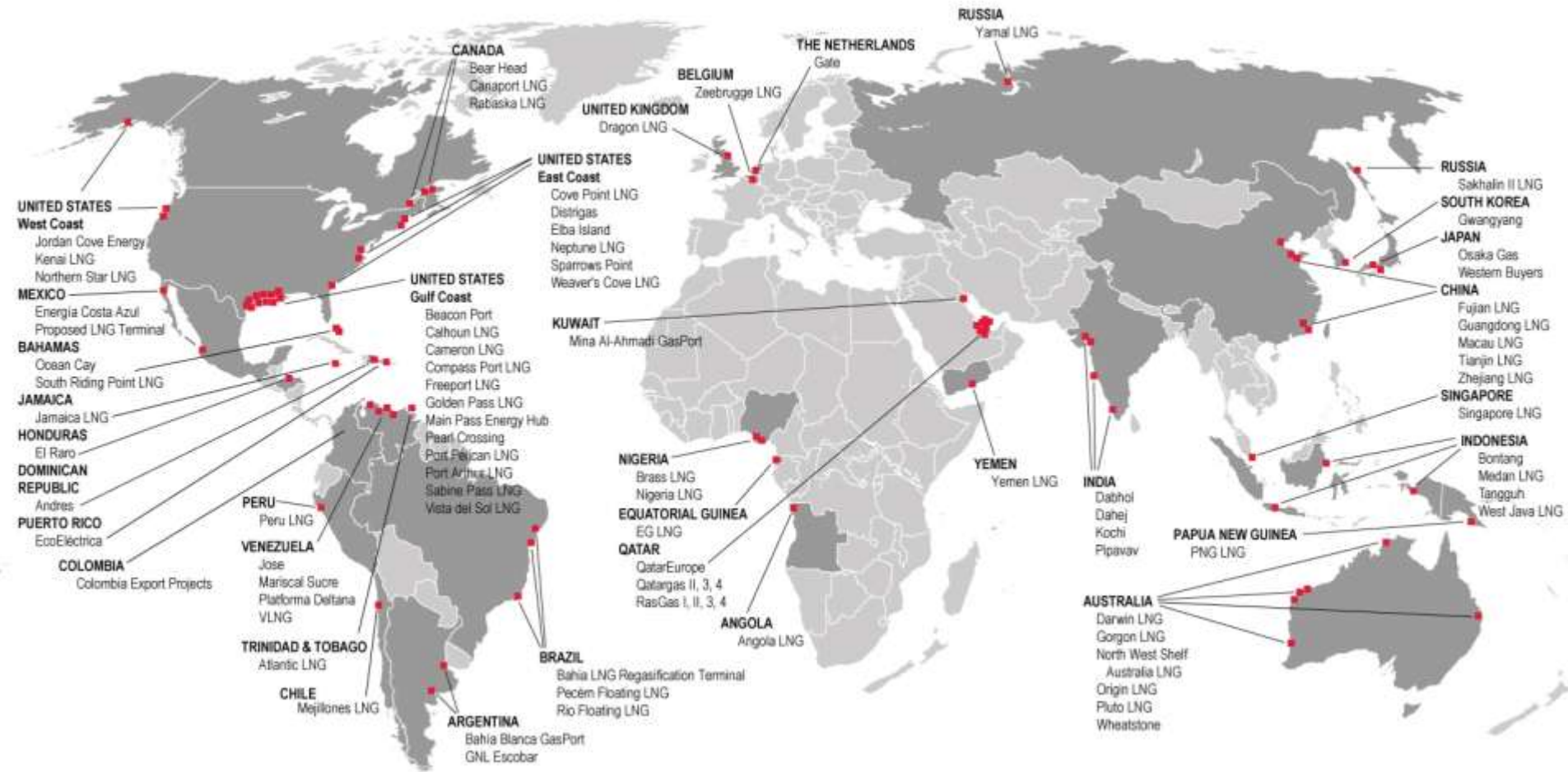


■ Recent LNG Deals:

- Developing new LNG liquefaction projects:
 - Sabine Pass LNG Wheatstone LNG Yamal LNG
 - Peru LNG Darwin LNG Qatargas 3
 - Tangguh LNG Equatorial Guinea Angola LNG
 - Brass LNG Sakhalin II Pacific Rubiales
- Developing the first U.S. LNG export project in 40 years
- Securing the first LNG supply into new terminals in Brazil, Chile, China, Dominican Republic, E.U., India, Indonesia, Mexico, Puerto Rico, & U.S.
- Negotiating some \$500 Billion in LNG sales agreements
- Chartering 73 LNG vessels (~20% of world fleet) & 5 FSRUs
- Co-Chair of industry-wide effort for the recently completed uniform LNG Master Sales Contract

