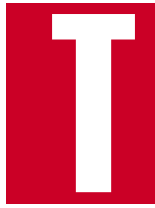


A hand in a suit sleeve points to a globe. The globe is tilted and shows continents in yellow and green and oceans in blue. The background is a solid blue color.

The Geopolitical Risks of LNG

Expanding LNG capacity is a necessary step for America to take, but that step might lead utilities toward unknown and unmanageable risks.

BY MICHAEL T. BURR



o many energy-industry analysts, 2005 is a make-or-break year for the U.S. gas market. If we don't have at least several liquefied natural gas (LNG) terminals in construction by the end of the year, the country arguably will face serious gas-supply shortages and price spikes beginning in about 2008.¹

"The North American markets are now dependent on the growth of liquefied natural gas," says Michael Zenker, a senior director with Cambridge Energy Research Associates (CERA) in Boston. "If we don't get LNG, we don't have a plan B."

Facing such a situation, the gas industry is working feverishly to develop LNG-import terminals and regasification facilities on every North American seacoast. Development moved slowly in 2003 and 2004, and alarm bells were sounded in policy circles, most memorably due to Federal Reserve Chairman Alan Greenspan's address before the Senate Energy Committee in 2003. Soon thereafter, the federal government took action:

- The Federal Energy Regulatory Commission (FERC) and the U.S. Coast Guard streamlined licensing and permitting processes;
- FERC eliminated "open-season" requirements to give developers clearer incentive to invest in LNG terminals, and asserted its authority over facility siting;
- The Department of Energy commissioned studies to analyze the risk of an LNG spill and formulate baseline science models to facilitate decisions regarding siting, design and permitting; and
- Lawmakers began a federal energy policy debate on LNG and natural gas in general. In late January 2005, the Senate Energy Committee convened a conference of industry leaders and policy analysts to discuss the myriad issues affecting natural gas.

Such policy developments indeed are adding steam to the LNG train. Two LNG terminals now are under construction, and several more have cleared their permitting hurdles. These projects will help the United States diversify its fuel supply by tapping into the deep wells of global LNG markets.

But some analysts are drawing attention to what they see as a dangerous elephant in the room—namely, geopolitical risks affecting the LNG trade; risks that make the U.S. utility industry more vulnerable, and intensify U.S. dependence on volatile global energy markets.

"Look at the supply chain, and where most of the LNG will be coming from," says Anne Korin, director of policy and strategic planning at the Institute for the Analysis of Global Security (IAGS) in Washington, D.C. "If you do that, you will see a lot of political risk. These areas are not oases of stability and good government." (See "U.S. LNG Imports by Source,

2002," p. 30, and "Long-Term North American LNG Supply Contracts Under Development," p. 33).

Korin and other analysts warn that reliance on LNG will expose utilities and ratepayers to a set of risks known mostly to transportation sectors. This set of risks includes political upheavals, terrorism, and the prospect of OPEC-like cartel behavior (see "LNG and Cartel Forces," p. 32). Even Trinidad & Tobago—America's predominant source of LNG today—exhibits a growing phenomenon of Islamic extremism.²

LNG dependence might not be the worst security risk the United States faces, but the issue merits attention because it tightens the chokehold that overseas energy producers have on the U.S. economy. "The problem is that nearly three-fourths of proven reserves are found in the Middle East and areas near there," says James Woolsey, former director of the Central Intelligence Agency, and now a vice president with Booz Allen & Hamilton and a policy advisor to the U.S. Secretary of Defense. "This creates real geopolitical risk. Importing natural gas helps to diversify sources, and there may be alternative ways to deal with the problem. But it is something one wants to pay attention to."

The consequences of inattention to these risks might be large or small, depending on what kind of disruptions might occur. In any case, until the industry develops mechanisms for dealing with such risks, utilities might find they are vulnerable to the very price shocks LNG imports are intended to avert.

Choke Points

Until now, global supply risks have received little attention in the LNG debate. In large part, this is because such risks generally are seen as an unavoidable fact of life.

