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FOREWORD

BY THE HONORABLE SUEDEEN G. KELLY*

Natural gas is an important economic and environmental fuel of choice in this country. However, in recent years, prices have been high, supply has been tight, and demand is projected to increase at an annual average rate of 1.5 percent from 2003 to 2025.[1] In 2005, the United States consumed 23 percent of the total amount of gas produced globally,[2] yet it accounts for less than 3 percent of the world's reserves; only 4 percent of the world's natural gas reserves are in North America.[3] While Canadian imports have provided needed gas to the U.S., these supplies are expected to decline as production flattens and Canadian demand increases.[4]

Where is natural gas if not in North America? Much of it—42 percent—is in the Middle East.[5] Approximately 33 percent is in Eastern Europe, with Russia alone holding the lion's share of 28 percent of the world's gas reserves.[6]

Clearly, to meet the rising demand for natural gas, the United States will have to increase its importation of natural gas from outside North America. Many predict that liquefied natural gas, or LNG, will play a major role in filling the gap between domestic demand and supply. Indeed, on June 10, 2003, former Federal Reserve Chairman Alan Greenspan testified before the House Energy and Commerce Committee on natural gas supply issues. In noting the tight supplies and high prices of natural gas, he called for more imports of LNG in order to help stabilize the U.S. market for natural. To that end, Chairman Greenspan noted that the U.S. will need additional LNG infrastructure.[7]

Although there are currently only four on-shore LNG import facilities

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1. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2005, at 4 (2005).

2. BRITISH PETROLEUM, QUANTIFYING ENERGY: BP STATISTICAL REVIEW OF ENERGY 2006, at 27 (2006).

3. PAUL W. PARFOMAK, CONGRESSIONAL RESEARCH SERVICE, LIQUEFIED NATURAL GAS (LNG) IN U.S. ENERGY POLICY: INFRASTRUCTURE AND MARKET ISSUES 17 (2005).

4. ENERGY INFO ADMIN, *supra note 1, at 96.*

5. PARFOMAK, *supra* note 3, at 17.

6. *Id.*

7. *Natural Gas Supply and Demand Issues: Hearing before the H. Comm. on Energy and Commerce*, 108th Cong. 91-96 (2003) (statement of Alan Greenspan, Chairman, Board of Governors, Federal Reserve System). Chairman Greenspan told the Committee that "Markets need to be able to effectively adjust to unexpected shortfalls in domestic supply. Access to world natural gas supplies will require a major expansion of LNG terminal import capacity." *Id.* at 94.

in the United States,[8] the Federal Energy Regulatory Commission (Commission) has approved 16 additional LNG terminals, and there are 12 proposals pending before the Commission.

This level of activity demonstrates that LNG is increasingly being taken seriously as an important component of this country's energy portfolio. LNG's physical characteristics drive its suitability for import: it is liquefied natural gas (methane) that has been cooled to an extremely cold temperature (260 degrees farenheit), which changes the gas from a vapor into a liquid.[9] This reduces the space the gas occupies by more than 600 times, making it much easier to store and transport.[10]

Moreover, on a global level, according to the Energy Information Administration:

> both supply and demand are driving plans for expansions of existing facilities and the construction of new facilities. On the supply side is the interest in finding a market for [thousands of] trillion cubic feet of stranded natural gas worldwide. On the demand side is the increased use of natural gas worldwide, which, coupled with lower costs associated with LNG processing and delivery, is making LNG a cost-competitive supply source at today's prices to meet gas demand.[11]

Given all this, why aren't U.S. markets flooded with LNG?[12] As the following articles will explore, some of the major barriers to development of LNG supplies for the U.S. include the steep capital costs of constructing upstream facilities, and the political, safety, and environmental issues surrounding construction and operation of LNG terminals.

There are also global issues to consider in relying more on LNG. While the international supply needed to satisfy the potential U.S. demand for LNG is available, worldwide LNG demand is rising, leading to competition for available supplies and higher prices.