Presenter Introduction

Experience with over 75 LNG Projects



1. North American Gas and LNG Market

2. Common Project Structures in an LNG Export Project

- Integrated Project Model
- Project Company (or Merchant) Model
- Tolling Model

3. Operational and Commercial Issues Associated with Creating a Bi-Directional Facility

4. LNG Regulatory Regime

- FERC authorization
- DOE Export authorization
- Policy Issues

5. Final Remarks

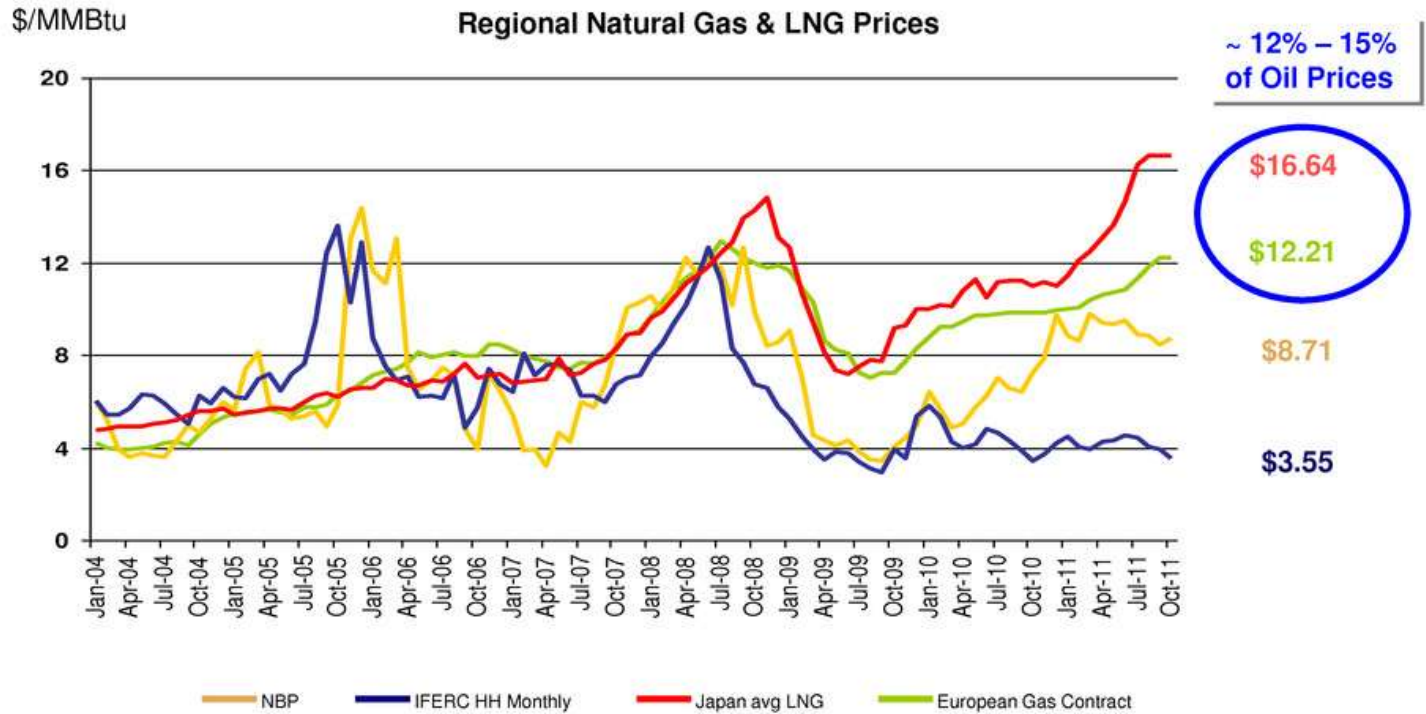
North American Gas and LNG Market



- **North American LNG Import Market Failed to Materialize**
 - Between 2005 and 2009, utilization rate for LNG import terminals was only 21.4%.
 - United States now seen as a market of last resort for LNG imports.
- **Development of Unconventional Gas led to North America having an estimated 482 Trillion Cubic Feet of Gas Reserves -- about 100 years supply**
- **North American Natural Gas Prices and Natural Gas Prices Diverged from Prices in Europe and Asia**
 - Divergence from oil-linked prices is particularly profound.