"This is just the real world we are living in," says Don Mason, a commissioner on the Ohio Public Utilities Commission, and chairman of the National Association of Regulatory Utility Commissioners (NARUC) gas committee. "I agree there could be long-term disruption problems, but we run into those situations now. Certain gas fields don't produce as successfully as expected, for example. It is something to be concerned about, but that's why it is important for the United States to be diversifying the LNG supply, so we are not dependent on any one area."

Such diversification, however, might prove elusive; while

oil tankers sail to and from dozens of ports around the world, the LNG trade is constrained to a handful of routes connecting relatively few terminals.

“This isn’t going to be a globally traded market in the foreseeable future,” says Gavin Law, head of the global LNG team at Wood Mackenzie in Edinburgh. “Going forward we expect the spot market may stretch to 15 or 20 percent of the trade in certain years, but the bulk will be traded on a long-term basis. Even most majors cannot invest the huge sums in the necessary infrastructure unless they know where the gas is going.”

In a few cases, integrated energy companies might be prepared to accept merchant risk and simply market imported gas in the U.S. interstate pipeline network. But these instances will be the exceptions rather than the rule. “These projects are so expensive and they take so much time to build, very few companies do it alone,” says Alan Herbst, a principal with Utilis Energy and a course director with the Oxford Princeton Programme. “LNG project sponsors look to spread the risk, and they are involved through the entire supply chain.”

A significant barrier for LNG project developers is price uncertainty. Selling LNG into the U.S. market is not like selling to Japan or Taiwan, where no viable alternative exists. In the United States, LNG must compete against indigenous gas resources. And while the best projections suggest gas prices aren’t likely to fall any time soon, project developers are skittish about building a costly LNG supply chain without having firm confidence they’ll be able to recoup their costs.

Thus LNG represents a dilemma. On the demand side, buyers need a diverse, reliable, and affordable supply, and they don’t want exposure to risks they cannot manage. On the supply side, gas companies need firm commitments to sell their LNG for a good price, and they can’t bear the panoply of risks themselves.

The result is most LNG cargoes coming into the United States are expected to be sold on a long-term, take-or-pay basis, with prices indexed in a way that ensures cost recovery and price stability. In this scenario, little excess capacity will exist to provide much supply flexibility. And that means geopolitical and *force majeure* risks come home to roost in the offtake market.

“You are putting choke points into your supply line,” says Dr. Cyril Widdershoven, a strategic policy analyst based in Amsterdam. “If something happens at a choke point, the whole chain will be disrupted and there won’t be enough capacity somewhere else to cope with the blockage.”

Contract terms and risk-management instruments might eventually address some of the financial risks associated with possible supply disruptions, but thus far such mechanisms remain theoretical. How they might be structured and what they might cost is unknown.

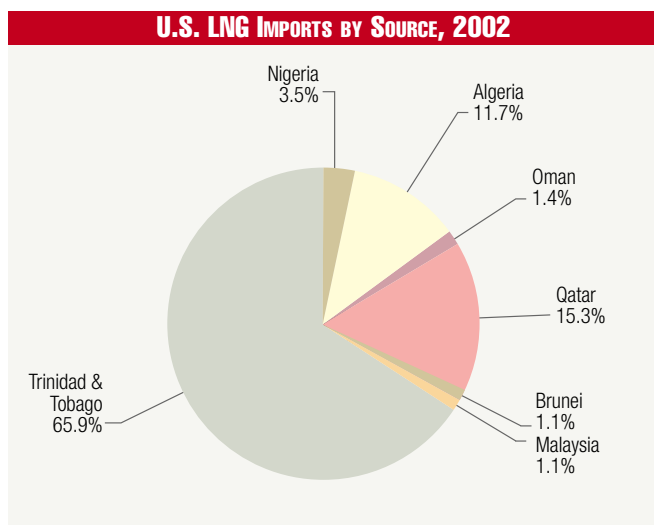
“That is going to be one of the biggest challenges,” says an LNG attorney who spoke to the *Fortnightly* on condition of anonymity. “Pricing and risk-allocation terms tend to be very confidential, and a standard model hasn’t been developed yet.”

