

# Unconventional LNG: Monetizing North American Gas Exports

The momentum toward LNG exports from North America highlights the radical change in North America's gas fortunes over the past decade. A global market is emerging for North American LNG exports. But where? At what price? Is Asia the primary target, or do other areas provide more lucrative targets, with better netbacks at lower prices? How does Europe fit into this equation? Is North American LNG a better alternative for buyers than African or Mideast suppliers? The answers to these questions will affect the relationship among gas markets around the world. **PIRA Energy Group assesses the impact of these forces in its newly released multi-client study, UNCONVENTIONAL LNG: MONETIZING NORTH AMERICAN GAS EXPORTS.**

The study provides detailed emphasis on:

- **The role of gas demand in destination markets.** Not all end-users are created equal. Even within a single country, many pricing points can occur, and understanding where these prices reside allows for a better comprehension of LNG marketing and trading options. Buyers seeking alternatives to oil or coal have a different pricing point than buyers faced with industrial or R/C growth.
- **The ability of North America LNG exports to compete with other gas suppliers.** Many buyers around the world have multiple supply options, which include not only LNG but also pipeline gas. While distance to market is an issue, it is not the only issue. How may North American LNG export projects position themselves?
- **Gas pricing issues that will drive future trade, including spot prices, price equivalency, relative gas pricing, and netbacks.** Although buyer-seller relationships still influence directions of LNG spot trades, all parties are quickly embracing the market's rising transparency and liquidity; therefore, pricing will become the dominant force behind cargo movements. At the moment, many buyers vastly overpay for spot supplies from current sources. Avoiding this mistake in the future will involve understanding relative gas pricing around the world.

## STUDY BACKGROUND

Vast new supplies of pipeline gas and LNG are emerging all over the world, and North American gas producers are faced with a highly competitive environment if LNG exports are going to succeed in a sustainable way. North American LNG marketers will face questions with regard to where the best value can be achieved. Where will the demand be? What markets will provide the highest netbacks at the lowest absolute prices? What is the bearable price in different markets and which end-use sectors will provide the engine for growth? Is Asia the likely destination, or are other destinations better suited for value?

It was only a short time ago that North America was looking at a vast import bill. Then, unconventional gas development took off and radically reversed the fortunes of all parties. The idea of turning North America into an LNG exporter started in British Columbia, where stranded reserves quickly became a problem. The idea then spread to the U.S. Gulf Coast, where stranded assets — built to manage a wave of LNG imports that never came — came looking for an alternative use. Both regions are reflective of a broader trend in North America, where overall demand growth is having trouble keeping up with a rapidly growing proven gas reserve base, which now stands at an all-time high and shows no signs of slowing. With demand growth seemingly constrained by a lack of end-users — even at prices that are by far the lowest in the OECD — gas

producers and marketers have found common ground with owners of underutilized LNG infrastructure in a quest to find markets overseas for an increasing amount of stranded gas.