Attractive Oil Linked Market Prices

Spread between oil linked and U.S. natural gas prices ~ \$9–\$13/MMBtu



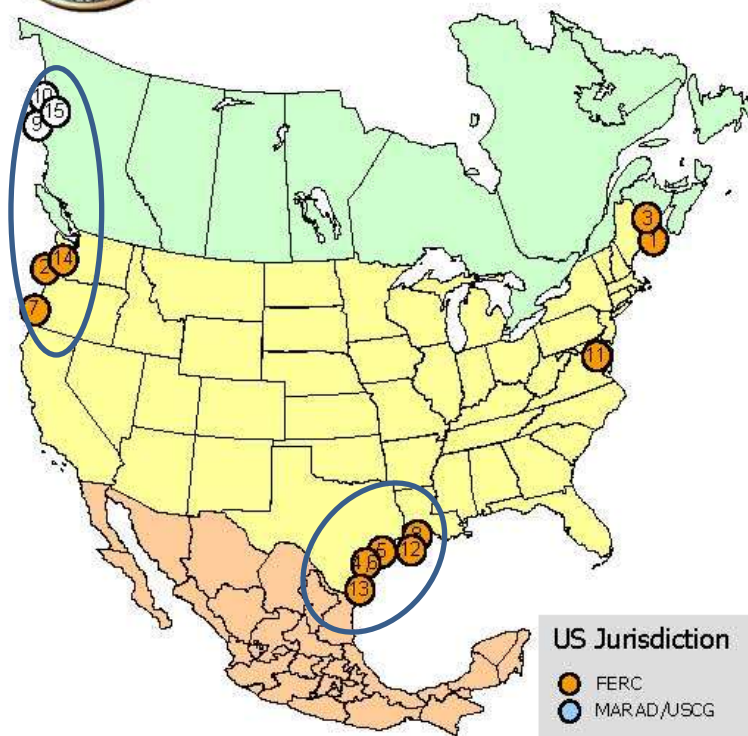
Source: PIRA, Platts



- **Project Developers have Responded to Opportunities Presented by Abundant Gas Supply and Relatively Low Prices**
 - Plans to restructure and expand use of LNG terminals to accommodate liquefaction and LNG export projects.
 - Developers have sought approval for numerous proposed LNG export projects in North America.



North American LNG Import/Export Terminals *Proposed/Potential*



Import Terminal

PROPOSED TO FERC

1. **Robbinston, ME:** 0.5 Bcfd (Kestrel Energy - Downeast LNG)
2. **Astoria, OR:** 1.5 Bcfd (Oregon LNG)
3. **Calais, ME:** 1.2 Bcfd (BP Consulting LLC)
4. **Corpus Christi, TX:** 0.4 Bcfd (Cheniere - Corpus Christi LNG)

Export Terminal

PROPOSED TO FERC

5. **Freeport, TX:** 1.8 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction)
6. **Corpus Christi, TX:** 1.8 Bcfd (Cheniere - Corpus Christi LNG)
7. **Coos Bay, OR:** 0.9 Bcfd (Jordan Cove Energy Project)
8. **Lake Charles, LA:** 2.4 Bcfd (Southern Union - Trunkline LNG)

PROPOSED CANADIAN SITES IDENTIFIED BY PROJECT SPONSORS

9. **Kitimat, BC:** 0.7 Bcfd (Apache Canada Ltd.)
10. **Douglas Island, BC:** 0.25 Bcfd (BC LNG Export Cooperative)

POTENTIAL U.S. SITES IDENTIFIED BY PROJECT SPONSORS

11. **Cove Point, MD:** 1.0 Bcfd (Dominion - Cove Point LNG)
12. **Hackberry, LA:** 1.7 Bcfd (Sempra - Cameron LNG)
13. **Brownsville, TX:** 2.8 Bcfd (Gulf Coast LNG Export)
14. **Astoria, OR:** 1.25 Bcfd (Oregon LNG)

POTENTIAL CANADIAN SITES IDENTIFIED BY PROJECT SPONSORS

15. **Prince Rupert Island, BC:** 1.0 Bcfd (Shell Canada)