The LNG industry’s legacy of long-term transactions exacerbates the problem, because contracts have tended to be complicated one-off documents. No clear approach has emerged to develop standardized legal approaches to contracting and risk allocation.³

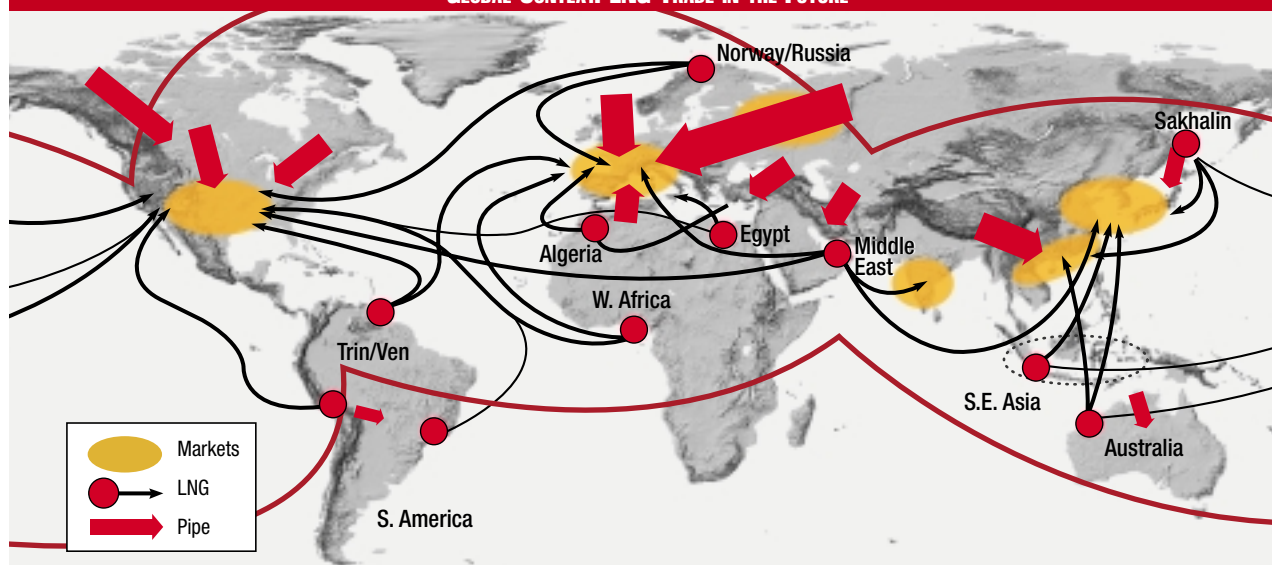
Force-majeure risks, in particular, are difficult to address. “It’s a hot topic because the cost implications of a *force-majeure* outage are enormous for an LNG train,” the attorney says. “One LNG shipment represents a huge amount of money, and it’s hard to imagine that a single entity could bear all that risk. Effectively you are importing a significant amount of *force-majeure* risk that rolls all the way back to production fields in a country that might have a significant amount of political risk. There’s no market solution sufficient to deal with that.”

Political risk insurance is obtainable, of course, from such agencies as the U.S. Overseas Private Investment Corp. (OPIC) and the Multilateral Investment Guarantee Agency (MIGA). This product can address risks from events like terrorism or political upheaval, but generally it protects financial investments, not operating risks. As a result, even if the infrastructure in an LNG supply chain is covered by political-risk insurance, such coverage probably would be ineffective at protecting a utility from a supply disruption or cartel action.

Commercial insurance and hedging products might be able to address the issue, but such products don’t exist today. Because the risks are novel and the potential losses enormous, developing such products



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on a custom basis likely will be costly and might not cover the entire range of risks affecting the LNG trade.

Gas Gambit

Amid all the uncertainties about the LNG trade, one thing is certain: Contracting for LNG poses geopolitical risk factors that aren't present in existing U.S. gas-supply markets. Predicting the future of geopolitics is a notoriously difficult task, but most analysts expect social entropy to increase in the future.

"The underlying assumption is that the world isn't going to change, and political risk isn't going to increase in a way that will affect the LNG trade," says Korin of IAGS. "I don't think that is a good assumption to make."

