LNG TERMINALS: FUTURE OR FOLLY?

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I. INTRODUCTION

Energy policy in the United States stands at a vital crossroads. The U.S. is heavily dependent on energy as the engine to power its enormous economy. Disruptions in energy supply and significant increases in energy costs lead to adverse economic consequences such as recession and inflation.[1] Conversely, cheap energy plays a significant role in the unprecedented economic success of the U.S.[2]

The energy consumed by the U.S. has not come cheap. As the world's leading consumer of energy, the U.S. is also the greatest contributor of greenhouse gas emissions ("GHGs").[3] The scientific consensus is that the planet is undergoing highly destructive climate change and this climate change is very likely the result of GHGs emitted by human activity.[4] The worldwide economic boom of the past fifty years has released staggering amounts GHGs into the atmosphere, trapping the heat emitted by the sun and causing global

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1. Michael Baly III, Brian S. White & Christopher B. McGill, *The Impacts of Energy on the Economy*, *in* ENERGY LAW AND TRANSACTIONS § 1.02 (2005).

2. *See id.*; ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 4 (2007), *available at* http://www.eia.doe.gov/ oiaf/aeo/pdf/0383(2007).pdf [hereinafter *AEO 2007*] (noting slow economic growth due in part to higher energy prices).

3. *See* ENERGY INFO. ADMIN., EMISSIONS OF GREENHOUSE GASSES IN THE UNITED STATES 2005 2 (2006), *available at* ftp://ftp.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/ggrpt/057305.pdf.

4. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE ("IPCC"), CLIMATE CHANGE 2001: THE SCIENTIFIC BASIS 92-94 (2001). *Accord*, IPCC, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, SUMMARY FOR POLICY MAKERS 5 (Feb. 2007) [hereinafter *2007 IPCC Report*]; James Hansen, et al., *Global Temperature Change*, 103 PROC. OF THE NAT'L ACAD. OF SCIENCES 14288, 14288 (Sept. 26, 2006); COMM. ON THE SCIENCE OF CLIMATE CHANGE, NAT'L RESEARCH COUNCIL, CLIMATE CHANGE SCIENCE: AN ANALYSIS OF SOME KEY QUESTIONS 1 (2001) (cited in Petition for Writ of Certiorari at 23, Mass. v. E.P.A., 127 S. Ct. 1438 (2006) (No. 05-1120)).

temperatures to climb.[5] According to the Intergovernmental Panel on Climate Change ("IPCC"), a trend of higher global temperatures stretching over one hundred years (with the most significant increases in the past fifty years), rises in sea level and loss of glacier and snow cover in both hemispheres demonstrate long-term effects of increased GHG emissions.[6] Immediate effects of climate change can be observed in such phenomena as "significantly increased precipitation levels" in various parts of the world coupled with significant drying observed in other regions, strengthened mid-latitude westerly winds, widespread changes in extreme temperatures, and more intense tropical cyclone activity in the North Atlantic.[7] Aside from these current impacts, the IPCC projects that continued warming in the 21st century will result in serious natural consequences, including increased heat waves, a higher incidence of more intense tropical cyclones, and rises in sea levels of up to 0.8 meters by the year 2300.[8]

If the IPCC's predictions are correct, changes in weather patterns and rising sea levels could have significant impacts on human life. Some of the potential impacts include reduction in crop levels,[9] species extinction due to weather-related habitat destruction,[10] and displacement of human populations due to rising sea levels and loss of potable water sources.[11] The potential for even greater impacts are present unless immediate corrective actions are taken.[12]

Although U.S. recognition of the climate change problem has

5. In its most recent report, the IPCC stated that atmospheric concentrations of carbon dioxide were 379 parts per million ("ppm") in 2005, up from a pre-industrial value of 280 ppm, exceeding the natural range over the past 650,000 years (180 to 300 ppm). *2007 IPCC Report*, *supra* note 4, at 2.

6. *Id*. at 5, 7.

7. *Id.* at 8-9.

8. *Id.* at 16-17.

9. IPCC, CLIMATE CHANGE 2001: IMPACTS, ADAPTATION AND VULNERABILITY 252-258 (2001).

10. *See* John W. Williams, Stephen T. Jackson, & John E. Kutzbach, *Projected Distributions of Novel and Disappearing Climates by 2100*, 104 PROC. OF THE NAT'L ACAD. OF SCIENCES 5738 (Apr. 3, 2007).

11. IPCC, *supra* note 9, at 209-212, 389-394.

12. *See* U.S. Environmental Protection Agency, Future Sea Level Changes, http://www.epa.gov/climatechange/science/futureslc.html#ref (last visited March 16, 2007). For example, if temperature increases are more dramatic then those predicted by the IPCC, sea levels could rise much more significantly, causing greater displacement of human populations. *See id*. The IPCC 2001 report posits that if portions of the West Antarctic Ice Sheet destabilize and slide into the ocean, world sea levels could rise as much as 20 feet. *Id*. Similar amounts of water could be added by the melting of the Greenland Ice Sheet. *Id*.

been delayed, the U.S. has slowly begun to recognize its need to curb emissions of GHGs and other air pollutants. A recent article in the *Proceedings of the National Academy of Sciences* confirmed the earlier findings of the IPCC that the world is warming faster than it has in the past, and the cause of the increased speed of this warming is, in part, anthropogenic.[13] Notwithstanding some entrenched dissenters,[14] an increasing number of American politicians and scientists are expressing the position that something must be done to curb carbon emissions in the U.S. in order to avoid a climate disaster of a catastrophic magnitude.[15]

The long-term answers to the issue of climate change are complex and beyond the scope of this article. However, the choices our society makes with respect to managing GHGs will define this generation. Our decisions could set us on a path towards climate stability, lead us down a path of climate disaster, or merely waste time and valuable resources through mediocre proposals and actions. It is evident that our over-consumption of fossil fuels must come to an end. But the changes necessary to wean our economy from fossil fuels cannot happen overnight. We must first find options available to immediately and significantly reduce GHG emissions without severely curtailing energy use and destroying the world economy dependent upon that energy utilization. One short-term option is to increase our reliance on natural gas. Natural gas is a cleaner source of electricity than coal or oil, and a substantial conversion from coal to natural gas as a source of electricity and space heating would result in

13. Hansen, *supra* note 4, at 14288.

14. *See, e.g.*, Science & Environmental Policy Project, http://www.sepp.org (last visited May 17, 2007) (website of a scientific group generally critical of any policy development that treats global warming as an anthropogenic issue); 151 CONG. REC. S18-S21 (daily ed. Jan. 4, 2005) (statement of Sen. Inhoffe) ("I called catastrophic global warming the 'greatest hoax ever perpetrated on the American people' . . . For [environmental extremists], the issue of catastrophic global warming is not just a favored fundraising tool. In truth, it's more fundamental than that. Put simply, man-induced global warming is an article of religious faith. [Skeptics] who challenge its tenets are attacked . . . [and] contemptuously dismissed . . .").

15. *See, e.g.*, Union of Concerned Scientists, Global Warming Program, http://www.ucsusa.org/global_warming/ (last visited May 28, 2007); EXECUTIVE COMMITTEE OF THE WEST COAST GOVERNORS' GLOBAL WARMING INITIATIVE, WEST COAST GOVERNORS' GLOBAL WARMING INITIATIVE STAFF RECOMMENDATIONS TO THE GOVERNORS (2004), *available at* http://www.ef.org/westcoastclimate/WCGGWI_Nov_04%20Report.pdf. In addition, both houses of Congress have made the issue of climate change and energy efficiency a central component of their agenda and have multiple bills concerning these issues under consideration. *See* S. 280, 110th Congress (2007); S. 317, 110th Congress (2007); H.R. 620, 110th Congress (2007); H.R. 1590, 110th Congress (2007).

an immediate and significant reduction in GHG emissions. While not a comprehensive long-term solution, shifting from coal and petroleum to natural gas would act as a stopgap measure to allow the U.S. to make major reductions in GHGs while converting to a non-hydrocarbon-dependent energy economy.

Because of its potential benefits, natural gas should become a key player in the U.S. energy market in the coming years. Yet, while demand is increasing, natural gas production in America is on a steady, permanent decline.[16] If natural gas is going to become a transition fuel for the switch to a more carbon-neutral economy, the U.S. must find other sources of natural gas since domestic reserves will not meet increasing demand. This article looks at one such source: liquefied natural gas. The purpose of this article is to track the development of U.S. policy as it affects the importation of liquefied natural gas ("LNG") and to demonstrate the propriety of a policy which favors LNG in light of the important role natural gas could play in the immediate future. Part II of this article demonstrates that natural gas is essential as a transitional energy supply. Part III shows that both current and future supplies of natural gas are insufficient to meet projected demand and considers LNG as a method of meeting this demand. Part IV provides basic information about LNG production, transportation, and distribution. Part V discusses national policies developed to encourage the development of liquefied natural gas supplies. Part VI examines common arguments presented against LNG development and responds to those criticisms. Finally, Part VII argues that existing U.S. energy policy is correct in encouraging the development of LNG importation through market-based systems. LNG is necessary as a source of natural gas supply to ensure the availability of a sufficient quantity of this important fuel during the transition to a carbon-neutral economy.

II. NATURAL GAS AS A TRANSITIONAL ENERGY SUPPLY

In order to achieve the reductions of GHGs necessary to stabilize the growth of atmospheric carbon dioxide and curb global warming, a multi-prong attack is necessary.[17] It would be absurd—and

16. ROBERT L. HIRSCH, PEAKING OF WORLD OIL PRODUCTION: IMPACTS, MITIGATION, & RISK MANAGEMENT 34 (2005) (citing CERA ADVISORY SERVICES, THE WORST IS YET TO COME: DIVERGING FUNDAMENTALS CHALLENGE THE NORTH AMERICAN GAS MARKET. (2004)).

17. *See* Robert H. Socolow & Stephen W. Pacala, *A Plan to Keep Carbon in Check*,

impossible—to require society to immediately walk away from all sources of energy that utilize GHG-emitting fuels. Therefore, this multi-pronged approach will likely involve several phased steps. A roadmap for this process is beyond the scope of this article. Rather, this article contends that natural gas will play a prominent role in any transition from our highly carbon-dependant society to one that is carbon-neutral, and that liquefied natural gas is vital to the procurement of natural gas supplies in sufficient quantities to satisfy demand.

To begin with, the United States' lust for energy continues to grow. Based on current trends, the Energy Information Administration estimates that total energy use in the U.S. will increase 31% over the next twenty-five years.[18] This increase in energy demand will have to be met by increased conservation and efficiency efforts, in addition to the acquisition of other energy resources.

At this point in the U.S. energy economy, fossil fuels are the overwhelming energy source.[19] Despite supplying only 22.5% of the nation's energy, coal contributes over a third of the nation's carbon dioxide emissions.[20] Transportation and electricity generation contribute the most carbon dioxide to the United States' overall GHG emissions,[21] and a significant portion of this carbon dioxide, nearly one third, is attributable to the use of coal for generating electricity.[22]

The data shows that generation of electricity is responsible for some of the worst GHG pollution produced in the U.S. Thus, natural gas finds its greatest potential as a transitional fuel source by replacing coal in electricity generation.[23] Because natural gas

SCIENTIFIC AMERICAN, Sept. 2006, at 50; NAT'L COMM'N ON ENERGY POLICY, ENDING THE ENERGY STALEMATE: A BIPARTISAN STRATEGY TO MEET AMERICA'S ENERGY CHALLENGES (2004).

18. *AEO 2007*, *supra* note 2, at 73.

19 Energy Information Administration, Energy Basics 101, http://www.eia.doe.gov /basics/energybasics 101.html (last visited May 12, 2007).