As of April 26, 2012

Office of Energy Projects

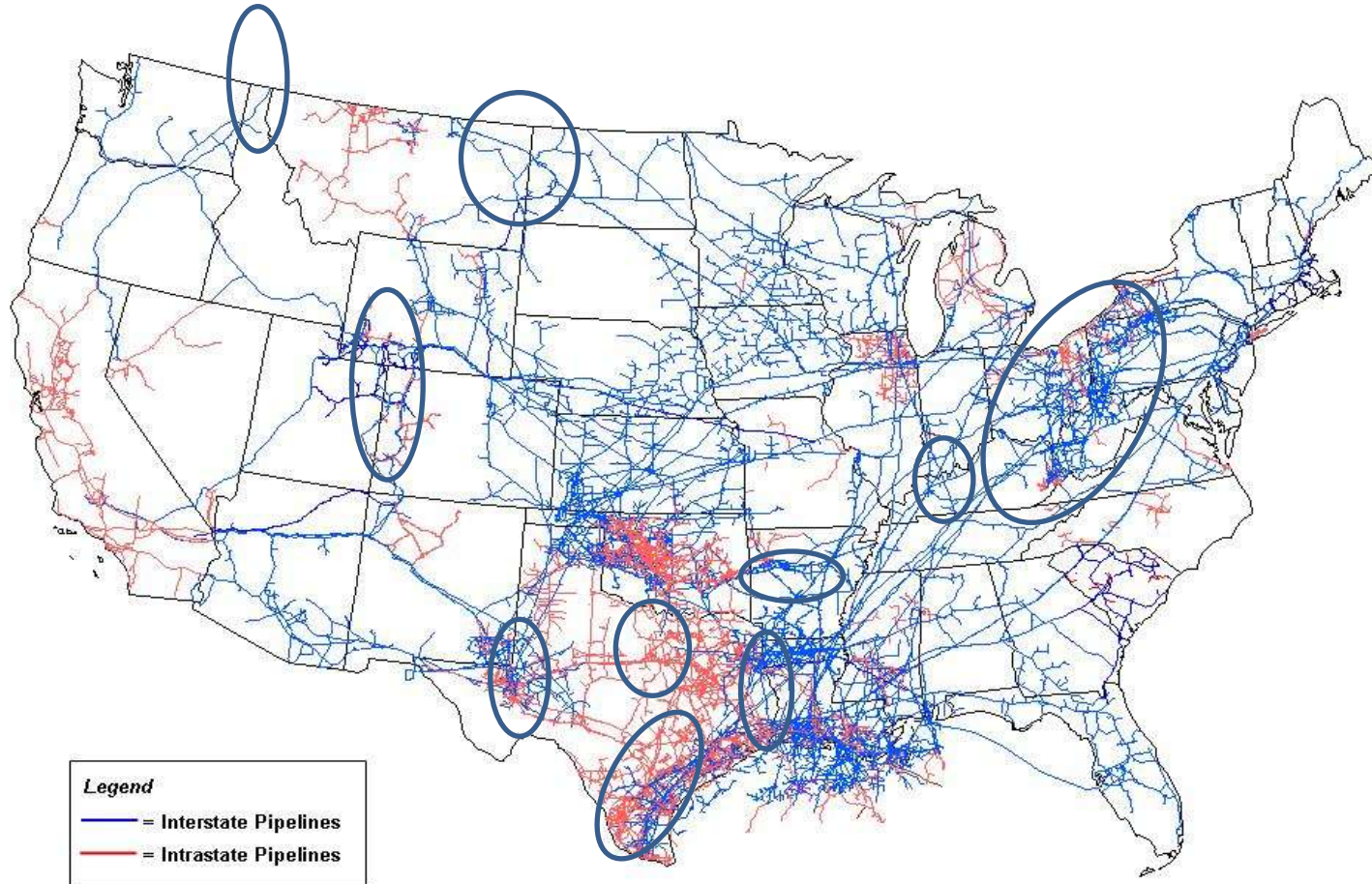
- **Existing Infrastructure Supports Development of Proposed LNG Export Projects**
 - Extensive natural gas infrastructure already exists in North America.
 - East and Gulf Coast: existing facilities already have pipelines connecting them to the natural gas transportation grid.
 - West Coast: planned export projects can incorporate existing pipeline infrastructure to access stranded sources.

North American Gas and LNG Market



Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
 Updated: May 9, 2011

■ US Natural Gas Pipeline Network, 2009



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

- **North America Commercial and Regulatory Frameworks Are Well-Established, Facilitating Gas Purchases**
 - Well-established commercial natural gas market:
 - Standard model contracts are routinely used (i.e., NAESB model contract).
 - Financial hedging is available through the New York Mercantile Exchange or the Intercontinental Exchange.
 - Robust gas market with a larger number of participants reduces market transaction costs.
 - Well-established regulatory regime in place:
 - Regulatory process is transparent.
 - Even though faced with novel issues, many developers seem comfortable with process.