Numerous wild-card factors complicate the analysis. One such factor, for example, is the role that might be played in the near future by Russia, which holds the world's largest gas reserves, as well as by China, India, and other Asian countries, whose LNG demand promises to increase dramatically.

In particular, China's growing LNG demand likely will put greater burdens on the Pacific LNG trade, further limiting flexibility for other gas markets. But the dynamics of China's economic and political influence could have even broader implications.

"It all depends on China's stability," Woolsey says. "What role China plays, in terms of demand or otherwise, depends on whether it remains politically stable and moves toward reform and democracy. An economically prosperous China that is beginning to liberalize politically is one thing, but a China that is getting nervous because of unemployment and economic changes could become hostile, particularly over Taiwan. That is a major variable."

Already recognizing its energy needs are growing quickly, China has begun investing in the LNG supply chain in Indonesia and Australia,⁴ and is getting more actively involved in Middle East politics. The U.S. State Department has expressed concerns in recent years about China's sale of missiles and military technology to Syria, Libya, Iran, Iraq and increasingly Saudi Arabia.⁵

Such wild cards make U.S. decision makers uncomfortable about relying on LNG.

"We'd like to be able to reduce the need for LNG," the Ohio PUC's Mason says. "If I had my preference, I'd rather see America become more dependent on North American resources of any nature, whether oil, gas, coal, or something else, instead of anything coming from overseas. It is easy to cartel crude oil, and unfortunately it probably is as easy to cartel LNG once you build American dependence."

Whatever U.S. utility decision makers might prefer, however, the country seems destined to increase its reliance on LNG imports. This destiny is driven by the fundamental belief that natural gas demands will rise in the future, particularly as environmental sensitivities intensify. Imported LNG is competitive today with domestic North American natural gas supplies, and it is expected to remain competitive in the future.⁶ The U.S. economy depends on affordable natural gas, and therefore, somehow, LNG terminals will be built on American shores.

Absent from this calculus are the public policy ramifications of extending energy dependence into the utility industry. Such factors have escaped serious consideration largely because LNG investment decisions are predicated on market forces, not public policy.

"The whole argument for LNG is being driven by envi-

AN OPEC FOR GAS?

At a meeting in Baghdad 45 years ago, representatives from five countries came together to form a trading alliance: the Organization of the Petroleum Exporting Countries (OPEC). For years, the U.S. energy industry felt little influence from OPEC. But over time, the oil market became more global, the U.S. imported more cheap oil from abroad, and OPEC gained leverage. By the early 1970s, America was importing about 35 percent of its oil needs.

Then war broke out in the Holy Land.

In October 1973, on Yom Kippur, Egypt and Syria invaded Israel. By November, Israel's borders were fully secured. In the meantime, the veil of energy security was ripped away.

In retaliation for Western military support of Israel, OPEC imposed a 70 percent increase in crude oil prices, sending shockwaves through the world energy market. U.S. gasoline prices quadrupled, and the stock market plummeted. In the months that followed, the Dow Jones Industrial average lost 45 percent of its value.¹

"The nation learned, quite painfully, the price of dependence upon foreign sources of crude oil," said Carl English, president and CEO of Consumers Energy, speaking before the House Energy & Commerce committee. "We also learned, through long gasoline lines and shuttered factories, that energy is the lifeblood of our economy. We can blame some of the past energy problems on a lack of foresight, understanding and experience. We will not be permitted to do so again."

Getting Hooked on Imports

Despite the wisdom that comes with experience, the U.S. cannot help but to sink another hook into its energy jugular. Admittedly the LNG hook is smaller than the petroleum hook, but it perforates a new and strategically critical vein of the U.S. economy—electric and gas utilities.