20 U.S. Envtl Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, ES-7 (2006), *available at* http://www.epa.gov/climatechange/ emissions/downloads06/06_Complete_Report.pdf.

21 *Id.*

22. Ninety percent of U.S. coal production goes to the production of electricity. *AEO 2007*, *supra* note 2, at 12.

23. Increasing the availability of natural gas could also reduce emissions if more homes and businesses were to use natural gas instead of electricity produced with coal for space heating. *See* FuelingtheFuture.org, Consumer Use, http://www.fuelingthefuture.org/contents /MoreConsumersatHome.asp (last visited May 31, 2007).

emits only 40% as much carbon dioxide as coal when burned for electricity, switching from coal to natural gas would significantly reduce GHG emissions in a relatively short period of time.

In contrast, the most aggressive efforts to increase the use of renewable energy sources would likely have only a modest impact on GHG emissions. Currently, non-hydroelectric renewables account for only 2.3% of electricity generation in the U.S.[24] The Energy Information Administration ("EIA") predicts that this share will grow to only 3.6% by 2030.[25] A recent report by the National Commission on Energy Policy has recommended that this amount be increased to 10% by 2020.[26] However, significant technological and economic barriers to achieving this modest goal remain.[27] Even assuming the pursuit of this aggressive strategy, renewable sources would displace only a small portion of the current coal-fired electricity production, leaving a gap for another type of energy to help reduce the GHG emissions attributable to electricity production.[28]

Natural gas is a convenient and proven way to achieve short-term reductions in GHG emissions. By switching from coal-fired power plants to natural gas-fired plants, the U.S. could achieve higher reductions in these emissions than solely from waiting for renewable sources to come on-line. As a cleaner method of producing electricity and providing space heating, natural gas could serve as one component of a multi-pronged approach to tackling GHG emissions.

III. CURRENT DOMESTIC SUPPLIES OF NATURAL GAS ARE INADEQUATE

Natural gas already plays an important role in the U.S. economy. The industry sector is the largest user of natural gas, where it provides a vital feedstock for all types of industrial processes and petrochemical production.[29] Natural gas also serves as an important and efficient space heating fuel in many American markets, and very recently natural gas has begun to play an important role in electricity

24. *AEO 2007*, *supra* note 2, at 86.

25. *Id.*

26. NAT'L COMM'N ON ENERGY POLICY, *supra* note 17, at 62, 69.

27. *Id.* at 63-68 (noting barriers to renewable development).

28. *See* Raymond J. Kopp, *Natural Gas: Supply Problems Are Key*, RESOURCES, Winter 2005, at 16, 18 (noting the inability of renewables to close the gap).

29. *See* James M. Inhofe & Frank Fannon, *Energy and the Environment*: *The Future of Natural Gas in America*, 26 ENERGY L.J. 349, 350-52 (2005).

generation.[30]

Natural gas offers many advantages over other sources of electricity production. First and foremost, natural gas burns much cleaner than coal, emitting only 40% as much carbon dioxide in electricity generation.[31] Along with the reduced carbon emissions from consumption, natural gas extraction has less environmental impact than coal mining.[32]

Natural gas plants are relatively cheap to build. A recent study by the EIA accounted for all costs over the life-time of various energy projects' combined cycle (termed "levelized cost comparison").[33] The study found natural gas plants cheaper than coal, nuclear, and wind-powered electricity generation facilities.[34] Thus, natural gas enjoys substantial environmental and economic advantages over alternative fuels.

Despite these advantages, federal law prevented burning natural gas for electricity production for a period of time.[35] A natural gas shortage prompted Congress to enact regulations to conserve natural gas for industrial use, encourage production of domestic coal, and reduce dependence on foreign oil in the wake of the 1973 oil embargo.[36] Yet in a fortuitous series of events, beginning with the amendment and repeal of the Power Plant and Industrial Fuel Use Act,[37] the deregulation of the natural gas industry, and the passage of

30. Daniel Yergin & Michael Stoppard, *The Next Prize*, FOREIGN AFF., Nov.-Dec. 2003, at 103, 107.

31. *Id* at 109.

32. For example, common coal mining practices such as strip mining or the more extreme mountaintop removal completely eliminate entire ecosystems. *See, e.g.*, Mountain Justice Summer, The Facts, http://mountainjusticesummer.org/facts/index.php (last visited May 11, 2007) (includes information about the damage caused by mountaintop removal, a common coal mining process). *See also* Wendy B. Davis, *Out of the Black Hole: Reclaiming the Crown of King Coal*, 51 AM. U. L. REV. 905, 947 (2002) (describing environmental impacts of coal mining).

33. ENERGY INFO. ADMIN., INT'L ENERGY OUTLOOK 2006 66 (2006), *available at* http://www.eia.doe.gov/ oiaf/ieo/pdf/0484 (2006).pdf [hereinafter *IEO 2006*].

34. *Id*. *See also* Yergin & Stoppard, *supra* note 30, at 109 (describing technology "borrowed from jet engines [that] has given gas a major advantage against its competitors" due to the fact that they are "easier to finance, quicker to build, and more efficient in their consumption of energy than existing coal plants").

35. Power Plant & Industrial Fuel Act, 42 U.S.C. §§ 8301-8484 (1978), *amended by* Pub. L. No. 100-42, 101 Stat 310 (1987).

36. *See* H.R. REP. NO. 100-78 at 3-8 (1987), *reprinted in* 1987 U.S.C.C.A.N. 270, 271-277.

37. 42 USC §§ 8301-8484 (1978).

Clean Air Act amendments of 1990,[38] natural gas began a resurgence throughout the 1990's that led one scholar to remark that, by the turn of the century, natural gas had become the "fossil fuel *du jour*."[39]

As cheap, clean gas became available, the building of natural gas-fired plants boomed. Between 1994 and 2005, over 190,000 megawatts of new natural gas-fired capacity was added, outstripping growth from all other fuel sources combined.[40] EIA predicts that electricity production through natural gas will increase from 18% to 22% of U.S. electricity generation between 2005 and 2020.[41] In a study prepared for the American Gas Foundation, the American Gas Association recently forecast a slightly higher figure, estimating that natural gas-fired power plants will account for 26% of U.S. electricity generation by 2020.[42]

The long-term picture for natural gas demand is strong. In 2005, the EIA predicted that natural gas demand will increase from 22 trillion cubic feet ("Tcf") in 2003 to 30.7 Tcf in 2025.[43] In 2006, the EIA predicted overall natural gas consumption will increase from 22.4 Tcf in 2004 to 26.9 Tcf in 2030,[44] with a potential demand as high as 29.4 Tcf.[45] Industry experts are generally in accord. The chairman of the American Gas Association recently predicted a "bounceback" in natural gas demand in the coming years.[46]

This predicted increase in demand for natural gas presents a

38. Pub. L. No. 101-549, 104 Stat. 2399 (1990).

39. Kopp, *supra* note 28, at 16.

40. ENERGY INFO. ADMIN., ELECTRIC POWER ANNUAL 2005 19 (2006), *available at* http://www.eia.doe.gov/cneaf/electricity/epa/epa.pdf.

41. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2006 7 (2006), *available at* http://www.eia.doe.gov/oiaf/archive/aeo06/pdf/0383(2006).pdf [hereinafter *AEO 2006*] (relying on a presumption that coal will experience a resurgence in electricity production). *Compare* ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2005 6,7 (2005), *available at* http://www.eia.doe.gov/oiaf/archive/ aeo06/pdf/0383(2006).pdf [hereinafter *AEO 2005*] (projecting higher future LNG imports and an increase in production of electricity using natural gas from 16% in 2003 to 24% in 2025).

42. AMERICAN GAS FOUNDATION, NATURAL GAS OUTLOOK TO 2020 7 (2005), *available at* http://www.gasfoundation.org/ResearchStudies/2020Complete.pdf.

43. *AEO 2005*, *supra* note 41, at 2.

44. *AEO 2006*, *supra* note 41, at 85. The EIA states that the difference between *AEO 2005* and *AEO 2006* projections is largely due to increases in the amount of electricity to be created through coal given rising gas prices. *See id.* at 10, 85. However, any comprehensive global warming legislation would seriously undermine this assumption.

45. *Id.* at 88. Recent data in *AEO 2007* places the 2030 demand slightly lower than *AEO 2006* at 26.1 Tcf. *AEO 2007*, supra note 2, at 89.

46. *AGA Chairman Says Utilities Must Adopt a More Global Perspective*, GAS DAILY, Jan. 19, 2007, at 3 (noting that U.S. consumption of natural gas could increase 20% by 2020).

dilemma. Natural gas is of increasing importance as a feedstock for industry, a method of heating homes and businesses, and a fuel for efficient and clean electricity generation. Yet, there is a widening gap between demand and production.[47] The EIA recently predicted that this gap could grow to an 8.7 Tcf yearly deficiency between U.S. consumption and production of natural gas by the year 2025.[48]

In order to fill the gap, more natural gas must be imported into the U.S. Traditionally, the U.S. has relied upon imports from Canada for about 20% of its gas,[49] making Canada the largest exporter to the U.S.[50] However, EIA has predicted that natural gas imports from Canada are on the decline as Canadian production matures and domestic consumption increases.[51] Mexico is a net importer of natural gas and will continue to be so in the future.[52] With its two continental neighbors out of the import picture, where will the U.S acquire the natural gas it needs to satisfy its growing demand?

The obvious answer is that the U.S. will need to import its natural gas from other countries. Worldwide natural gas reserves are estimated at 6,112 Tcf.[53] With world consumption projected to increase from 95 Tcf per year in 2003 to 182 Tcf per year in 2030, EIA estimates that there is a 66.7 year reserves to production ratio.[54] The U.S. Geological Survey estimated in 2000 that 4,221 Tcf of world natural gas reserves remain undiscovered.[55] While abundant world reserves exist, approximately half of the known reserves are located in stranded reserves, or gas fields where no domestic consumption or transportation is available.[56] In order to meet the growing demand for natural gas in the U.S., the questions that remain

49. Over the past several years, the EIA has consistently forecasted a widening gap between the consumption and production of natural gas. *See AEO 2005*, *supra* note 41, at 9; *AEO 2006*, *supra* note 41, at 11; *AEO 2007*, *supra* note 2, at 14.

48. Denise L. Desautels & Peter A. Ray, The Struggle Between States and the Federal Government on the Siting of LNG Import Terminals: Has a Red Tide Washed Ashore in the Blue States?, Electricity J., Oct. 2005, at 81 (citing Nat'l Assoc. of Reg. Util. Comm'rs, Liquefied Natural Gas: An Overview of the Issues for State Pub. Util. Comm'ns (2005), *available at* http://www.fossil.energy.gov/programs/oilgas/publications/lng/LNG_NARUC_state_utility_comm.pdf).

49. *AEO 2006*, *supra* note 41, at 88.

50. *IEO 2006*, *supra* note 33, at 41.

51. *Id*.

52. *Id*.

53. *Id*. at 38.

54. *Id*. at 37-38.

55. *Id*. at 38-39.

56. *Id*.

are how to get these stranded reserves to domestic markets, and how to feasibly transport non-stranded reserves from overseas to the U.S.