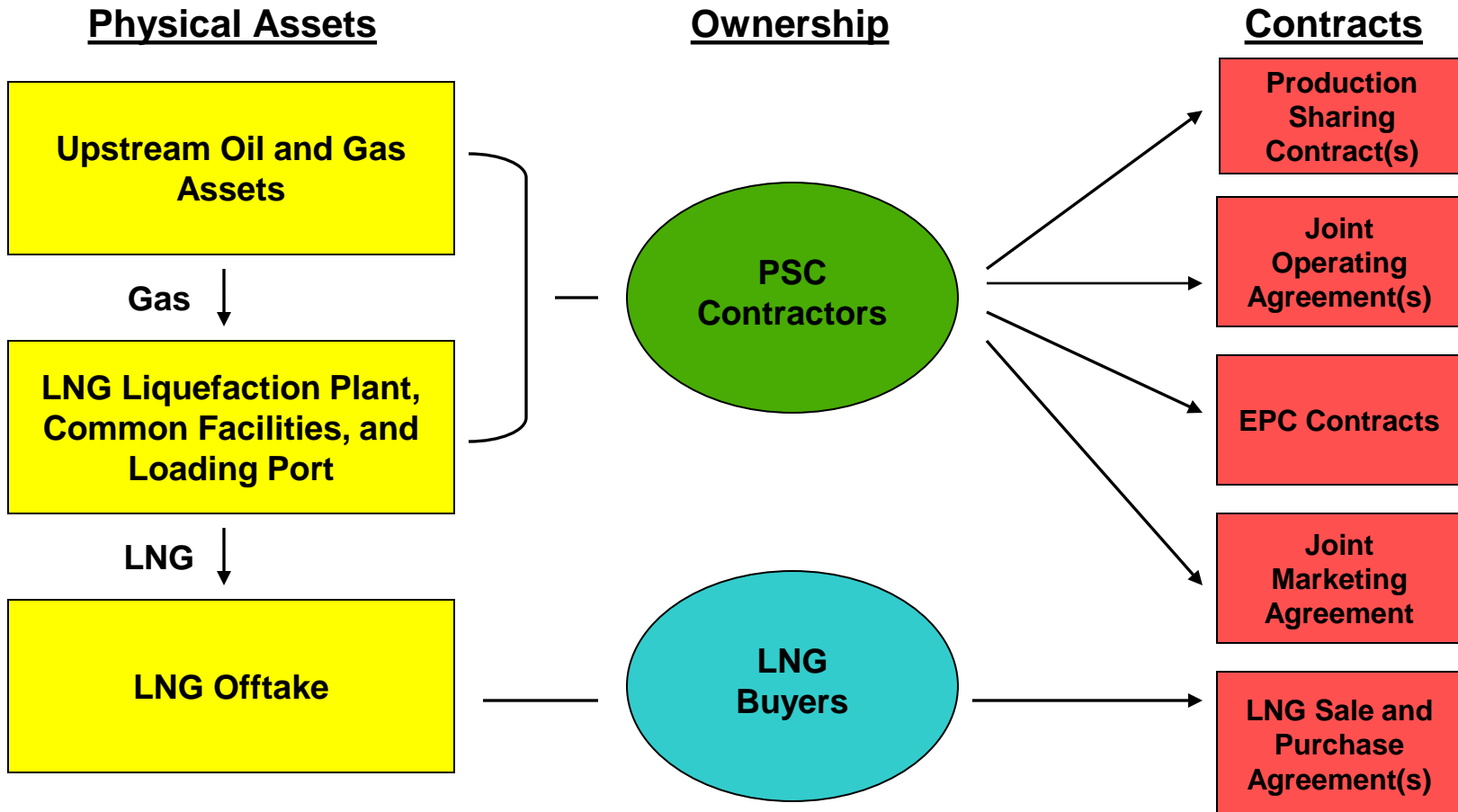
Common Project Structures – LNG Export Projects



Common Project Structures – LNG Export Projects

- Three primary project structures for LNG liquefaction projects:
 - Integrated Project Model: Participants share a unity of interest in the LNG value chain.
 - Project Company (or Merchant) Model: Project company that owns the liquefaction facility purchases natural gas as feedstock from a seller and resells LNG to off takers.
 - Tolling Model: LNG plant does not take title to natural gas feedstock or LNG produced at the plant, but provides liquefaction and processing services.

