

# LNG Update

May 3, 2004

Last June, *The Energy Insider* presented a sound business case for expanding LNG facilities to serve U.S. markets (LNG – An Idea Whose Time Has Come, June 25, 2003). Did our predictions pan out? Read on to see how LNG rates in the 2004 and beyond natural gas marketplace.

## The Current Market Situation

Currently, the United States is unable to meet demand with domestic supply sources. In a nutshell, our supply basins are maturing and we've yet to find the big new sources we'll need to replace them. At the same time, Canadian imports are declining (for many of the same reasons they are declining in the U.S. plus internal use of gas for oil production). And, our net imports to Mexico are increasing. It doesn't take a mathematician to figure out we've got a problem. In fact, the only way we currently have of meeting our projected rising demand is through a significant rise in imports. (EIA projections show a rise in net U.S. imports from 3.5 Tcf in 2002 to 7.2 Tcf in 2025). The only near-term solution that will increase imports to these levels is LNG. And the only alternative is to decrease our demand.

## Reducing Demand

Given the current high prices for natural gas, one would expect to see a significant reduction in demand. In the industrial sector, there are signs that this is happening. Many industry experts have noted that those industrial customers with the option to fuel switch to a cheaper fuel source have already done so.

Additionally, we are seeing reduced demand in the chemical and fertilizer industries - both of which use natural gas for feedstock. Fertilizer plants have shut down as uneconomic. Chemical plants have raised product prices, reduced output and - in at least the case of one Dow Chemical plant on the Gulf Coast - announced relocation to another country with cheaper energy prices. In short, the current and projected high prices of natural gas have, in fact, resulted in short-term (and potentially permanent) demand reduction from the industrial sector.

And what about the residential and small commercial sector? Here we find quite a different story. While

these customers have certainly complained about increased heating costs, sticker shock has not led to decreased consumption. While some consumers may turn down the thermostat or water heater a degree or two, most are unwilling (or unable) to either shut down costly gas appliances or invest in other energy alternatives. And, the number of customers in each group has increased every year since 1999 - a trend likely to continue into the future.

While electric generation use of natural gas declined in 2003 due to higher gas prices and moderate electric demand, additions of new gas generating capacity continued at a brisk pace. It is clear that as the economy heats up and electric demand once again begins to grow, gas-fired generation is the only near-term source available to pick up the slack. And since the EIA is currently projecting electric demand to increase by 2% annually over the next 25 years, continued growth in this sector is likely.

Overall, decreased access to natural gas and higher prices have not reduced demand as much as rational market theory might suggest. This suggests significant problems in the future - especially when summers and winters are not as moderate as they've been in the recent past.

## Increased Supply

Simple economic theory will tell you that if we can't reduce demand, the only option available is to increase supply. Enter the natural gas industry's white knight - LNG. While LNG has historically supplied just a small fraction of our total demand, over the last few years LNG economics have become a lot more attractive. The EIA estimates liquefaction costs have decreased 35-50%, with plant capital costs decreasing from more than \$500 per ton of annual liquefaction capacity to less than \$200 per ton for trains at existing plants (in nominal dollars). In addition, building costs for LNG tankers have decreased from about \$280 million (nominal) in the mid-1980s to about \$155 million in late 2003. EIA also notes that regasification terminal costs have fallen as well, with new terminals in the U.S. estimated to cost between \$200 and \$300 million. Add

this to high domestic gas prices for the foreseeable future and it's not hard to see that LNG has suddenly become a legitimate supply alternative.

Worldwide availability of LNG is also on the rise. LNG is currently produced from stranded production in 13 countries around the world. In 2002, 12 of these countries shipped 5.4 Tcf globally. These countries currently account for 28% of the world natural gas reserves. In addition to expanded production from these players, three additional countries (Egypt, Norway and Russia) have liquefaction facilities under construction. Russia alone has an estimated 1,680 Tcf of reserves which accounts for an incredible 30.5% of world stocks. And seven more countries (Angola, Bolivia, Equatorial Guinea, Iran, Peru, Venezuela, and Yemen) have liquefaction facilities in the planning stages. Clearly the perceived market for LNG globally continues to increase.

#### **U.S. LNG Facilities**

The United States currently has just four receiving facilities with a combined import capacity of 2.5 Bcf/d. All four have received FERC approval to expand their receipt capabilities. In addition, there are approximately 46 proposed receipt terminals for LNG throughout North America. And the EIA estimates that between four and eight new terminals (in addition to the expansion of the four existing terminals) will be necessary to meet the future supply shortfall.