LNG may in fact provide answers to these lingering questions. In 2003, renowned energy scholars Daniel Yergin and Michael Stoppard touted LNG as *The Next Prize*.[57] Yergin and Stoppard pointed out that LNG is important because much of the world's plentiful gas reserves remain in stranded fields.[58] They outlined the potential for a global market for LNG and advocated for the U.S. to take an aggressive approach toward developing capacity to import and process LNG. Yergin and Stoppard joined with the natural gas industry and government sources in championing the need for LNG in order to meet the growing gap between U.S. domestic production and U.S. consumption.[59] If their projections are accurate, LNG will be a necessary and growing component of the U.S. energy market over the next several decades. Although this aspect of U.S. energy policy is not unanimously embraced,[60] both the U.S. government and key industry players see LNG as part of the future of natural gas in the U.S.[61]

IV. LIQUEFIED NATURAL GAS: A PRIMER

Liquefied natural gas is natural gas which has been cooled down to -260ºF, at which point it condenses into a liquid that can be stored at atmospheric pressure.[62] In its condensed state, LNG occupies 600 times less volume, making it possible to transport large quantities of gas at one time.[63] Ordinarily, in order for the transportation to be economical, natural gas must be pressurized and passed through

57. Yergin & Stoppard, *supra* note 30.

58. *Id*. at 104.

59. *See* Warren R. True, *The Future of U.S. Gas Means LNG*, OIL & GAS J., Apr. 4, 2005, at 3.

60. See *infra* Part VI.

61. For instance, upon approving two new LNG import terminals, the Federal Energy Regulatory Commission ("FERC") Chairman Joseph Kelliher recently commented, "Our natural gas markets are changing fundamentally. Natural gas supply is no longer sufficient to meet North American demand, and LNG will play a more important role in meeting US natural gas needs." He further noted that the combined capacity of these two projects, "nearly equal to the projected capacity of an Alaskan gas pipeline." FERC: Press Release, Feb. 15, 2007, http://www.ferc.gov/press-room/press-releases/2007/2007-1/02-15-07-C-1.asp.

62. *See* U.S. DEP'T OF ENERGY, LIQUEFIED NATURAL GAS: UNDERSTANDING THE BASIC FACTS 3 (2005), *available at* http://www.fossil.energy.gov/programs/oilgas/publications/lng/LNG_primerupd.pdf.

63. *Id*.

pipelines.[64] Because pipelines are not always available, natural gas in remote locations and in areas without a developed market is left stranded.[65] Utilization of LNG permits the shipment of this otherwise stranded gas in sufficient quantities to make transport economical.[66]

LNG comes with its own infrastructure. This infrastructure has been termed the LNG "value chain."[67] The value chain consists of four major components: "(1) [e]xploration and [p]roduction, (2) [l]iquefaction, (3) [s]hipping, and (4) [s]torage and [r]egasification."[68] This process comes at a tremendous price tag: each "value chain" is estimated to cost between $7 and $10 billion per project depending upon size.[69] Recently, costs have been reduced due to improvements at every stage of the value chain,[70] but the entire process remains exceedingly expensive.

The first step in the value chain is building a liquefaction facility near a natural gas production field.[71] Natural gas is delivered by pipelines to the liquefaction plant.[72] The liquefaction plant purifies natural gas to remove natural contaminants and refrigerates the gas through a series of refrigerant "trains."[73] Once liquefied, the gas is pumped into LNG tankers, specialized ships capable of transporting 125,000 to 135,000 cubic meters of LNG, or approximately 2.6 to 2.8 billion cubic feet of natural gas.[74] The ships take the liquefied gas to an LNG import terminal where it is offloaded into large insulated storage tanks.[75] It is then run through a regasification process,

64. *See* Yergin & Stoppard, *supra* note 30, at 107.

65. *See id*. at 104, 107.

66. *Id*.

67. U.S. DEP'T OF ENERGY, *supra* note 62, at 8.

68. *Id*.

69. *Id.* at 9. Even a small terminal alone can cost upwards of $400 million. ENERGY INFO. ADMIN., U.S. LNG MARKETS AND USES: JUNE 2004 UPDATE 11 (2004), http://tonto.eia.doe.gov/FTPROOT/features/lng2004.pdf [hereinafter *U.S. LNG MARKETS & USES*].

70. *See* U.S. DEP'T OF ENERGY, *supra* note 62, at 8.

71. *Id*. at 10.

72. *Id*.

73. *Id*. at 10-11. Although the techniques vary, an LNG "train" is generally a series of heat exchanges in which natural gas is passed. Each heat exchange has a successively colder refrigerant which cools the gas down to the temperature required to achieve liquefaction. *Id.*

74. MICHELLE MICHOT FOSS, INTRODUCTION TO LNG 23 (2003), *available at* http://www.beg.utexas.edu/energyecon/lng/documents/CEE_INTRODUCTION_TO_LNG_FINAL.pdf.

75. *See* DEP'T OF ENERGY, supra note 62, at 13-14.

converting the liquid natural gas back into its gaseous form.[76] From there, the natural gas is sent through an interconnection pipe, which leads to a pipeline (usually preexisting) for transportation to end users.[77]

The enormity of the LNG value chain and its high price tag poses the question: Is LNG economical? The answer, of course, depends upon the price of natural gas. "[T]he current demand for LNG in the U.S is a function of whether the imported LNG can be produced and transported to the U.S., regasified, and sold at a price that is competitive with the price paid for domestic supplies of natural gas."[78] It is generally agreed that LNG is a competitive alternative to natural gas so long as prices for natural gas remain above $3.00 to $4.00 per million British thermal units ("MMBtu").[79] Natural gas has recently been trading at levels much higher than these figures—as high as $7.694 per MMBtu on the NYMEX futures market.[80] Even the most pessimistic forecast by EIA projects natural gas prices above this threshold through at least 2030.[81] Cambridge Energy Research Associates, led by Yergin, reports that "[t]he North America natural gas market is set for the longest period of sustained high prices in its history."[82]

Given this outlook, it appears that LNG gas will be economical to import to the U.S. despite the high cost of the LNG value chain, and thus demand for LNG will continue to rise.[83] Current evidence supports this trend of an increasing demand for LNG. LNG imports in

76. *Id.*

77. *Id.*

78. Brian D. O'Neill, *Liquefied Natural Gas*, *in* ENERGY LAW AND TRANSACTIONS § 56.02[1][b] (2005).

79. *See* Foss, *supra* note 74, at 19 (proposing a figure of $2.50 to $3.50 per MMBtu); Gerald Knowles, *Liquefied Natural Gas: Regulation in a Competitive Natural Gas Market*, 24 ENERGY L.J. 293 (2003) (suggesting a slightly higher range of $3.50 to $4.00 per MMBtu); Kopp, *supra* note 28.

80. New York Mercantile Exchange, *available at* http://www.nymex.com/ng_fut_cso.aspx (last visited Oct. 26, 2006).

81 *See AEO 2007*, *supra* note 2, at 91; *AEO 2006*, *supra* note 41, at 87

82. Hirsch, *supra* note 16, at 34.

83. If the price of natural gas rises too high, some users may switch to other fuels, making LNG less attractive. This is the position EIA has taken in its 2006 Annual Energy Outlook, representing a shift form the pro-LNG forecasts of 2004 and 2005. EIA analysis is limited in that it assumes that present national policy on the regulation of GHGs (none) will continue. Even provided EIA is correct in these assumptions, it still predicts LNG imports will triple over the next two decades and will play a very significant role in the short term, as new coal-fired capacity takes time to come on-line. *See AEO 2006*, *supra* note 41.

2004 were around 0.6 Tcf and the EIA predicts that imports could rise as high as 6.4 Tcf by 2025.[84] However, demand is highly contingent upon prices, so depending upon the price and demand scenario, EIA predicts LNG imports in 2030 could be as low as 1.9 Tcf and as high as 7.4 Tcf.[85] Of course, the importation of LNG would also have an impact on natural gas prices as greater supply could help lower prices.

To accommodate the increase in LNG imports, the U.S. will need to build more gasification facilities. As of 2005, the U.S. had five operating LNG terminals, four on the eastern seaboard and one in the Gulf of Mexico. The combined peak capacity of these terminals is 1.3 Tcf per year.[86] Proposed expansions of these projects will bring their total annual capacity up to 2.1 Tcf by 2008.[87] With projected imports increasing to somewhere between 2 Tcf and 8 Tcf per year, the U.S. needs additional importation and re-gasification capacity. Furthermore, as current projections assume increased reliance on coal for electricity production over the next twenty-five years, any effort to replace coal-fired electricity with natural gas-fired capacity would result in even greater demand. With this in mind, from the perspective of LNG proponents, it is incumbent on the United States government to create a policy mechanism that encourages the responsible and efficient development of LNG import terminals.[88]

V. LNG: U.S. POLICY DEVELOPMENT

The modern era of LNG regulation began in 2002 with the Federal Energy Regulatory Commission's ("FERC") approval of the construction of an LNG Terminal in Hackberry, Louisiana.[89] The *Hackberry* opinion represented a major shift in the policy of the FERC toward the siting, construction, and operation of LNG facilities.[90] This shift sets the stage for determining the success of LNG as an alternative source of natural gas. The opinion, along with

84. *See* U.S. DEP'T OF ENERGY, *supra* note 62, at 6.

85. *AEO 2006*, *supra* note 41, at 89.

86. DEP'T OF ENERGY, *supra* note 62, at 6.

87. *Id.*

88. *See*, Yergin & Stoppard, *supra* note 30, at 113-114; Kopp, *supra* note 28, at 18; Monica Berry, *Liquefied Natural Gas Import Terminals: Jurisdiction Over Siting, Construction, and Operation in the Context of Commerce Clause Jurisprudence*, 26 ENERGY L.J. 135, 178 (2005).

89. *Hackberry LNG Terminal, LLC*, 101 F.E.R.C. ¶ 61,294 (2002).

90. See Knowles, *supra* note 79, at 311-315, for an in-depth look at the circumstances surrounding this shift and analysis of its impacts. *See also* O'Neill, *supra* note 78 at § 56.02[3].

other current events, formed much of the policy that ended up in amendments made to the Natural Gas Act[91] by the Energy Policy Acts of 2005.[92] In order to understand the importance of this shift, it is necessary to understand the regulation leading up to this opinion. After a brief discussion of the treatment of LNG leading up to the modern era, the current regulatory framework for LNG will be considered and the policy implications of the existing legal and regulatory framework will be addressed.

A. Regulation of LNG in its Infancy

1. Natural Gas Act

Natural gas was originally considered a worthless byproduct of the oil industry leading to the widespread practice of gas flaring.[93] This was due, in large part, to the primitive state of pipeline technology during the early decades of oil exploration.[94] As the development of high-strength steel led to more reliable and sturdy pipelines, gas was suddenly a valuable commodity and a new industry was born.[95]

At first, natural gas was regulated primarily by states. However, as the growth of the industry led to an interstate market, federal regulation became inevitable.[96] The Supreme Court's decision in *Missouri ex rel. Barrett v. Kansas Natural Gas Co.* demonstrated the need for federal regulation. [97] The Court held that the Commerce Clause restricted state regulation over natural gas rates to intrastate gas. [98] In the face of this legal vacuum, and in response to some abusive practices in the interstate gas industry, Congress directed the Federal Trade Commission to investigate the natural gas market and recommend legislation based on its findings.[99] The FTC published the study in 1935 and Congress subsequently passed the Natural Gas Act

91. 15 U.S.C. § 717 (2007).

92. Pub. L. No. 109-58, 119 Stat. 594 (2005).

93. James McManus, *Historical Development of the Natural Gas Industry*, *in* ENERGY LAW AND TRANSACTIONS § 50.02[1] (2005).

94. *Id.*

95. *Id.*

96. *Id.* at § 50.02 [1][a][i].

97. 265 U.S. 298 (1924).