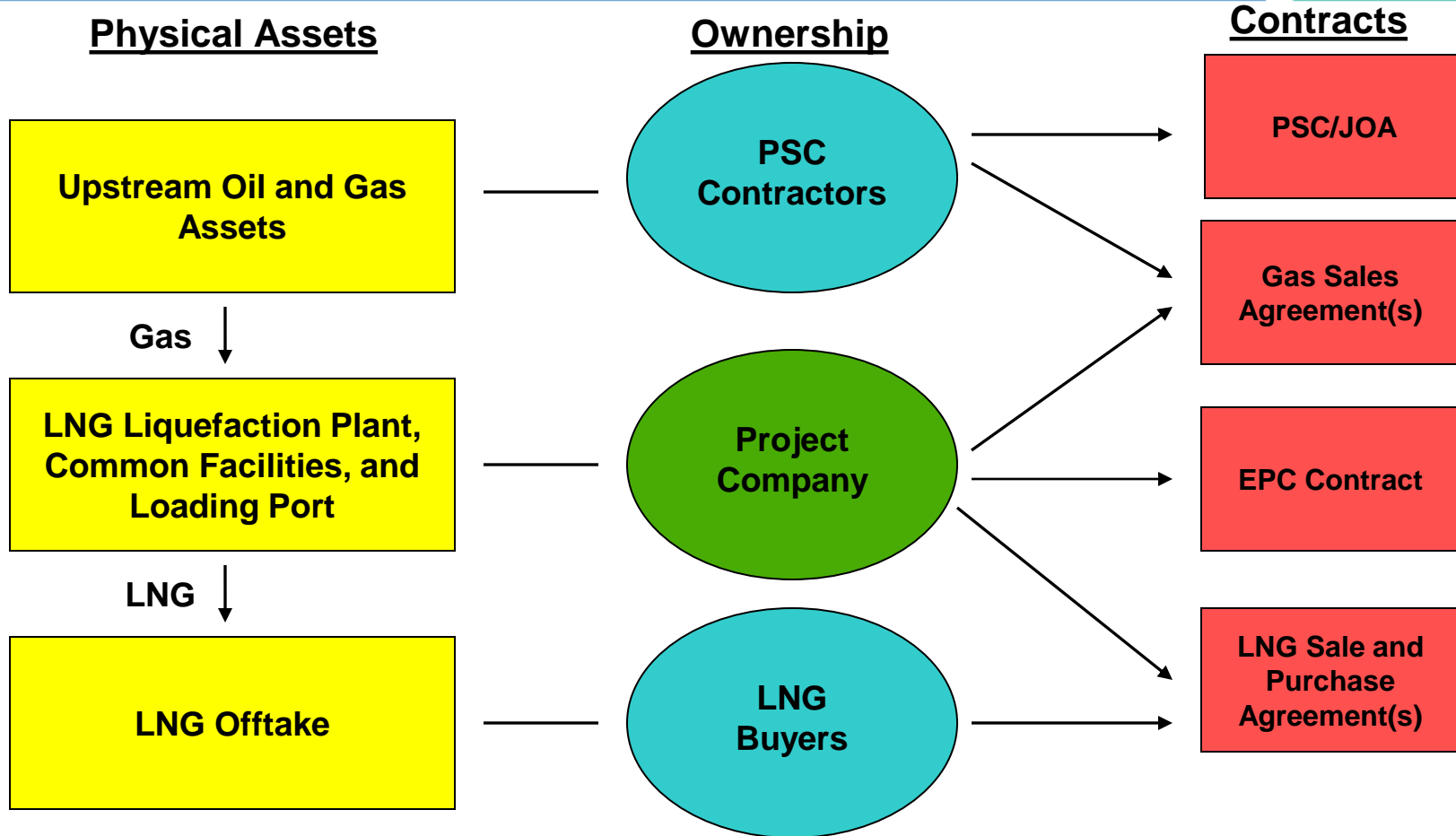
Common Project Structures – Integrated Upstream Structure



Common Project Structures – Integrated Project Structure

- Benefits:
 - Alignment of interest among PSC Contractors.
 - Ability to share costs along entire LNG supply chain.
 - May have tax and accounting benefits (i.e., use early losses from LNG plant construction to offset any natural gas liquids production).
 - Promotes financeability by reducing cross-default risk.
 - Each natural gas supplier can control its own marketing.
- Risks:
 - Requires identical ownership upstream and downstream (structuring with TrainCos can allow future trains with separate ownership).