So are we well on our way to ensuring these facilities will be ready? Not exactly. Since we haven't built LNG terminals in 20 years, the path to successful project development is less than clear and there is no standard model to follow. More than half of the announced LNG terminal expansions have currently filed with the appropriate regulatory agency for project approval. A few (Cameron, Port Pelican, Bahamas pipeline to Florida, the existing LNG terminal expansions, Mexican sites) have received either U.S. or Mexico regulatory approvals and are moving down the road to locking up supply and markets. Energy Secretary Abraham has suggested that this approval process needs to expedited, and it would seem that there has been an effort to do just that.

In addition, Abraham suggested that "we will also have to address objections to new terminals based on

environmental and safety concerns. Success in this will require a concerted effort to educate the public on LNG's importance to the American economy, and on the environmental and safety record of the industry." That was probably easier before an explosion at a liquefaction plant in Algeria. The consequences of this accident and persistent opposition to LNG expansion may already have adversely affected the LNG landscape in North America. Mexico has taken back land lease permits from the Marathon Tijuana Energy Complex. ExxonMobil has received a "no" land use vote for their proposed facility near Mobile, Alabama. TransCanada and ConocoPhillips have terminated their LNG project in Harpswell, Maine in the face of local opposition. Sound Energy sees the California PUC's recent attempt to assert jurisdiction over the proposed Long Beach harbor facilities as "cast(ing) a cloud of uncertainty" over the project. Italian oil company Eni S.p.A.'s Leonardo Maugeri summed up the situation quite accurately when he said "the U.S. remains ... an impossible dream, given the severe environmental restrictions still impeding the construction of LNG terminals."

#### **What to Expect?**

Clearly, it will take a lot more education and considerably more leadership to get LNG off the ground in the U.S. We've certainly learned that "flying under the radar" is not going to get individual sites green lighted. And the case can certainly be made that gas industry leaders and economists have not yet done an effective job of educating the public regarding our current natural gas situation and the options available to us. At the same time, there have been some encouraging notes. The governor of Maine has spoken out in favor of LNG in his state, and several towns have subsequently requested information about siting a potential terminal near their community. Nova Scotia has reported garnering favorable support from communities located in proximity to an LNG terminal project there. OXY has joined Dow Chemical in announcing LNG plans for their chemical plants on the Gulf Coast of Texas. And development of the Energy Bridge technology that would allow regasification off-shore continues. Undoubtedly, the next few years will be critical for the LNG industry – and in turn for the future health of our economy and North American industry. Will LNG become the white knight, or will it be felled before it has the chance to save us? Stay tuned – it's likely to be a bumpy ride!

Energodynamics presents a new seminar on LNG

## LNG — From Boom to Bust!

June 15 and 16  
Hyatt Regency Houston

This seminar provides an in-depth overview of the LNG industry and is designed for those with limited knowledge of the industry. Details include an overview of the increasingly important role of LNG in the natural gas marketplace, the LNG supply chain, issues with regulation, safety and security, the dynamics of LNG, why LNG is so important at this time, the financials that make LNG viable, and a look at the future of the industry. This seminar is highly interactive and stresses participation from all attendees through class discussion and a number of market simulation exercises. Class size is limited to ensure personal attention for all attendees.

### **Course length**

One and one-half days

### **Prerequisites**

None (though a general understanding of the natural gas industry is helpful)

### **Who should take this course?**

- Gas or electric industry employees whose companies are now (or may become) involved in LNG
- Gas consumers
- Professionals from outside the industry who will be involved in LNG
- Individuals providing services or sales to companies involved in LNG
- Regulatory or governmental employees
- Communications or public relations professionals

### **What you will learn**

This course will provide you with a solid understanding of the dynamics of the LNG marketplace. After attending this course, you will understand the ins and outs of:

- The physical supply chain for LNG
- Economic and environmental issues
- Market participants in the delivery chain
- How business transactions are performed
- The steps involved in developing an LNG project
- Global LNG market dynamics
- The potential impacts of LNG on the U.S. marketplace
- The future of LNG

### **Registration fee**

\$990 (save \$100 if paid by May 28). This fee includes continental breakfast, lunch and morning and afternoon breaks. The fee also includes full-color course materials.

### **To register**

Click on the following link to register online: <https://secure.nextmill.net/energodynamics/section03/purchase.asp>. Or call us at 415.777.1007. Visit our website at <http://www.energodynamics.com> for more information.