98. *Id.* at 307

99. McManus, *supra* note 93, at § 50.04[1][a][i].

("NGA") in 1938.[100]

The NGA vested power in the Federal Power Commission ("FPC") (later the Federal Energy Regulatory Commission and jointly referred to in this article as "FERC" or "the Commission") to regulate the interstate natural gas industry.[101] Important provisions of the NGA included Sections 1, 3, 4, and 7. Section 1(b) of the NGA gave the Commission jurisdiction over the transportation and sale of natural gas in interstate commerce and over companies involved in the sale and transportation of natural gas in interstate commerce.[102] Section 3 provided authority to regulate importation and exportation of natural gas.[103] Section 4 gave the Commission authority to set "just and reasonable" rates.[104] Finally, § 7, as amended in 1942, gave the Commission broad authority to grant Certificates of Public Necessity and Convenience for the construction or extension of facilities subject to the Commission's jurisdiction upon a finding that "the public convenience and necessity will be served by such operation."[105] A series of Supreme Court cases following the NGA upheld the Act as being constitutional and provided a broad level of discretion for the Commission in implementing the NGA's various provisions.[106]

The Commission first extended its regulatory authority only to pipeline companies.[107] This policy was reasonable in light of the fact that it was only pipeline companies that had monopoly and monopsony[108] power in the natural gas market. A large number of suppliers maintained competition at the production level and therefore

100. 15 U.S.C. § 717 (2007).

101. 15 U.S.C. § 717(b).

102. *Id*.

103. 15 U.S.C..§ 717(b).

104. 15 U.S.C. § 717(c).

105. 15 U.S.C. § 717(f).

106. *See* Colo. Interstate Gas Co. v. Fed. Power Comm'n., 324 U.S. 581 (1945) (deferring to the Commission's authority, in the absence of Congressional direction, to determine the proper formula for allocating costs of interstate natural gas service); Fed. Power Comm'n. v. Hope Natural Gas Co., 320 U.S. 591 (1944) (holding that a just and reasonable rate is determined "by the result reached not the method employed" in reaching it); Fed. Power Comm'n. v. Natural Gas Pipeline Co., 315 U.S. 575 (1942) (upholding the constitutionality of the NGA's ratemaking provisions and holding that the Commission could reach the determination of a just and reasonable rate by a variety of formulas and was not bound to any particular formula).

107. McManus, *supra* note 93, at § 50.04[1][a][ii].

108 A monopsony is a state of imperfect market competition in which one buyer faces many sellers, as opposed to a monopoly, where one seller faces many buyers. *See generally* JOAN ROBINSON, THE ECONOMICS OF IMPERFECT COMPETITION (Macmillan & Co., Ltd. 1933).

regulation was not necessary.[109] However, the Supreme Court drastically altered the landscape of regulation in the natural gas industry in 1954 with its decision in *Phillips Petroleum v. Wisconsin*.[110]

In *Phillips*, the Supreme Court held that the under the NGA, the Commission had the authority and the responsibility to regulate not only pipeline companies, but also natural gas producers.[111] This decision resulted in a massive expansion in the jurisdiction of the Commission from a small number of pipeline companies to thousands of natural gas producers.[112] The resulting regulatory backlog led to many of the failed regulatory policies that plagued the natural gas industry throughout the 1970's and early 1980's.[113] These policies led to a gas shortage.[114] The energy crises of the seventies, particularly the OPEC oil embargo of 1973 and the occurrence of several record cold winters in the mid-1970's, further exacerbated the gap between natural gas supply and demand.[115] As a result, demand for natural gas was high in the early 1970's.

2. LNG Under the Natural Gas Act

During the tumultuous seventies, LNG became a viable choice for augmenting the natural gas supply in the United States. Although the technology to create and transport LNG had been available since the 1940's,[116] an abundance of domestically-produced natural gas combined with the high cost of the LNG value chain left it outside the scope of the natural gas market. In fact, the U.S. first entered the LNG market as an exporter, beginning in 1959 with the export of LNG to

109. Sueden G. Kelly, *Natural Gas*, *in* THE ENERGY LAW GROUP, ENERGY LAW AND POLICY FOR THE 21ST CENTURY 8-19 (Rocky Mountain Mineral Law Foundation 2000).

110. 347 U.S. 672 (1954).

111. *Id*. at 682-84.

112. McManus, *supra* note 93, at § 50.04[1][a][ii].

113. The issue of the deregulation of the natural gas industry has been exhaustively addressed by others and will not be recounted here. *See, e.g.*, Richard J. Pierce, Jr., *The Evolution of Natural Gas Regulatory Policy*, *in* NAT. RESOURCE & ENV'T. 53 (1995) (discussing development of natural gas regulatory policy). It was during the period of the deregulation of the natural gas industry that LNG began to gain a foothold in the U.S. energy markets, and the regulations adopted by FERC have followed and expanded upon this modern trend in natural gas regulation and industry development.

114. *Id.* at 54.

115. *See* McManus, *supra* note 93, at § 50.02[3][a].

116. *U.S. LNG MARKETS & USES*, *supra* note 69, at 1.

Lake Charles, England aboard the *Methane Pioneer*.[117] Since 1969, the U.S. has exported gas regularly to Japan from its oldest active LNG terminal located in Kenai, Alaska. However, during the early seventies, demand conditions and a two-tiered vintage pricing system which favored "new gas" over "old gas" provided ripe timing for the importation of LNG for the first time.[118]

In 1972, the Commission authorized the construction of the first LNG import terminal and approved the long-term importation of LNG from Algeria to Everett, Massachusetts.[119] This project was approved, in part, because the Commission determined that "the United States [was] running dangerously short of natural gas."[120] At first, there was some uncertainty over the appropriate policy approach to LNG terminals. LNG terminals were new components in a developed natural gas transportation and distribution system that connected interstate pipeline systems with imported natural gas. While the Commission clearly had jurisdiction under § 3 of the NGA, it was less clear whether the construction of these facilities required a Certificate of Public Convenience and Necessity under § 7 of the NGA.

Initially, the Commission authorized construction exclusively under § 3 of the NGA.[121] However, shortly after the Commission issued the authorization in *Distrigas*, the Commission changed its position.[122] Upon application for an increase in the amount of gas it could import, the Commission held that § 7 certification was required for all of Distrigas' facilities.[123] Distrigas challenged this ruling on the grounds that the Commission did not have jurisdiction over imported natural gas under *Border Pipe Line Co. v. FPC*, in which the D.C. Circuit held that the Commission did not have § 7 jurisdiction over pipelines importing gas from Mexico.[124] Rather than overturn its earlier decision, the D.C. Circuit in *Distrigas v. FPC* held that the Commission's authority under § 3 was broad enough to include § 7

117. *Id.* at 1-2.

118. McManus, *supra* note 93, at § 50.03[4][b][ii].

119. Distrigas Corp., 47 F.P.C. 752 (1972).

120. *Id*. at 761.

121. *Id.* at 756.

122. For an excellent discussion of the policy development of LNG terminal siting under FPC, and later FERC, see Knowles, *supra* note 79.

123. Distrigas Corp., 49 F.P.C. 1145 (1973).

124. 171 F.2d 149 (D.C. Cir. 1948).

requirements.[125]

In general, the Commission treated LNG import terminals like natural gas pipelines by regulating long-term contracts, requiring that services be provided pursuant to tariffs on file with the Commission, and eventually imposing open-access policies on terminals similar to those imposed on pipelines.[126] However, favorable policies and deregulation could not save LNG from market forces. After imports of LNG peaked in 1979, LNG imports suffered a drastic decline due to rapidly falling oil prices and the emergence of the natural gas "bubble," created in large part by the Natural Gas Policy Act of 1978.[127] This resulted in a glut of domestically available natural gas and, because LNG prices were tied to oil prices in most contracts, LNG became uneconomical to import.[128] As a result, most LNG import terminals were shuttered, and LNG fell into the background of energy policy development.[129]

However, due to rising demand for natural gas, LNG has enjoyed a surge in popularity in recent years. First, sections of the Powerplant and Industrial Fuel Use Act were repealed in 1987,[130] lifting restrictions on the use of natural gas in industrial boilers and in the generation of electricity, thus raising demand for LNG.[131] Additionally, the more stringent requirements on air quality imposed by the Clean Air Act Amendments of 1990[132] resulted in renewed interest in natural gas-fired power plants.[133] Finally, record demand and resulting record high prices have brought natural gas prices far above the threshold necessary to support the LNG value chain.

Although LNG imports remained consistent throughout most of

125. 495 F.2d 1057, 1062-65 (D.C. Cir. 1974).

126. Knowles, *supra* note 79, at 307.

127. *See* Pierce, *supra* note 117, at 55 (discussing effect of NGPA).

128. O'Neill, *supra* note 78, at §56.02[1][b].

129. Regulatory policies had a significant impact as well. For example, FERC Order 380 eliminated minimum commodity bills from pipelines and eliminated the ability of natural gas companies to pass many expenses on to customers, and effectively bankrupted Distrigas Corp. *Id.*

130. 42 USC §§ 8301-8484 (1978), *amended by* Pub. L. No. 100-42, 101 Stat 310 (1987).

131. *See* Energy Info. Admin., Repeal of the Powerplant and Industrial Fuel Use Act (1987), http://www.eia.doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/repeal.html (last accessed May 11,, 2007).

132. Pub. L. No.101-549, 104 Stat. 2399 (1990).

133. *See, e.g.*, Energy Information Administration, Clean Air Act Amendments of 1990, http://www.eia.doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/clnairact.html (last visited May 11, 2007).

the 1990's, an enormous increase in LNG imports to the United States occurred at the end of the decade.[134] The recent surge in natural gas demand outpaced domestic supply and pipeline imports, and the increase in LNG imports brought fresh regulatory activity to the field.

B. The New Millennium Brings New Policy For LNG Terminals

In November of 2002, the Commission granted preliminary authorization under § 3 of the NGA to Southern LNG, Inc.to expand their existing LNG facility at Elba Island, Georgia.[135] This decision was significant because, although Southern applied under both § 3 and § 7 of the NGA, the Commission stated that approval was only required under § 3 and that consideration under § 7 was not needed.[136] This served as a retreat from the Commission's position in the seventies that approval was required under both § 3 and § 7.[137]

The next major shift in policy came in 2003 when the Commission approved construction of the first new LNG terminal in the lower 48 states in Hackberry, Louisiana.[138] First, the Commission determined that an application under § 7 of the NGA and Part 157 of the Commission's regulations was not necessary.[139] Second, the Commission did not require the filing of rate or tariff schedules.[140] Finally, the Commission decided that new LNG terminals would not have to operate on an open-access basis.[141]

These policies opened the LNG industry to free-market forces. Under the Commission's new policy, LNG would be bought and sold under market conditions, and the investors backing new LNG projects would be responsible for assuming the risk that the LNG market would sour.[142] The Commission projected that the "[market-based] approach may provide incentive to develop additional energy infrastructure to increase much-needed supply into the United States,

134. *See* Energy Information Administration, U.S. Natural Gas Liquefied Natural Gas Imports, http://tonto.eia.doe.gov/dnav/ng/hist/n9103us2a.htm (last visited May 11, 2007).

135. Southern LNG, Inc., 101 F.E.R.C. ¶ 61,187 (2002). *See* Knowles, *supra* note 80, at 308-315 (discussing in-depth the development of FERC's modern policy regime).

136. Knowles, *supra* note 79, at 308-09.

137. *Id.*

138. Hackberry LNG Terminal, L.L.C., 101 F.E.R.C. ¶ 61,294 (2002); Cameron LNG, L.L.C,. 104 F.E.R.C. ¶ 61,269 (2003).

139. *Hackberry*, 101 F.E.R.C. at ¶ 62,179.