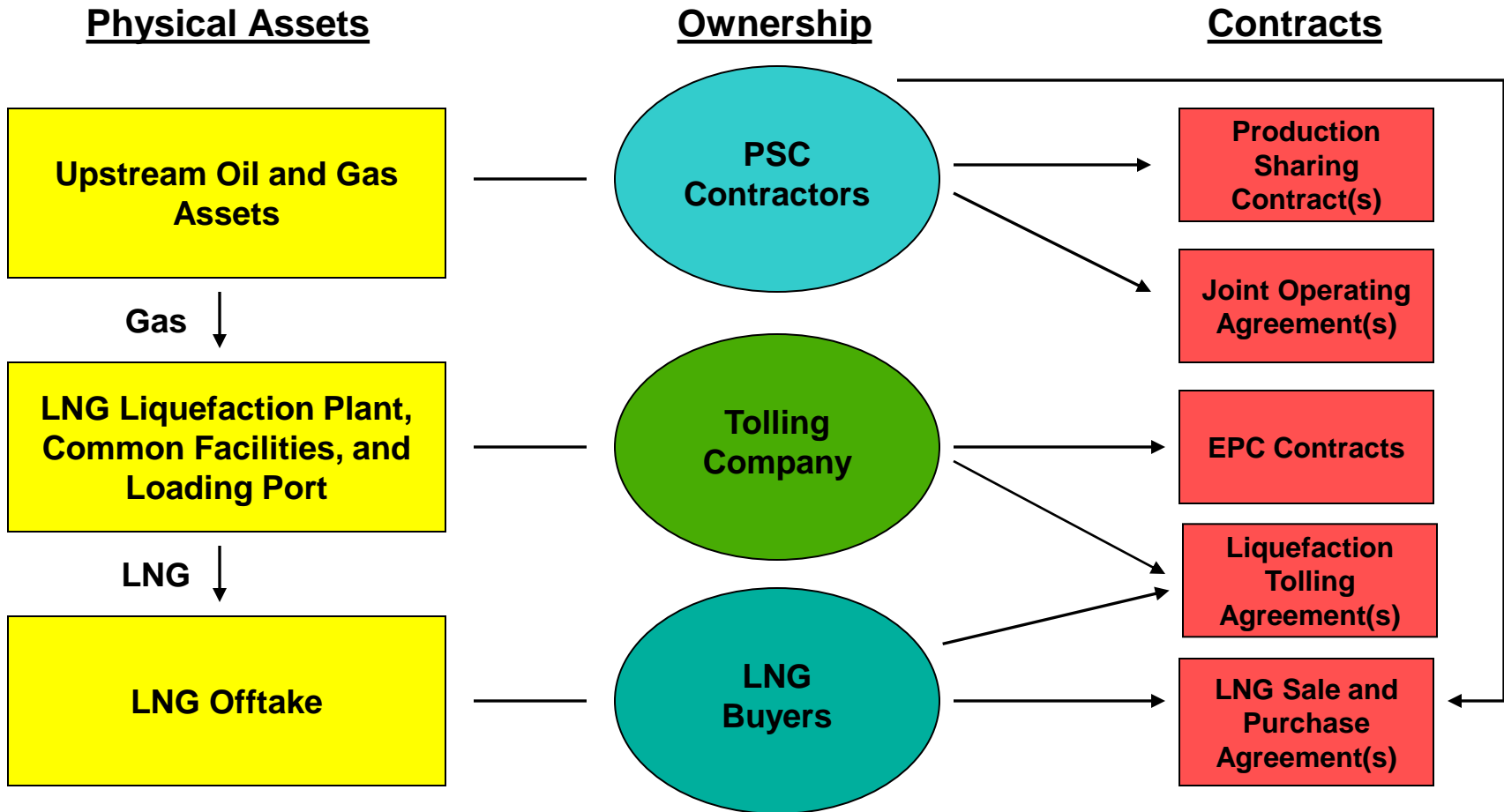
Common Project Structures – Project Company Structure



Common Project Structures – Project Company Structure

- Benefits:
 - Allows Project Co. to generate potentially higher returns based on value of LNG/gas price spread.
 - Maximizes flexibility in ownership of various assets.
 - Provides an opportunity when upstream owners are unwilling to invest in liquefaction facility.
- Risks:
 - Project Co. assumes market and counterparty default risks both upstream and downstream.
 - Requires Project Co. to obtain finance for plant construction based on LNG sales and project revenues.