One issue that cannot be ignored is that an LNG cartel, similar to the

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8. Lake Charles, LA (Trunkline LNG); Elba Island, GA (Southern LNG); Cove Point, MD (Dominion Cove Point); and Everett, MA (Distrigas). There is also a terminal located offshore Lousiana in the Gulf of Mexico.

9. FED. ENERGY REGULATORY COMM'N, A GUIDE TO LNG: WHAT ALL CITIZENS SHOULD KNOW 2 (2006).

10. *Id.* Specially designed, double-hulled tankers are used to transport LNG to U.S. terminals. Ships unload LNG at terminals where the LNG is pumped from the ship to insulated storage tanks at the terminal. The LNG is also converted back to gas at the terminal, where it can then be pressurized and injected into the natural gas delivery system just as it would be at the wellhead. *Id.*

11. ENERGY INFO. ADMIN, OFFICE OF OIL AND GAS, U.S. LNG MARKETS AND USES 3-4 (2003) (internal footnotes omitted).

12. Less than 2% of U.S. Natural Gas comes from LNG imports. *Liquefied Natural Gas: Hearing before the Subcomm. on Energy of the S. Committee on Energy and natural Resources*, 109th Cong. 34 (2005) (prepared statement of J. Mark Robinson, Director, Office of Energy Projects, Federal Energy Regulatory Commission).

Organization of Petroleum Exporting Countries (OPEC), will emerge. This is possible, as relatively few countries control a large percentage of the world's stranded natural gas reserves, such that they have the power to affect LNG prices.[13] Indeed, the media has reported that a confidential study by North Atlantic Treaty Organization (NATO) economics experts sounds an alarm that Russia may be trying to put together a cartel comprising Algeria, Qatar, Libya, a number of central Asian countries, and perhaps Iran.[14] While it is unclear whether a cartel will play a similar role in gas as OPEC does in oil, the potential exists.

In a similar vein, there is the public policy consideration of dependence on foreign gas. Although domestic production accounts for most of the natural gas our nation uses today, it is projected that by 2025, LNG imports will account for 24 percent of the U.S. gas supply.[15] To date, most of our foreign gas has come from reliable trading partners, such as Canada, but new global players are stepping in to meet our natural gas needs.

As noted in a Congressional Research Service Report for Congress, "so long as domestic demand outpaces North American natural gas production, developing LNG import capacity appears attractive."[16] However, "ensuring adequate import capacity, integrating LNG efficiently into the existing natural gas supply network, and securing LNG facilities against terrorist attacks or accidents," are significant challenges that lie ahead.[17] Public opposition to LNG and new global trading relationships will also impact the future of LNG facilities.[18]

The following articles provide great insight to readers interested in understanding the complex issues associated with integrating LNG into the U.S. energy supply. The articles are both timely in light of the increasing U.S. and global demand for natural gas, and noteworthy because the subject matter affects each and every one of us.

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13. PARFOMAK, *supra* note 3, at 17. As the CRS report notes, in 2004, 10 countries held 77 percent of the world's natural gas reserves, with Russia, Iran and Qatar accounting for more than 55 percent of the reserves. *Id.*

14. *Marketplace* (NPR radio broadcast Nov. 14, 2006).

15. FED. ENERGY REGULATORY COMM'N, SECOND REPORT TO CONGRESS ON PROGRESS MADE IN LICENSING AND CONSTRUCTING THE ALASKA NATURAL GAS PIPELINE 12 (July 10, 2006). Note that Trinidad and Tobago has over the last few years become the single largest supplier of LNG to the U.S.; in 2004, it supplied 462,100 million cubic feet (MMcf), followed by Algeria (120,343 MMcf), and Malaysia (19,999 MMcf). ENERGY INFO. ADMIN., NATURAL GAS MONTHLY: NOVEMBER 2006, at 14, tbl.6 (2006).

16. PARFOMAK, *supra* note 3, at 22 (2005).

17. *Id.*

18. *Id.*