## STUDY OUTLINE

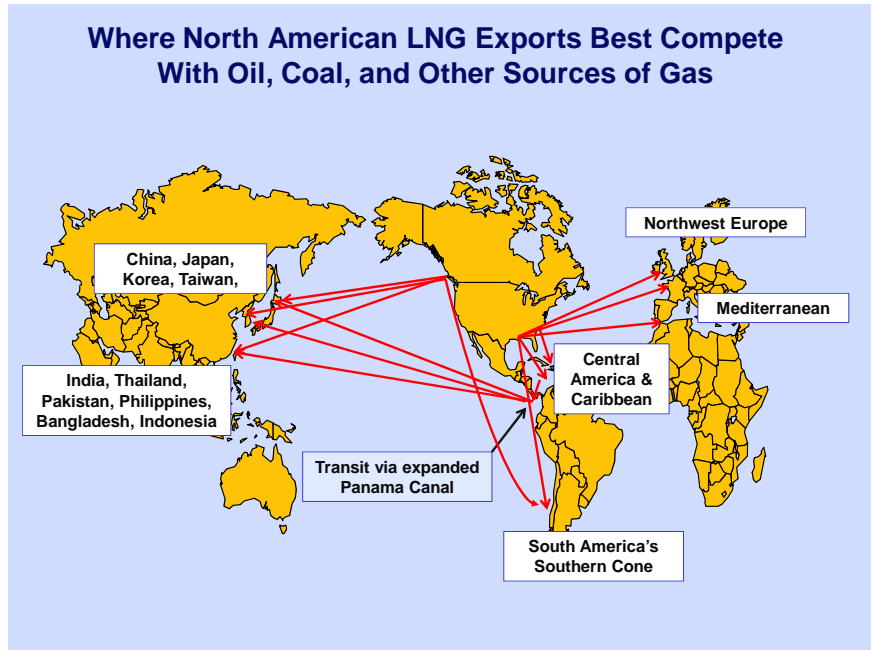
**A key deliverable of the multi-client study (see list of deliverables below) is a detailed written report. Its outline is as follows:**

- 1) **Overview of North American LNG Supplies in the Global Supply Context**
  - a) Implications of North America's current market dynamic. Unlike other exporters, North American export projects may not have dedicated feedgas, pipelines, or perhaps even LNG storage. How significant are these obstacles? How much will they affect project development?
    - i. Possible project structures.
    - ii. Types of participants.
  - b) Proposed LNG export projects and potential future additions.
  - c) North American LNG's ideal customer profile versus preferences of buyers.
- 2) **Assessing Potential Markets<sup>1</sup> for North American LNG Exports**
  - a) Markets and incremental demand to 2025.
    - i. Existing major LNG markets by major consuming sector (e.g. residential/commercial, electricity generation, and industrial).
      - Asia, Europe, the Americas, and the Middle East.
    - ii. Future LNG markets and incentives to switch to LNG, by sector.
      - New gas markets in Asia, the Caribbean, Latin America, and Africa.
  - b) Buyer preferences
    - i. Seasonality.
    - ii. Timing.
    - iii. Security of supply, including acceptable levels of political risks and project reliability.
    - iv. Project participation, including ownership in export facilities and upstream gas resources.
- 3) **Oil Substitution**
  - a) Economics and incentives.
  - b) Oil-linked LNG markets
    - i. Existing markets.
    - ii. New, emerging, and the potential of untapped markets.
  - c) History of and prognosis for future oil and LNG price linkage and de-linkage.
- 4) **LNG and North American Gas Pricing**
  - a) Henry Hub and AECO price outlook to 2025, and risks to PIRA's Reference Case.
  - b) Conditions that lead to, and prerequisites to earn, LNG price premium.

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<sup>1</sup> Geographical areas covered include Asia (e.g. China, India, Japan, South Korea, the Philippines, Singapore, Taiwan, Thailand, Vietnam, etc.), Europe (e.g. Belgium, France, Germany, Italy, the Netherlands, Poland, Portugal, Spain, Turkey, the U.K., etc.), selected islands of the Caribbean (e.g. the Dominican Republic, Jamaica, and Puerto Rico), Central and South America (e.g. Argentina, Brazil, Chile, Honduras, Panama, and Uruguay, etc.), the Middle East and Africa.