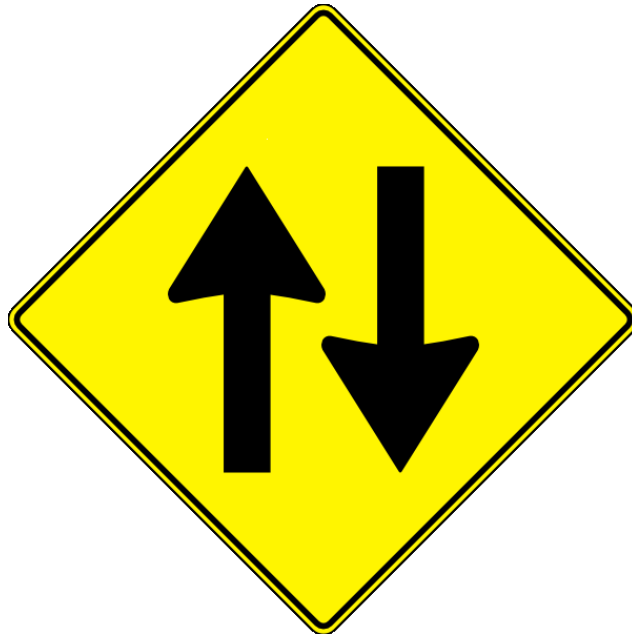
Common Project Structures – Tolling Structure



Common Project Structures – Tolling Structure

- Benefits:
 - Reduce/avoid exposure to commodity price and marketing risks.
 - Does not require that all upstream parties be owners of LNG plant.
 - Third-party ownership of gas/LNG throughout chain may reduce some taxes for LNG plant owners.
 - Reduced risk can help project financing of LNG plant.
- Risks:
 - Sponsors do not profit from LNG sales.
 - If the tolling party is an affiliate of sponsor, security and cross-default issues can affect financing.

Operational and Commercial Issues Associated with Creating a Bi-Directional LNG Facility



Operational and Commercial Issues Associated with Creating a Bi-Directional LNG Facility

- **Considerations upon Reconfiguring an LNG import Project as a Bi-Directional Facility**
 - Effects on existing customers
 - Concerns of existing capacity holders
 - Effects on the associated pipeline to accommodate both imports and exports
 - Additional complexity of operations

■ Tools Available to Manage Limited LNG Capacity

- Terminal Services Agreement ("TSA")
 - Bilateral agreement between the owner of the LNG terminal and the capacity holder.
 - TSA provisions concern customer capacity, tanker scheduling, and Gas/LNG deliveries.
- Operational Coordination Agreements ("OCAs")
 - Multilateral agreement among capacity holders and terminal operator.
 - Establishes rights and obligations with respect to the capacity of the LNG terminal.
- Other arrangements (e.g., Pooling Agreements)

LNG Regulatory Regime



■ Regulatory Regime Overview

- Satisfying regulatory requirements for a new terminal may require significant time and resources.
- In the United States, Section 3 of the Natural Gas Act ("NGA") governs construction of export facilities and export of LNG.
 - Primary regulatory authority under NGA:
 - FERC: LNG facility siting authority.
 - Department of Energy ("DOE"): Approval for exports of the commodity.
- Pipelines governed by Section 7 of the NGA.
 - FERC: Regulation of pipelines.

■ DOE Export Authorization

- DOE required to authorize the export unless it finds the proposed exportation "will not be consistent with the public interest."
- Exports to a country that has entered into a Free Trade Agreement ("FTA") with the United States deemed to be within the public interest.
- Presently, only one license granted by DOE for LNG export to non-FTA countries.
 - Granted to Cheniere Energy.
 - Eight (8) applications pending for non-FTA export licenses.

■ Policy Issue - DOE Moratorium and Market Studies

- Since Cheniere's authorization, DOE issued moratorium on export authorizations pending examination of "impact on consumption, the economy, gross domestic product and balance of trade" of domestic LNG.
- DOE commissioned two studies to solidify its policy position before it authorizes any further export projects:
 - Study 1: Assessed natural gas price effects on end-user prices. Released January 2012.
 - Study 2: Assess the broad economic effects of increased exports. Release expected after the November 2012 election.

Final Remarks

- **Abundant LNG Supply and Relatively Low Prices Create Opportunities for North American LNG**
- **LNG Export Project Checklist**
 - Whether investing in a new terminal, purchasing capacity, or purchasing LNG: carefully consider your risk/reward posture, and that of your partners.
 - Make sure the appropriate structure is selected from the beginning; the need to change later can increase costs, prevent financing and delay the project.
 - Align contract terms to reflect structure, comply with licenses, and promote project commercial and financial success.

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