140. *Id.*

141. *Id.*

142. *Id.* at ¶ 62,180.

while at the same time ensuring competitive commodity prices and an open-access interstate pipeline grid."[143] Commentator Brian O'Neill explained:

> "The end result of the Commission's new LNG terminal policy is a much more light-handed regulatory regime for new LNG terminal projects, a policy that limits authority to section 3 of the NGA. . . .
>
> . . . .
>
> Based on subsequent activities at the FERC approving new and expanded LNG terminal projects and as a consequence of its new LNG terminal policy, it is evident that FERC is seeking to process LNG applications as quickly as possible. Thus, under the new regulatory climate at the FERC, the most significant hurdles that an applicant must overcome are the environmental issues in general (including siting issues) and the preparation of, and passing muster under, environmental impact statements [("EIS")] or environmental assessments by FERC Staff. Siting related matters have become, perhaps, the most critical to the success of new LNG terminal projects and local opposition to such projects can prove to be fatal for project sponsors.[144]

The new policy had its intended effect. Immediately following the approval of the Cameron (formerly Hackberry) LNG terminal, the Commission experienced a flood of LNG terminal applications.[145] As of the time of this writing, the Commission has approved eighteen new LNG terminal applications, is considering twelve more applications, and has identified nine additional projects that may result in applications.[146] In light of the fact that the U.S. had only four such terminals for over twenty years, only two of which were consistently operational, it is apparent that the Commission's policy shift elicited interest in the market development of LNG and encouraged investment in LNG terminals.

The policy changes did not go unchallenged. The most significant challenge to the Commission's regulatory authority came with an application to build an LNG terminal at the Port of Long Beach, California.[147] On January 26, 2004, Sound Energy Solutions

143. *Id.* at ¶ 62,179.

144. O'Neill, *supra* note 78, at § 56.02[3].

145. *Id.*

146. *See* FERC, Liquified Natural Gas (LNG) in the US, http://www.ferc.gov/industries/lng.asp (last visited May 12, 2007).

147. *See* Sound Energy Solutions, 106 F.E.R.C. ¶ 61,279, ¶ 62,014 (2004); Berry, *supra* note 88, at 149-151, 166-178 (discussing the background and process of *Sound Energy*

("SES") proposed to build an LNG terminal at the Port of Long Beach, California by filing its § 3 application with the Commission.[148] Shortly after its initial filing, the California Public Utilities Commission ("CPUC") filed a protest, arguing that the Commission's authority was limited to approving the importation of LNG, and did not extend to approval of the siting, construction, and operation of LNG facilities.[149]

The CPUC found support for its argument from several sources. First, the regasified LNG would be inserted into the California natural gas pipelines and consumed entirely in the state of California.[150] Thus, the CPUC argued that the Commission lacked jurisdiction under the NGA because it was not natural gas moving through interstate commerce.[151] Second, the CPUC argued that recent policies of Congress, reflected in the Energy Policy Act of 1992, demonstrated Congressional intent to withdraw the Commission's jurisdiction over the siting, construction, and operation of LNG terminals.[152]

The Commission rejected these arguments and affirmatively asserted its exclusive jurisdiction and authority over the SES application.[153] The Commission found that it had to maintain exclusive jurisdiction to avoid inconsistent state regulation that would hinder LNG development.[154] Furthermore, the Commission found the siting, construction, and operation of the terminal to be a matter of foreign and not intrastate commerce.[155] Finally, the Commission found no evidence that Congress intended to withdraw the Commission's authority over LNG terminals in the Energy Policy Act of 1992.[156]

The history of natural gas regulation and the specific manifestations of that regulation with respect to LNG epitomize a regulatory field in constant flux. From the earliest days of natural gas as a wasted by-product to its modern emergence as one of the most

Solutions); O'Neill, *supra* note 78, at § 56.02[3] (also summarizing *Sound Energy Solutions*).

148. *Sound Energy Solutions*, 106 F.E.R.C. at ¶ 62,014.

149. *Id.*

150. Berry, *supra* note 88, at 149-150 (citing *Sound Energy Solutions*, 106 F.E.R.C. ¶ 61,279, ¶ 62,021 n.5).

151. *Id.*

152. *Sound Energy Solutions*,.106 F.E.R.C. at ¶ 62,015.

153. Id. at ¶ 62,014.

154. *Id.* at ¶ 62,018.

155. *Id.*

156. *Id.* at ¶ 62,016.

valuable commodities, natural gas regulation has grown and changed as the industry has grown and changed. As the modern push toward free-market policies and deregulation has taken full effect in the natural gas industry, LNG regulation has followed suit. Recently, as discussed above, the Commission bestowed a new level of regulatory favor on LNG. It is in this climate that the Energy Policy Act of 2005 was adopted.

C. The Energy Policy Act of 2005.

1. Significant Provisions[157]

In the Energy Policy Act of 2005[158] ("Act"), Congress continued to hone national policy on the importation and development of LNG. In the Act, Congress continued the pro-development policies of deregulation that the Commission set forth in *Hackberry*. Furthermore, the significant provisions of the Act affecting LNG demonstrate that Congress sought to encourage the development of LNG through what can be termed "regulatory subsidization."

Congress first resolved the question of jurisdiction raised by California in *Sound Energy Solutions.* Congress made it clear that the Commission was the lead agency in developing onshore LNG terminals: "The Commission shall have the exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal."[159] The Act further solidified the Commission's role in the process by affirmatively establishing the Commission as "the lead agency for the purposes of coordinating all applicable Federal authorizations and for the purposes of complying with the National Environmental Policy Act" and by directing all other state and federal agencies involved to "cooperate with the Commission and comply with the deadlines established by the Commission."[160] However, the Act reserved to the states all authority previously exercised by the states under the Coastal Zone Management Act, the Clean Air Act, and the Federal Water Pollution

157. This analysis builds on the excellent analysis presented in ENERGY POLICY ACT OF 2005: SUMMARY AND ANALYSIS OF THE ACT'S MAJOR PROVISIONS § 1.03[3][a]-[g] (Kevin J. McIntyre, Martin V. Kirkwood & Jason F. Leif eds., 2006) [hereinafter *Summary and Analysis*].

158. Pub. L. No. 109-58, 119 Stat. 594 (2005).

159. Pub. L. No. 109-58, § 311(c) (codified at 15 U.S.C. § 717(b) (2007)).

160. *Id.* at § 313(b)(1)-(2) (codified at 15 U.S.C. § 717(n)).

Control Act.[161]

Next, the Act contains provisions promoting the free-market regulatory policies that the Commission developed under the NGA for the natural gas industry over the past two decades.[162] The Act codifies the policies adopted by the Commission in *Hackberry*[163] by establishing that applicants need not provide services on an open-access basis and by prohibiting the Commission from conditioning application approval on ratification of rates, charges, and other terms of service.[164] As if to demonstrate that the purpose of these policy choices is to encourage the building of enough LNG terminals to meet the projected shortfalls in natural gas in the near future, the Act gives these policies full effect until January 1, 2030.[165] In essence, these policies allow developers of LNG to avoid the ordinary regulatory oversight exercised by the Commission, and in exchange the developers agree to bear the full economic risk of the project.[166] This leaves the success of the project to market forces and protects ratepayers from bearing the costs of unnecessary or unsuccessful investment.

Having settled the jurisdictional issues and codified a free-market approach to LNG terminal siting, the Act establishes a consolidated and comprehensive method for processing LNG applications. The Act mandates the formerly voluntary NEPA pre-filing process for all LNG applications and directs the Commission to adopt regulations to implement this process.[167] The pre-filing operates as a consolidated procedure wherein the applicant assembles the necessary information, notifies potential stakeholders, and encourages

161. *Id*. at § 311(c)(2) (codified at 15 U.S.C. § 717b(d)(1)-(3)).

162. *See, e.g.*, Order No. 636, F.E.R.C. Stats. & Reg. Preamb. ¶ 30,939 (1992); Order No. 636-A, F.E.R.C. Stats. & Reg. Preamb. ¶ 30,950 (1992); Order No. 636-B, F.E.R.C. Stats. & Reg. Preamb. ¶ 61,272 (1992). Collectively these and other orders sought to permit greater influence of market forces in setting natural gas prices. *See* McManus, *supra* note 95, at § 50.04[d].

163. 101 F.E.R.C. ¶ 61,294 (2002).

164. Pub. L. No. 109-58, § 311(c)(2) (codified at 15 U.S.C. § 717b); *Summary and Analysis*, *supra* note 160, at § 1.03[3][b].

165. *Id*.

166. *See* Dominion Cove Point LNG, L.P., 115 F.E.R.C. ¶ 61,337 (2006) (authorizing expansion of LNG terminal under *Hackberry* rate treatment). *See also Summary and Analysis*, *supra* note 160, at § 1.03[3][b].

167. Pub. L. 109-58, § 311(d) (codified at 15 U.S.C. § 717b-1). The Commission adopted these regulations on October 18, 2005. *See* 70 Fed. Reg. 60,439 (Oct. 18, 2005); 18 C.F.R. § 157.21 (2007).

early participation by all necessary and interested parties.[168] In addition, the process requires the applicant to file a series of resource reports that aid the Commission in the completion of a draft-EIS.[169] Arguably, these filing policies streamline the permitting process by assuring that all necessary components and parties are included before an application is even filed. These polices also improve public participation by permitting involvement from all interested parties in the application process at an early stage and by reducing the cost of obtaining information.[170]

The Act reserves an advisory role for states in assessing the safety of proposed LNG terminals.[171] First, the Act authorizes the governor of each state to designate a state agency to consult with the Commission regarding state and local safety considerations.[172] Next, the Act authorizes states to furnish advisory reports on these specialized safety considerations within thirty days of the filing of an application and requires the Commission to review and respond specifically to the issues raised therein.[173] The Act gives states a continuing role in the safety of LNG terminal operation by permitting the state agency to inspect the LNG terminal upon written notice to the Commission.[174] The state may notify the Commission of any alleged safety violations, which the Commission forwards to the applicable federal agency to take "appropriate" action and notify the state.[175] In addition, prior to approving the project, the Commission must approve an Emergency Response Plan and cost-sharing plan, which the applicant develops in cooperation with the U.S. Coast Guard and state and local agencies.[176]

Finally, the Act institutes a scheduling and enforcement system which again emphasizes the primacy of the Commission's role in the process of LNG siting under § 3 of the NGA.[177] As mentioned, the Act designates the Commission as the lead agency under the NGA

168. *See* 18 C.F.R. § 157.21(f) (2007).

169. 18 CFR §§ 157.21(f)(5)-(12), 380.12(c) (2007).

170. *See* James B. Lebeck, *Liquefied Natural Gas Terminals, Community Decisionmaking and the 2005 Energy Policy Act*, 85 TEX. L. REV. 243, 252 (2006).

171. *Summary and Analysis*, *supra* note 157, at § 1.03[3][e].

172. Pub. L. No. 109-58, § 311(d) (codified at 15 USC § 717b-1(b) (2007)).

173. *Id.* (codified at 15 USC § 717b-1(c)).

174. *Id.* (codified at 15 USC § 717b-1(d)).

175. *Id.*.

176. *Id.* (codified at 15 USC § 717b-1(e)).

177. *Summary and Analysis*, supra note 157, at § 1.03[3][g].

applications for purposes of compliance with NEPA. Beyond this, the Act authorizes the Commission to establish a schedule for all Federal authorizations, under which the Commission "shall . . . ensure expeditious completion of all such proceedings [and] comply with applicable schedules established by Federal Law."[178] If a state or federal agency refuses to cooperate with the Commission or fails to comply with a deadline, the applicant for the LNG terminal can seek to have the D.C. Circuit compel the recalcitrant agency to act.[179] Review of any agency action other than delay or lack of cooperation can be sought in the U.S. Circuit Court of Appeals for the circuit in which the proposed facility is located.[180] The Act directs the courts to set these actions for expedited review.[181]

In order to further facilitate expeditious judicial review, the Act directs the Commission to maintain a consolidated record in cooperation with federal and state agencies for each project.[182] This consolidated record is the record for both described types of judicial review. Again, this consolidated record, along with the expedited review, serves to speed up the process of siting LNG terminals by providing a specialized, efficient dispute resolution procedure.