- c) Interplay between spot and long-term markets and the positives and negatives to North American LNG.
- d) Spot and long-term LNG pricing. Bearable price and breakeven spot price trends and forecasts to 2025, for:
  - Asia
  - Europe
  - The Caribbean
  - The Middle East
- e) Transportation costs and netbacks to North America, by export regions.
  - From Asia
  - From the Middle East
  - From Europe
  - From Africa
  - From the Caribbean
  - From the Americas



**WHO WILL BENEFIT FROM THIS STUDY?**

LNG exports from North America will potentially play a significant role in establishing global gas prices around the world. As the world's first spot-based source of LNG, the rules of the game on trading will be re-written by North America, creating a wide range of gas marketing opportunities for sellers and a potentially enormous uptick in supply options for buyers given the number of hedgeable free-on-board trading options that will emerge. Inevitably, market participants will end up on either side of multi-million-dollar gains or losses. **UNCONVENTIONAL LNG: MONETIZING NORTH AMERICAN GAS EXPORTS** will help companies keep ahead of the competition through a better understanding of the future interplay among potential LNG markets. They will receive valuable insight into demand and pricing trends that will affect where LNG *should* flow, which is not necessarily the same thing as where it *will* flow.

**The following market participants will all benefit from this study:**

- **North American Gas Producers** know an opportunity when they see it, and LNG exports offer an outlet that provides much more marketing flexibility. With some North American terminals offering open access to liquefaction, gas producers must now look beyond regional U.S., Canadian, and Mexican gas pipeline markets, with an eye on end-users from the Caribbean to Asia.
- **Gas/LNG Marketers** need to understand the interplay between potential North American LNG exports and other forms of gas-on-gas competition. Today's market for re-exported cargos alone shows that U.S. and Mexican cargos are ending up in South America, Asia, and Europe. Marketers will want to understand, for example, the bearable price for industry in Texas versus potential buyers in Chile, Jamaica, and China.
- **Trading Companies** see North American LNG exports as a starting point for entering the lucrative world of spot LNG trade, as price differentials around the world are as wide as \$15 per MMBtu.

Traders are beginning to secure large sums of LNG and capture the price discrepancies among the world's regional markets, but the club is still largely a closed one. North American LNG exports, particularly from the U.S. Gulf Coast, would blow the doors wide open in terms of securing supply.

- **Shipping Companies** know that an open-source LNG terminal in North America will create an explosion in demand for spot charters looking to secure FOB volumes. North American LNG will bring an eruption in LNG trade that will be heavily influenced by seasonal demand and access to U.S. and European storage.
- **Electric Utilities and Other End-Users** constantly consider how changing gas price dynamics will influence service choices and future capacity decisions. Suddenly, what happens to demand in Spain now matters in Houston, and what happens in Tokyo can affect gas prices in the U.K. Long-haul Qatari LNG is backing out short-haul Norwegian volumes in the U.K. The study will make end-users better equipped to adapt to new offers from North American suppliers, as they make more informed choices regarding gas origination.
- **Financial Institutions** will benefit from a world of new hedging opportunities that will come from a growing and liquid LNG market, in which Henry Hub and NBP will play a direct role as either a benchmark or a pricing point. The scope of new LNG export projects from North America is vast and financiers will need to understand the value of potential LNG exports to both the owners of the infrastructure and others that use it on an ad hoc or tolling basis.

## WHAT DO STUDY SUBSCRIBERS RECEIVE?

Companies purchasing the study will get three users entitled to each of the following deliverables (there are licensing options to add extra users):



**ONLINE DATABASE.** Historical data back to 2005 and forecasts through 2025 in Excel spreadsheets for:

1. Country-level demand by sector breakdown
2. Gas pricing and transport cost figures
3. Existing and future export, transport, and import infrastructure components
4. Gas price forecast by region for North/South America, Europe, Mideast, and Asia



**WRITTEN REPORT.** A detailed written report that spells out the findings of the study, the bases underlying the Reference Case results, and a discussion of key uncertainties that impact the major findings and possible alternative scenarios.



**WORKSHOP (June 2011).** A live presentation, conducted online, will present the key results of the study, discuss the market implications of these findings, and offer the ability to question the study's authors.

**WORKSHOP OPTION.** For an additional fee, study buyers may choose to have a private (online or on-site) briefing of the study's findings. Such an option allows for a more thorough dialog with the study authors as well as some customization of the presentation. Arrangements (location, date, etc.) are made on a case-by-case basis, which will determine the cost of the option. Contact your PIRA sales representative if you are interested.