Until a few years ago, the United States was almost independent in terms of its natural gas supplies. Some gas entered this country from Canada through pipelines, and a tiny amount arrived in the form of LNG—about 1 percent of U.S. natural gas consumed at its recent peak in

2002. Since then, however, existing LNG terminals and storage capacity have expanded, and imports have more than doubled.² This growth continues; U.S. LNG imports are expected to increase by an order of magnitude over the next decade, as gas companies develop billions of dollars worth of LNG infrastructure here and abroad.³

A recent accounting showed 49 LNG terminals in development in North America, with a combined total capacity of more than 49 billion cubic feet (bcf) per day. Only a small share of those projects will ever see a drop of LNG, but current projections call for between six and 12 LNG import terminals to be built by 2012. So far nine projects, totaling 10.9 Bcf/day of capacity, have cleared permitting and licensing hurdles, and two are in construction.⁴

This quantity of LNG capacity is significant, though probably not large enough to flood the U.S. market with cheap gas in the foreseeable future. If gas prices remain high enough for LNG to compete, then most domestic gas production will continue. The Department of Energy's Energy Information Administration (EIA) projects U.S. imports will reach 16 percent of U.S. gas consumption by 2025.⁵ However, global expansion of the LNG trade suggests the imports will have an increasing influence on gas prices,⁶ and indeed some analyses show that LNG already has become a determining factor in U.S. gas prices.⁷

Not surprisingly, amid these market developments, an international gas cartel might be emerging.

Cooperation Among Suppliers

Early last year, news reports quoted Qatari Energy Minister Abdullah Bin Hamad Al-Attiya saying about 15 countries—mostly OPEC members—agreed to establish an "executive bureau" to "coordinate interests" in the gas-export markets. (The group is expected to meet in March 2005 at the Fifth Annual Gas Exporting Countries Forum in Trinidad & Tobago.)⁸

Whether and when such a cartel might gain the leverage to drive market prices remains to be seen. "We know a lot of the gas in our long-term outlook comes from countries that are members of OPEC, and we can imagine there will be more of a concerted effort among these

countries to coordinate gas production," said Michael Stoppard, a Cambridge Energy Research Associates (CERA) director, in a conference call last November. "But gas is different from oil. The payback to banks is too critical for countries to develop facilities and then hold back production."

Additionally, LNG customers in Europe and North America have some leverage against such a cartel, because gas must compete against domestic sources of fuel for heating and power generation. And some utilities—particularly in the Far East—are investing upstream in the supply chain, buying their way into a stronger trading position.

"We're seeing more integration in the business," says Alan Herbst, a principal with Utilis Energy. "Tokyo Electric is now a part owner in the Australian North Shelf venture. They also own LNG vessels. They can use their expertise to get a better price."

On the other hand, imported LNG likely will be cheap enough to drive some marginal gas wells out of the market, and potentially to slow domestic drilling. Cheap LNG could forestall commercialization of coal gasification and bio-fuels. And while LNG diversifies U.S. gas sources, it does so in a market dominated by a handful of countries, many of which are distrustful or even hostile to Western influence.

"If you have an OPEC for gas, it would include Russia, Iran, Qatar, and probably Algeria," says Dr. Cyril Widdershoven, a security analyst based in Amsterdam. "They have more than 70 percent of the gas in the whole world. That's a lot of eggs to put in one basket." — *MTB*

Endnotes

1. Trumbore, Brian, "The Arab Oil Embargo of 1973-74," *Stocks and News*, 2002.
2. The Global Liquefied Natural Gas Market: Status & Outlook, U.S. Department of Energy / Energy Information Administration, Dec. 2003
3. Annual Energy Outlook 2005, Early Release, DOE / EIA.
4. Utilis Energy USA, LNG: North American Project Almanac 2005, October 2004.
5. Ibid.
6. Odawara, Youichi, "Accelerating Changes in the LNG Chain," Institute for Electrical Engineers of Japan, Nov. 2004.
7. Ferguson, Ph.D., Rich, "Natural Gas Update: Winter 2003-2004, U.S. Dependence on Imported Liquefied Natural Gas," Center for Energy Efficiency and Renewable Technologies.
8. "Gas exporting countries to set up executive bureau," Agence France Presse, March 19, 2004.

ronmental concerns, price factors, and investment questions," Korin says. "These are legitimate concerns, but utilities need to take a step back and look at the whole context. If you do

that, you'll see a whole slew of options that deserve to be considered." Most notably, coal, nuclear, and renewable energy sources offer domestic alternatives—albeit probably more