2. *Impact of the Energy Policy Act of 2005 on Siting of LNG Terminals*

The overarching policy objective of the Act, as contained in its preamble, is to "ensure jobs for our future with secure, affordable, and reliable energy."[183] By resolving jurisdictional issues, centralizing and streamlining the application process, reserving only an advisory role for states in safety determinations, providing an expeditious dispute resolution mechanism, and resting the ultimate decision and accountability in one federal agency, the Act facilitates the development of LNG terminals in accordance with national energy priorities. Furthermore, by adopting the *Hackberry* policies and leaving states' environmental review untouched, the Act leaves as the primary obstacles to development of LNG terminals the normal operation of a competitive market and state environmental concerns.

178. Pub. L. No. 109-58, § 313(a) (codified at 15 USC § 717n(b)-(c)).

179. *Id.*

180. *Id.*

181. *Id.*

182. *Id.* (codified at 15 USC § 717n(d)).

183. Energy Policy Act of 2005 pmbl., Pub. L. 109-58, 119 Stat. 594 (2005).

These policies have been extremely successful in eliciting applications.[184] However, it is too early to determine whether these policies will result in the actual construction and successful operation of LNG terminals.

It is possible that the current polices will not result in the importation of enough LNG to meet the growing difference between rising demand and declining domestic production. If this is the case, the policies of the Act may need to be revisited and incentives to import strengthened. Congress might continue to encourage the market-driven policies embraced by the Act and yet continue to promote LNG importation through such programs as carbon taxation or emissions trading. By forcing GHG emitters to internalize the cost of their emissions, less carbon-intensive energy sources like natural gas will become more desirable. Environmentally sensitive policies like these could build on the changes made by the 2005 Energy Policy Act to ensure that enough natural gas is available to meet current domestic needs and to help the U.S. energy economy transition away from more environmentally harmful choices.

D. From the Periphery to the Limelight

LNG, like domestic natural gas, has progressed from a peripheral energy source to one that is central to achieving a sufficient and reliable supply of energy. Like other energy sources, its desirability has fluctuated with the operation of the greater energy market, enjoying times of favor and times of indifference. Due to a rise in demand for natural gas and projections of future shortfalls, LNG is currently enjoying a period of resurgence as an important and potentially significant source for meeting the growing energy needs of the United States. Accordingly, the current U.S. energy policy has developed in recent years to favor development of LNG terminals. The Energy Policy Act of 2005 clearly shows that the federal government sees LNG as an important source for meeting future natural gas needs, and the policies enshrined in the Act should serve to facilitate a rapid expansion of LNG import capacity.

Despite this positive legal environment, LNG is not without its critics, and there is fierce opposition to the siting, construction, and operation of LNG terminals.[185] The next section will address the

184. *See* O'Neill, *supra* note 79, at § 56.02[3].

185. *See, e.g.*, Columbia Rivervision, http://www.columbiarivervision.org/ (last visited May 11, 2007); Ratepayers for Affordable, Clean Energy (RACE), http://www.lngwatch.com/

reasons for this opposition.

VI. LNG: THE DISSENT

Every time an LNG project is proposed, opposition quickly materializes. While some of the animosity can be attributed to mere parochial NIMBY[186] concerns, many opponents rest their arguments on substantive bases other than a general aversion to having an LNG terminal in their state. Several of the most common objections are: (1) LNG is not needed; (2) LNG and LNG terminals destroy the environment; (3) LNG and LNG terminals are unsafe; (4) an increase in LNG will increase U.S. dependence on foreign energy sources and decrease national security; (5) the development of LNG is a distraction from the more important goal of developing renewable energy sources; and (6) the current policy regime does not preserve an adequate role for states in the process. These arguments will be addressed in turn.

A. Is LNG Needed?

Some argue that LNG is not needed in order to meet projected energy demand. For example, opposition groups in California assert that LNG Terminals are not needed in California, in part because California will have enough natural gas to supply its needs for the near future.[187] Furthermore, they argue, additional conservation efforts will extend the utility of current supplies even further into the future.

Even assuming that these arguments are true as to California, as discussed in Part II, the United States is facing a *national* shortage of natural gas. Therefore, a national response is needed. Part of this national response will include augmenting supplies in states which have ports appropriate for importing LNG in order to free up natural gas that otherwise would have been piped into that state. For example, in 2005, California was the second largest consumer of natural gas in

(last visited May 11, 2007); Jordan Cove Retort, http://www.jordancoveretort.com/ (last visited May 11, 2007); *Daily Astorian Poll Reveals Deep Divide on LNG Plant*, THE DAILY ASTORIAN, Jan. 29, 2007, *available at* http://www.dailyastorian.com/main.asp?SectionID=78&SubSectionID=876&ArticleID=39926&TM=44139.39.

186. NIMBY is an acronym for the sentiment "Not In My Backyard."

187. *See* RACE, Truth About LNG, http://lngwatch.com/race/truth.htm (last visited May 11, 2007); TAM HUNT, ALLISON CHAN & JENNY PHILLIPS, DOES CALIFORNIA NEED LIQUEFIED NATURAL GAS? 7 (2006), *available at* http://www.pacificenvironment.org/downloads/LNG%20report%20FINAL.pdf.

the fifty states, accounting for almost 10% of all U.S. natural gas consumption.[188] California imported 87% of this gas, and given declining production, it can only be assumed the state will have to meet more of its natural gas needs in the future through imports.[189] Were California to meet part of its future need through LNG imports, the gas not taken through the interstate pipeline would then be available at lower prices for other states that lack the capacity to import LNG.[190]

As demonstrated in Part II, natural gas is an important transitional fuel. The availability of natural gas to meet short-term increases in demand for electric power and space heating is an important component of a comprehensive carbon reduction program, moving the U.S. away from carbon-intensive energy sources and toward a renewable energy future. If the increase in energy demand is not met by utilizing natural gas, it will be met by other forms of energy production, such as nuclear and coal-powered plants. Renewables cannot yet meet the entire energy need.

This argument is a good example of why a national energy policy is important. Organizations such as LNG Watch and Community Environmental Council do not contend that the data compiled by EIA or the American Gas Association is inaccurate. Rather, they assert that local conditions do not warrant development of LNG for their communities. While local concerns are very important and should be considered in any comprehensive energy policy, parochial interests may ignore the national picture in favor of local needs. Although this myopia is not necessarily misplaced, local preferences should not be permitted to cripple the energy supplies needed to ensure a robust national economy—particularly when the energy source at issue is the most environmentally friendly of all carbon-based fuels. This leads to the second objection raised by opponents of LNG terminals.

188. ENERGY INFO. ADMIN., NATURAL GAS ANNUAL 2005 70 (2005), *available at* http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_annual/current/pdf/nga05.pdf.

189. CAL. ENERGY COMM'N, INTEGRATED ENERGY REPORT 131-132 (2005), *available at* http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF.

190. For example, a recent report stated that Nevada's gas demand will grow twice as fast as the national average, doubling by 2025. *Report: Nevada's Gas Demand Expected to Double by 2025*, GAS DAILY, Feb. 12, 2007, at 7. A portion of this growth would come through LNG imported to the west coast as "West Coast LNG . . . could displace other gas supplies into the Nevada market even if physical gas flow does not increase." *Id.*

B. Is LNG Environmentally Friendly?

When burned for electricity, natural gas emits only 40% of the carbon dioxide emitted by coal, making it the most environmentally friendly fossil fuel when combusted.[191] However, the production, transportation, and liquefaction of LNG are not part of the ordinary natural gas cycle, and therefore some of the benefits of natural gas are lost through LNG as a result of inefficiency. Opponents of LNG point to a Greenpeace study which found that venting during the processing of LNG and emissions from ships transporting LNG reduce the carbon-dioxide benefits of natural gas by a range of 18% to 40%.[192] The net result is to place total emissions from LNG-produced power approximately halfway between the emission of the newest Integrated Gasification Combined Cycle ("IGCC") coal-fired power plants and gas-fired power plants burning domestic natural gas.

Second, opponents argue that the siting of LNG terminals and related facilities has an adverse impact on the environment. LNG terminals may require dredging of river channels and disrupting sensitive fish habitats.[193] Also, the LNG terminal itself must be connected to the interstate pipeline system, which requires, in most cases, that a pipeline be built from the LNG terminal to a hub or other interconnection point. These environmental concerns also remain in the foreign countries that process and liquify natural gas for export.[194]

These arguments, however, fail to address the full scope of the national energy issue. The United States must act quickly in order to curb carbon dioxide emissions, and replacing coal-fired power plants with cleaner combined cycle natural gas-fired power plants is a simple way to do so.[195] The more conservative estimates put forth by

191. Yergin & Stoppard, *supra* note 30, at 109.

192. JOHN COEQUYT & KATIE ALBRECHT, LIQUID NATURAL GAS: A ROADBLOCK TO A CLEAN ENERGY FUTURE 3-4 (2004), *available at* http://www.greenpeace.org/raw/content/usa/press/reports/ liquid-natural-gas-a-roadbloc.pdf.

193. *See, e.g.*, Cassandra Profita, *Bradwood LNG Will 'Adversely Affect' Salmon Species, Habitat*, THE DAILY ASTORIAN, Oct. 20,2006, *available at* http://www.dailyastorian.com/main.asp?SectionID=78&SubSectionID=876&ArticleID=37262&TM=18722.58; Cassandra Profita, *Shipping Impacts Left Out of LNG Report*, THE DAILY ASTORIAN, Nov. 24, 2006, *available at* http://www.dailyastorian.com/main.asp?SectionID=78&SubSectionID=876&ArticleID=38248&TM=18722.58.

194. *See, e.g.*, Pacific Environment, Sakhalin Oil & Gas: Introduction, http://www.pacificenvironment.org/article.php?id=247 (last visited Jan. 4, 2007).

195. *See* Socolow & Pacala, *supra* note 17, at 50-57 (positing that the replacement of 1400 large coal-fired power plants with gas-fired plants would act as one "wedge" in an overall plan to stop global climate change).

EIA indicate that LNG must play a growing role in providing natural gas to the U.S. However, this study does not assume a marked shift from coal-fired power to natural gas electricity generation. If the U.S. does not fully utilize natural gas, energy will come from other sources. Most likely, according to EIA, that source will be coal.[196] In terms of emissions, even taking the study by Greenpeace as accurate, LNG is still more environmentally friendly for producing electricity than the most advanced methods of coal-fired power.[197] In addition, as LNG becomes more commonplace, technological advancements should increase efficiency and lower the amount of GHGs produced throughout the LNG value chain.[198]

The environmental concerns about siting are addressed as part of the individual assessment of each proposed LNG terminal location.[199] Some terminals may have unacceptable environmental impacts, or may fail to comply with the Clean Air Act, Clean Water Act, or Coastal Zone Management Act programs of the state in which the siting of the terminal is proposed. In such instances, the application will properly be denied on these individualized environmental grounds. However, some terminals may be able to both protect the marine environment and still provide a clean and efficient energy source to U.S. markets. Simply because LNG terminals will have an environmental impact is not a reason to reject them outright. Ultimately, the environmental impact of one or two dozen new LNG terminals pales in comparison to the environmental impact of increasing the use of coal and the dangers posed by planet-wide climate change.

C. Is LNG Safe?

LNG poses several unique safety risks.[200] First, its cryogenic temperature poses an immediate danger to humans who come into contact with the liquid at the time of a spill.[201] Second, a large release of LNG could result in a low-lying cloud of natural gas that could

196. *See, e.g.*, *AEO 2007*, *supra* note 2, at 9.