## FEES AND OPTIONS

**UNCONVENTIONAL LNG: MONETIZING NORTH AMERICAN GAS EXPORTS** can be purchased by both PIRA retainer clients as well as non-clients. **Existing PIRA retainer clients receive a reduced price. Companies seeking a private briefing should contact their PIRA sales representative for a price quote.**

For detailed service pricing options, see the [Acceptance Form on page 7](#).

## ABOUT PIRA ENERGY GROUP

The PIRA Energy Group, founded in 1976, is an international energy consulting firm, offering Retainer Client Services as well as customized consulting on a broad range of subjects in international oil, natural gas (and LNG), coal, electricity, biofuels, freight markets, and related environmental issues. PIRA provides evaluation of key U.S. and international energy issues that impact the behavior and performance of the industry and its various markets and sectors. Currently, more than 500 companies worldwide retain PIRA, including international and national integrated oil and gas companies, independent producers, refiners, marketers, oil and gas pipelines, electric and gas utilities, industrials, trading companies, financial institutions, and government agencies.

## NORTH AMERICAN LNG EXPORTS STUDY TEAM

**Mickey Kwong** (Director, International Gas) is responsible for analyzing global gas pricing and market fundamentals, including business structures, demand, production, unconventional gas, and imports, and he contributes to all of the International Gas Group's reports. He developed and maintains PIRA's LNG spot price calculator. In 2008, he co-authored PIRA's *Globalization of Natural Gas* multi-client study. Mickey has also authored single-client special studies on topics ranging from LNG procurement strategy, business models, unconventional gas in China, to long-term international gas market developments. From 1998 to 2006, he was an LNG/natural gas consultant at Poten & Partners, where he advised clients from the Americas, Africa, Asia, and Europe on pricing, demand, and price risk management. Mickey holds a B.B.A. in finance from Baruch College.

**Ira B. Joseph** (Executive Director, International Gas) manages PIRA's European Energy Service, which includes distinct services on European natural gas and European electricity, as well as PIRA's Global LNG Service. Ira is co-author of PIRA's 2008 *Globalization of Gas* study as well as a multi-client study on Atlantic Basin LNG markets in 2001. He also provides quarterly and annual contributions on International Gas to PIRA's Scenario Planning Service. Ira joined PIRA in 1999 after working at Energy Intelligence Group for over a decade as Editor-in-Chief of *World Gas Intelligence* and Senior Editor of *Petroleum Intelligence Weekly*. With 22 years in the energy business, he has authored several books on natural gas and crude oil marketing, including EIG's *International Crude Oil Market Handbook* and *World Gas Handbook*, as well as several articles on natural gas swaps and gas marketing strategy. Ira holds an M.A. in international economics from Johns Hopkins School of Advanced International Studies and a B.A. from the University of Michigan.

**Richard M. Redash** (Managing Director, Natural Gas) focuses on fundamental analysis and the related writing of the *Gas Flash Weekly*, *Gas Forecast Monthly*, *Gas Trade Monthly* and *Gas Regional Monthly*. Additionally, Richard provides support in expanding and developing regional natural gas market coverage and basis studies. He came to PIRA in 1999 from Prudential Securities, where he was VP of Energy Futures Research and responsible for fundamental research coverage of the NYMEX energy complex. Previously, he was an analyst with NYMEX in its research department with responsibilities centered on the crude oil and natural gas markets. Prior to NYMEX, he was a natural gas supply and demand analyst at Consolidated Edison of New York. Richard is a summa cum laude graduate from Pace University with a B.B.A. in finance and economics, and also holds an M.B.A. with distinction from New York University.