TABLE 1 LONG-TERM NORTH AMERICAN LNG SUPPLY CONTRACTS UNDER DEVELOPMENT

Exporting Country	Exporter	Project (Train)	Importer	Destination	MT/yr	Startup	Term
Nigeria	Nigeria LNG (NNPC, Shell Total, Agip)	NLNG (Train 4, 5)	BG	Lake Charles, LA	2.5	2005	20
Nigeria	Nigeria LNG (NNPC, Shell Total, Agip)	NLNG (Train 4, 5)	Shell	U.S.	1.1	2005	20
Nigeria	Nigeria LNG (NNPC, Shell Total, Agip)	NLNG (Train 6)	Total	U.S., Europe	0.88	2007	20
Nigeria	Nigeria LNG (NNPC, Shell Total, Agip)	NLNG (Train 6)	Shell	U.S., Mexico, Europe	1.4	NA	20
Qatar	Ras Laffan LNG II (Qatar Pet. Exxon Mobil)	Ras Gas (Train 5, 6)	Exxon Mobil	Texas	15.6	2008/2009	25
Qatar	QP, Conoco Phillips	Qatargas III (Train 1)	Conoco Phillips	Gulf of Mexico	7.5	2008/2009	NA
Indonesia	BP, MI Berau, Nippon Oil, CNOOC, KG Berau, Japan LNG	Tangguh (Train 1,2)	Sempra	Ensenada, Mexico	3.7	2007	15
Indonesia	Indonesia Pertamina, Expan	Sulawesi	Marathon Mexico	Tijuana,	6.0	NA	20
Australia	ChevronTexaco Shell, ExxonMobil	Gorgon (Train 1,2)	Chevron Texaco	Rosarito, Mexico	5.0	2008	20
Equatorial Guinea	Marathon, GE Petrol	Bioko LNG	BG	Lake Charles, LA	3.4	2007	17

costly and challenging ones.

“Natural gas is a bridge fuel and is the cleanest fossil fuel,” says Rep. Mark Udall, D-Colo. “We need to work to bring LNG into this country, but in the long term we need to work in the direction of domestic alternatives—such as coal gasification and biofuels.”⁷

These alternatives are receiving public policy attention and government support, vis-à-vis tax benefits, R&D funding, and regulatory encouragement. Moreover, the largest domestic substitute for natural gas—coal gasification—is being pursued aggressively in certain corners of the U.S. utility industry.⁸

But lawmakers have barely begun facing the national policy question of whether such alternatives are competing on a level playing field against LNG imports.⁹ To secure global energy supplies, Americans already pay an enormous and rising toll, including defense costs estimated at more than \$100 billion a year. This toll is not reflected in U.S. energy prices today; nor will it be under LNG-import scenarios that are likely to emerge from the current development trend.

Utility reliance on a global LNG trade raises the stakes in the global security gambit. America’s public policy institutions have only begun exploring whether those stakes are acceptable, nor have they considered how to assess the costs. That debate

seems likely to happen someday, but whether that day comes before or after U.S. utilities face LNG supply disruptions depends largely on political will—and the brutal hand of fate. ■

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Endnotes

1. “Balancing Natural Gas Policy: Fueling the Demands of the Growing Policy,” National Petroleum Council, 2003.
2. Kelshall, Candyce, Director, Bluewater Defence and Security Ltd.: “Radical Islam and LNG in Trinidad and Tobago,” *Energy Security*, Nov. 15, 2004.
3. Banaszak, Sara, PFC Energy, “Linking Natural Gas Supplies to Critical Markets,” *Economic Perspectives*, U.S. Department of State, May 2004.
4. Odawara, Youichi, *Ibid.*
5. Luft, Gal and Korin, Anne, “The Sino-Saudi Connection,” *Commentary*, March 2004.
6. National Petroleum Council, *Ibid.*
7. Burr, Michael T., “Gasification Gets Real,” *Public Utilities Fortnightly*, January 2005.
8. The National Association of Regulatory Utilities Commissioners convened a conference Jan. 24-26, 2005, at Carnegie-Mellon University. “The Natural Gas Crisis: Finding Clean Solutions” in part explored rate-design and related factors
9. Copulos, Milton R., National Defense Council Foundation, “Set America Free” (teleconference), Jan. 22, 2005