197. *See supra* Part II.

198. *See Hoglund Hopes Technology Will Transform LNG Industry*, GAS DAILY, Dec. 13, 2006, at 3.

199. *See* 18 C.F.R. §§ 157.21(f)(5)-(12), 380.12(c) (2007).

200. *See* FERC, LNG Safety Record, http://www.ferc.gov/industries/lng/safety/safety-record.asp (last visited May 11, 2007).

201. NAT'L ASSOC. OF REG. UTIL. COMM'RS, *supra* note 48, at 24-25.

asphyxiate anyone within a certain distance of the spill.[202] Finally, although LNG is not flammable in its liquid form, in the event of a spill, vaporization of the gas combined with the presence an ignition source could result in a massive explosion and flame front, potentially impacting anyone within 500 to 2500 meters of the spill.[203] The safety issue is the one on which opponents to LNG become the most imaginative: images of mile-wide fireballs engulfing cities are touted as strong arguments for rejecting LNG facilities outright.[204]

Despite these risks, most major analyses of the problem indicate that the risk of a spill is small and manageable with adequate safety practices.[205] A 2004 government-funded report (the "Sandia Report") outlines the safety risks described above, but ultimately determines that the risk of such a spill happening is low.[206] Subsequent studies have generally agreed with the Sandia Report, though a recent report by the Government Accountability Office surveying existing data and experts on the risks presented by LNG accidents indicates that additional studies are needed to assure that government agencies have a full understanding of the potential risks involved in transporting LNG.[207] In general, the studies analyzing the risks agree that the primary danger to the public is from the heat effects of an LNG fire.[208]

While more study is needed, current safety practices take the

202. *Id.*

203. SANDIA NAT'L. LABS., GUIDANCE ON RISK ANALYSIS AND SAFETY IMPLICATIONS OF A LARGE LIQUEFIED NATURAL GAS (LNG) SPILL OVER WATER 15 (2004), *available at* http://www.fossil.energy.gov/programs/oilgas/storage/lng/sandia_lng_1204.pdf.

204. *See* Jordan Cove Retort, http://jordancoveretort.com/ (last visited May 11, 2007), for a particularly humorous example.

205. SANDIA NAT'L. LABS., *supra* note 203, at 14. *See also* MICHELLE MICHOT FOSS, LNG SAFETY AND SECURITY 5-7 (2003), *available at* http://www.beg.utexas.edu/energyecon/lng/documents/CEE_LNG_Safety_and_Security.pdf (thoroughly discussing safety of LNG and concluding that LNG can be safely transported and used in the U.S.); ASPEN ENVTL. GROUP, INTERNATIONAL AND NATIONAL EFFORTS TO ADDRESS THE SAFETY AND SECURITY RISKS OF IMPORTING LIQUEFIED NATURAL GAS: A COMPENDIUM (2005), *available at* http://www.energy.ca.gov/2005publications/CEC-600-2005-002/CEC-600-2005-002.PDF; Harri Kytömaa & Filippo Gavelli, *Studies of LNG Spills Over Water Point Up Need for Improvement*, OIL & GAS J., May 9, 2005, at 61 (arguing that Sandia study was too conservative and LNG spills could have a smaller impact than indicated by the study).

206. *Id.*

207. U.S. GOV'T ACCOUNTABILITY OFFICE, MARITIME SECURITY: PUBLIC SAFETY CONSEQUENCES OF A TERRORIST ATTACK ON A TANKER CARRYING LIQUEFIED NATURAL GAS NEED CLARIFICATION 22-23 (2007), *available at* http://www.gao.gov/new.items/d07316.pdf.

208. *Id.* at 11.

known risks of an LNG fire into account in the LNG facility siting process. In issuing a certificate, the Commission considers the "average most probable 'worst case' scenario" in coming to its conclusion of whether or not a given applicant's safety standards satisfy its requirements.[209] Both the siting of the gasification terminal[210] and the movements of the ship[211] must be within a sufficient exclusionary zone to assure that, in the event of a hull rupture or tank failure due to terrorist attack or other cause, the public is safe from heat exposure.[212]

Once operational, several mechanisms in the LNG regulatory system ensure that terminals operate with the interest of public safety at the forefront. Government regulations require extensive treatment of issues such as safety, maintenance, upkeep, employee training, and recordkeeping in the operation of LNG terminals.[213] The Commission maintains a yearly inspection cycle for all LNG import facilities.[214] In addition, after giving written notice, states are permitted to inspect the facilities and may report any violations of safety or security procedures to the Commission.[215]

Perhaps no other area of the LNG terminal siting process is as heavily regulated and monitored as the safety and security measures implemented to ensure the protection of the public.[216] Furthermore, the safety record shows that the LNG industry, while not perfect, has not had a serious accident in the U.S. in over 25 years.[217] In the over 40,000 tanker cargos of LNG transported "since 1959, there have been no LNG spills resulting from a cargo tank rupture."[218]

209. *See* Gulf Energy LLC, Inc., 118 F.E.R.C. ¶ 61,128, (Feb. 16, 2007) (issuing cite certificate and discussing safety issues in application).

210. 49 C.F.R. § 193 (2007); 33 C.F.R. § 127 (2007).

211. 33 C.F.R. § 105 (2007).

212. *See also* 15 U.S.C. § 717b-1 (2007) (providing significant role for states in safety review); 18 C.F.R. § 380.12(m), (o) (2007) (requiring resource reports to be factored into the EIS that explain reliability and safety of the facility).

213. 49 C.F.R. § 193 (2007); 33 C.F.R. § 127 (2007).

214. *See* FERC, LNG – Safety and Inspections, http://www.ferc.gov/industries/lng/safety.asp (last visited Mar. 19, 2007).

215. Energy Policy Act of 2005, Pub. L. No. 109-58 § 311(d), 119 Stat. 594 (2005) (codified at 15 USC § 717b-1(c) (2007)).

216. See ASPEN ENVTL. GROUP, *supra* note 205, at C1-C3, for a list of the multitude of laws and regulations that cover the safety of LNG terminals and shipping.

217. See Cal. Energy Comm'n, LNG Safety, http://www.energy.ca.gov/lng/safety.html (last visited May 11, 2007), for a complete list of incidents and accidents involving the LNG industry.

218. U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 207, at 5.

Government agencies,[219] industry groups, and independent scientific studies[220] have all come to one general conclusion: although importing LNG carries inherent risks, the risks are manageable and minimized through adherence to appropriate safety measures. Given this consensus, and the intense focus safety plays in any grant of a license,[221] safety alone should not be grounds for generally rejecting LNG as an energy source.

D. Will Importing LNG Pose a Risk to U.S. National Security?

The United States is already heavily dependent upon foreign countries for imports of energy.[222] What will be the impact of adding LNG to the list of imported fuels? Opponents of LNG argue that it will unnecessarily increase U.S. dependence on foreign fuel sources and threaten national security.[223] Countries exporting or planning to export LNG in 2002, as reported by EIA, are listed in the chart below. This list of LNG exporters consists of many countries that suffer serious problems with unrest or insecurity. If the United States were to become dependent on LNG imports from these locations, disruptions in these countries could result in a compromise of energy supplies similar to that which occurred in the energy crises of the 1970's. The problem could be further complicated by the emergence of an organization similar to OPEC for gas-producing countries (sometimes referred to as OGEC). [224]

219. FED. ENERGY REG. COMM'N, A GUIDE TO LNG: WHAT ALL CITIZENS SHOULD KNOW 4-5 (2006), *available at* http://www.ferc.gov/for-citizens/citizen-guides/citz-guide-lng.pdf.

220. *See* SANDIA NAT'L. LABS., *supra* note 203. *See also* NAT'L COMM'N ON ENERGY POLICY, *supra* note 17, at 48.

221. *See, e.g.*, Cassandra Profita, *LNG Safety Concerns Move to Forefront of Approval Process*, THE DAILY ASTORIAN, Dec. 26, 2006, *available at* http://www.dailyastorian.com/main.asp?SectionID=78&SubSectionID=876&ArticleID=39048&TM=116.846. *See also* Kytömaa & Gavelli, *supra* note 205.

222. In 2005, the US imported over 60% of its oil from other countries. Energy Info. Admin., U.S. Crude Oil Supply and Disposition, http://tonto.eia.doe.gov/dnav/pet/pet_sum_crdsnd_adc_mbbl_a.htm (last visited May 11, 2007).

223. *See, e.g.*, Pacific Environment, Pacific Environment's Position on California's Energy Future, http://www.pacificenvironment.org/article.php?id=276 (last visited Jan. 3, 2007).

224. Some industry analysts believe that this is bound to happen. *See* Yergin & Stoppard, *supra* note 30, at 113-114; Hector Igbikiowubo, 2020 Scenario: OPEC May be Replaced, http://www.energybulletin.net/145.html (last visited May 11, 2007).

Indonesia	1.1 Tcf
Algeria	935 Bcf
Malaysia	741 Bcf
Qatar	726 Bcf
UAE	278 Bcf
Australia	367 Bcf
Brunei Darussalam	351 Bcf
U.S.	68 Bcf
Russia	Projected to begin exporting in 2007 w/ capacity of 234 Bcf
Nigeria	394 Bcf
Trinidad and Tobago	189 Bcf with expansion plans for additional 253 Bcf
Libya	21 Bcf with expansion plans for additional 131 Bcf

Table 1: International Sources of LNG[225]

On the other hand, if the U.S. increases its level of LNG imports, the U.S. could reduce its reliance on petroleum imports from the Middle East. Furthermore, by importing from several of these countries, the U.S. could assure that no one country has the ability to threaten national security by manipulating the LNG market. Some analysts also argue that, given the unique characteristics of the natural gas market, an OGEC would be less successful in presenting a united front to control or manipulate the natural gas market.[226]

There is no doubt that the risk from increased dependence on foreign sources of energy is real. Russia and several Middle Eastern countries have expressed interest in the possibility of an OPEC-like cartel,[227] though it does not appear that any formal movement towards the establishment of such a cartel has yet occurred. The risks of foreign dependence cannot be ignored and must be part of the

225. Energy Information Administration, LNG Exporters, http://www.eia.doe.gov/oiaf/analysispaper/global/exporters.html (last visited May 11, 2007).

226. *OGEC? Officials Debate Likelihood of LNG Cartel*, GAS DAILY, Nov. 11, 2003, at 1.

227. *Bodman Cool to Idea of OPEC-Style Gas Cartel*, GAS DAILY, Feb. 15, 2007, at 1. A loose organization called the Gas Exporting Countries Forum ("GECF") already exists, but its ability to form into a more cohesive group is subject to the same arguments as those against an "OGEC." *See* Energy Business Review Online, GECF Unlikely to Emerge as OPEC Equivalent, http://www.energy-business-review.com/article_feature.asp?guid=BE742459-2CC6-42FF-BD70-8CAA2CE74827 (last visited May 10, 2007).

analysis of every LNG terminal application. However, Yergin and Stoppard perhaps provide the best answer to this problem:

> A variety of risks will come from increased interdependence, but, in a growing, diversified global market, they can be managed. And they are dwarfed by the much greater risk that the United States ... could face a persistent shortfall in natural gas. There is a growing urgency to make investments in LNG in the near term in order to avoid more serious disruptions in gas markets and economies later in the decade.[228]

In other words, the risks that accompany dependence on foreign energy sources are real, but the greater risk to the well-being of the U.S. is that posed by a severe shortage of natural gas. In light of the potential shortage, the risk involved in purchasing LNG from foreign countries is tolerable. And when the risk of climate change (and the importance of natural gas as a gap fuel in slowing that change) are considered, it is clear that the risks of purchasing LNG from foreign countries must be taken.