**Dr. Mark A. Schwartz** (President and Managing Director, Scenario Planning) works closely with PIRA's Global Oil, Natural Gas and Coal groups to evaluate the key assumptions underlying their outlooks and to develop plausible alternative assumptions and outcomes. Before joining PIRA in 2002, he was the Chief Economist of Exxon, where he was responsible for developing the company's long-range economic and energy outlook. Mark designed and managed the implementation of the energy modeling system and database that allowed ExxonMobil to develop its base-case global energy outlook as well as alternative cases to capture the impact of changes in price, economic growth, environmental policy and other critical assumptions. Prior to this position, Mark spent five years in Exxon's International Gas Marketing Company, where he developed the Asian gas supply/demand balance. During his 25 years at Exxon he also had assignments in Upstream Planning, Treasurers, and Corporate Planning functions. He holds a Ph.D. in economics from the University of Pennsylvania.

**Gregory J. Shuttlesworth** (Executive Director, Natural Gas) directs PIRA's research covering all aspects of North American natural gas fundamentals. His work is aimed at providing PIRA clients with in-depth and timely analysis of how fast-breaking events will impact gas supply and demand, interfuel competition, and the outlook for gas prices. He is a principal author of PIRA's *Gas Forecast Monthly*, *Gas Trade Monthly*, *Gas Regional Monthly* and *Gas Flash Weekly*. Before founding PIRA's Natural Gas Group in 1981, his professional career centered on global petroleum and related energy economics. He held the positions of Senior Analyst at the petroleum-consulting firm of W.J. Levy Associates and Energy Economist at the Chase Manhattan Bank. Greg is a graduate of Johns Hopkins University. He has a B.A., M.B.A., and completed post-MBA studies in economics.

**Max Pyziur** (Analyst, International Gas) created and maintains PIRA's NGL Facilities and Global Gas databases, the latter a key contribution to the Global LNG retainer and Scenario Planning Service. Prior to PIRA, Max was the energy analyst at CPM Group, a New York-based commodities research and investment banking firm, where he developed the company's energy practice. While at CPM Group, he had articles published on energy and economic issues in commodities-related periodicals. Previously, he held positions at Banc of America Securities, Victory Capital Management, and Borg-Warner Security. Max received his M.B.A. in finance from Washington University in St. Louis and his B.A. from St. Louis University.

**ACCEPTANCE FORM**

(Company Name) \_\_\_\_\_ wishes to subscribe to the multi-client study **UNCONVENTIONAL LNG: MONETIZING NORTH AMERICAN GAS EXPORTS**.

**We understand and agree that the fees are as follows:**

	<b>PIRA Client 3 Users</b>	<b>PIRA Client Add'l Users</b>	<b>Non-Client*, 3 Users</b>	<b>Non-Client*, Add'l Users</b>
<b>Standard Fee</b>	\$11,000	\$750 each	\$16,000	\$1,090 each

Note: New York State-based companies will be charged the county-appropriate sales tax.

\* Companies that are not currently a retainer client of PIRA’s can redeem 75% of their premium cost on the study toward the purchase of a PIRA retainer service.

We wish to add the private briefing option at the quoted price of \$\_\_\_\_\_.

**Name/Title:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Phone/Fax/e-mail:** \_\_\_\_\_

**Total Fee:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**PLEASE MAIL OR FAX TO:** **PIRA Energy Group**  
**Attn.: Managing Director, Client Services**  
**3 Park Avenue, 26th Floor**  
**New York, NY 10016-5989**  
**Phone: (212) 686-6808; Fax: (212) 686-6628; [sales@pira.com](mailto:sales@pira.com)**

**Note:** *Unconventional LNG: Monetizing North American Gas Exports* will contain no confidential technical information, to the best knowledge of PIRA. However, except for information that is or becomes available to the public in printed publication, or is already in the possession of subscriber or developed independently by subscriber, or is received by subscriber in good faith from a third party, any information in the study is for the sole and confidential use of the subscriber. Subscribers agree to use reasonable efforts to protect the confidential nature of the information supplied to them as part of this study.