E. Is LNG a Distraction?

Finally, there is an argument that resources spent on LNG terminals represent wasted efforts and only delay the inevitable need for the United States to eliminate its dependence on hydrocarbon fuels and move toward greater utilization of renewable energy sources.[229] Or, put in another light, the U.S. should focus efforts on conservation and renewable forms of energy, not natural gas which itself consists of the very hydrocarbon-based energy source from which the U.S. is attempting to wean itself. This argument can revolve around time, money, political capital, taxpayer-funded subsidies (both via economic grants and streamlined regulatory processes), or other subsidies, but in all its permutations, it essentially posits that resources would be better spent on investments in renewable technologies.

This argument has an intuitive and emotional appeal for its adherents. However, it is short-sighted. As discussed above, due to its much cleaner burning properties, natural gas is an excellent gap fuel

228. Yergin & Stoppard, *supra* note 30, at 114.

229. *See* RACE, *supra* note 187 ("Importing LNG into California will be a huge setback to our renewable energy initiatives."); Columbia Riverkeepers, LNG Mega Port, http://www.columbiariverkeeper.org/lngmega.htm (last visited May 11, 2007) ("a large new source of a foreign fossil fuel would compete directly with efforts to promote increased efficiency, conservation, and renewables development").

which can provide a short-term energy supply while more concerted efforts are made to develop renewable energy sources. Because the total energy required by the U.S. continues to grow, it is not plausible to bring enough renewable energy sources on-line to both meet growing energy needs and replace all hydrocarbon-based sources in the near future. If energy demands are to be met, additional sources of energy will be required. Other than renewable sources, there is no cleaner and more readily available energy source than natural gas.[230] Therefore, if the U.S. is to maximize immediate efforts to reduce the amount of carbon-based fuels, it should aim to burn more natural gas, and focus reduction strategies on coal and petroleum.

Utilizing a multi-prong approach, including aggressive development of renewables and switching from GHG-intensive forms of fossil fuel to lesser-polluting forms, constitutes a rational energy policy. Resisting the cleanest form of fossil fuel and advocating solely for the development of renewable energy is illogical in light of the fact that U.S. energy needs in the next twenty-five years cannot be met through renewables alone. Resources spent on developing LNG import facilities will not be wasted but will be an investment in a robust strategy to curb GHG emissions on the way to achieving carbon neutrality.

In focusing their attack on LNG, opponents who emphasize a strictly renewables approach focus on the wrong fuel source. While achieving a carbon-neutral energy market represents the ultimate goal, discontinuing coal and oil use in favor of cleaner energy sources like natural gas during the development of renewable options represents the best and most practical way to accomplish this goal. Once renewable resources have proven themselves able to accomodate the energy demands currently met by coal and oil, natural gas could also be replaced.

F. Do the States Have a Proper Role?

A final argument by LNG opponents is that the current policy regime under the 2005 Energy Policy Act leaves states too small a role in the siting decision. Under the Act, the Commission grants states an advisory role in the siting of LNG terminals. It is still too early to determine whether the role reserved for the states sufficiently meets

230. *See supra* Part II.

local concerns. However, it is paramount that decisions about LNG be made on the national level with national interests in mind.[231]

The states still retain their authority over important environmental regulations that effectively permit states to veto LNG applications that fail to comply with the federal environmental regimes being administered by the states. The importance of this control cannot be understated. The environmental obstacles to siting an LNG facility remain some of the most significant barriers an applicant must overcome to achieve certification. By retaining the state's authority in that process, the Act gives states a major "trump card" that assures they will feature centrally in any siting decision. In addition, states play a central role in considerations of safety and security both in the initial siting decision and in the continuing operation of the facility.

While the Act resolved jurisdictional issues surrounding the siting of LNG terminals, several other significant issues remain. One issue not addressed by Congress, and intentionally left open by the Commission, is the impact of the Act on local land use laws. While the Commission encourages applicants to seek approval from local land use agencies, it has reserved authority to override local authority where application of local or state laws works to prohibit or unreasonably delay the construction or operation of federally-approved facilities.[232] At what point this encouragement turns into coercion remains to be seen. Without an affirmative policy decision by the Commission, followed by a test in the courts, the extent to which the Act overrides local zoning authority remains uncertain.

A dispute playing out in Maryland over the development of an LNG Terminal may provide the definitive answer to this issue. A

231. The role of states in the LNG siting process has been discussed extensively by other authors. This article does not aim to extensively analyze the issue or critique these works. Rather, the focus of this article is merely the argument that in light of the national importance of reductions in GHG emissions, state interests should be subordinated to national policy. On the issue of whether the right balance has been struck, the author refers the reader to the excellent work by these authors: Monica Berry, *Liquefied Natural Gas Import Terminals: Jurisdiction over Siting, Construction, and Operation in the Context of Commerce Clause Jurisprudence*, 26 ENERGY L.J. 135 (2005); James B. Lebeck, *Liquefied Natural Gas Terminals, Community Decisionmaking, and the 2005 Energy Policy Act*, 85 TEX. L. REV. 243 (2006); Scott A. Zimmermann, *Feds and Fossils: Meaningful State Participation in the Development of Liquefied Natural Gas*, 33 ECOLOGY L.Q. 789 (2006); Denise L. Desautels & Peter A. Ray, *The Struggle Between States and the Federal Government on the Siting of LNG Import Terminals: Has a Red Tide Washed Ashore in the Blue States?*, ELECTRICITY J., Oct. 2005, at 81.

232. *See, e.g.*, Crown Landing LLC, 115 F.E.R.C. ¶ 61,348 (2006).

federal judge in the District of Maryland recently held local zoning laws passed to discourage LNG development to be unconstitutional under the Supremacy Clause due to the exclusive jurisdiction provisions of the Act.[233] According to the judge, "[s]tate and local governments have a clearly defined role in providing input to [FERC] during the application process . . . ."[234] This role, however, is limited to providing input on "consideration of local environmental requirements and any public opposition"[235] and other "specific [grants of] authority under certain environmental statutes."[236]

The court held that "[b]y giving 'exclusive authority' to FERC to regulate the 'siting, construction, expansion, or operation of an LNG terminal,' Congress explicitly intended to prevent states from imposing *additional* restrictions on the siting of LNG facilities." [237] After a review of the text, context, and legislative history of the Act, the court determined that the Act expressly preempted local land use regulations that imposed requirements above and beyond those mandated by the Commission.[238] This successful use of the Act by developers to thwart local parochialism is a concrete example of the Act's efficacy in encouraging the development of LNG terminals and may portend the full authority the Commission could bring to bear in future projects.

Notably, the Act does not give the Commission eminent domain powers. Therefore, where a local government owns the property subject to potential LNG development, the local body's authority over the development of LNG terminals should be much greater. This creates another area of unresolved conflict as localities could attempt to use lease or contract provisions to require considerations or protections above and beyond those the Commission may require. Such a conflict has recently come to a head in Long Beach, California, where the Board of Harbor Commissioners disapproved of and terminated negotiations over an LNG project proposed by Sound

233. AES Sparrows Point LNG, LLC v. Smith, 470 F. Supp. 2d 586 (D. Md. 2007).

234. *Id.* at 589.

235. *Id.*

236. *Id.* at 597.

237. *Id.* at 597 (emphasis in original).

238. Not to be thwarted, the county whose ordinance was struck down in *Sparrows Point* passed a new zoning regulation aimed at thwarting the Chesapeake Bay project. This time the county linked the zoning law to statewide environmental regulations in an apparent effort to bring the zoning laws within the sphere of state involvement protected under the Act. *County Officials Again Try to Sink Md. LNG Project*, GAS DAILY, Feb. 7, 2007.

Energy Solutions ("SES").[239] Because the city owns the land under consideration, the termination of negotiations may have effectively killed the project. In response, SES filed a lawsuit asking a California court to order the Harbor Commission to continue processing its environmental impact report. The pending outcome of this case will likely provide important insight into the authority of local governments to impose additional requirements on LNG projects where the property is publicly-owned.

While these and other issues will resolve the finer points of the division of labor and authority between the state and federal spheres, the central point remains that, in passing the Act, Congress appropriately placed the authority for final decision-making in the hands of the Commission, not the states. This authority ensures that siting decisions account for national considerations. It enables the federal government to supersede local parochialism in the interest of a cohesive and rational national energy policy. This is appropriate because, while local, state, and regional efforts are important, finding the answer to GHG emissions requires national efforts. The United States needs comprehensive and controlling policy, not piecemeal and precatory guidelines, in order to solve one of the most pressing issues of our time.

G. Analysis: The Benefits Outweigh the Problems

Each of the above arguments against the development of LNG has merit. Yet each of them share a common thread: a concern which at the micro level looks overwhelming, but which is, at the macro level, small in comparison to the greater problem of global warming. If natural gas is to serve as a transition fuel, the U.S. must have enough of it to supply current demand and to displace demand for more carbon-intense fuel. This shift is impossible without importing LNG. As an important component to a comprehensive attack on climate change, LNG is invaluable.

As with any major public policy, the decision to import LNG to meet rising natural gas demand will have negative impacts. These will include potential damage to the environment, safety and security risks, loss of resources that could be devoted to other important issues, and the subjugation of local and state interests to matters of national policy. The key question to ask is: what are the alternatives?

239. *Long Beach LNG Terminal is Dead in the Water*, GAS DAILY, Jan. 24, 2007.

Certainly renewable sources of energy are desirable above all hydrocarbon sources. Yet it is not seriously contended that development of renewable energy sources can meet all the current or future energy demands of the entire United States. In this context, increasing imports of LNG makes sense. It is necessary to meet national demands for natural gas and its environmental impacts, while existent, are justified when the impact of the otherwise additional emissions from coal power plants are taken into consideration. Furthermore, the safety implications are small and manageable using current technologies and practices, and diversification of energy sources can mitigate potential threats to national security. Finally, it is appropriate that the U.S. devote valuable time and resources to this issue because natural gas, and therefore LNG, is a necessary part of a comprehensive strategy to combat climate change.

VI. ARGUMENT AND CONCLUSION

Assuming conservative increases in natural gas demand, the U.S. does not produce enough natural gas domestically to meet its future needs, and imports from Canada and Mexico will not prove sufficient to meet needs either; the increases in natural gas-fired power plants necessary to replace dirtier coal-fired plants to produce an immediate reduction in GHG emissions only compounds this problem. Without LNG imports, natural gas is in immediate danger of major supply disruptions and the U.S. will be forced to seek out natural gas from alternative sources such as coal. In light of this situation, current U.S. energy policy on LNG is correct in encouraging the development of LNG as a means of meeting the rising demand for natural gas.

The Energy Policy Act of 2005 represents a coming of age of the LNG industry. Historically pushed to the fringes of the natural gas industry, the Act brought LNG into the limelight and set up the potential for LNG to emerge as a major source of natural gas in the future. In order to increase the odds of successful transition, the Act has made appropriate use of market forces, which currently favor LNG imports and will continue to favor LNG for the foreseeable future. The Act properly and effectively streamlines the LNG terminal application process through regulatory mechanisms such as the pre-filing process, consolidated record, and expedited appeal process. Finally, the Act appropriately balances state and local concerns about environmental protection and the safety of citizens by giving states a central role in the siting process, safety planning, and inspection, and

by reserving to the states all authority previously held under important environmental regulatory schemes.

Given the desirability of LNG and the current favorable national policies, LNG terminals should come to provide a substantial amount of natural gas supplies for the U.S. in the near future. Although they are not without problems, the benefits of providing an alternative source of clean and efficient energy outweigh the negative impacts of LNG terminals and LNG importation.

LNG is primarily an important stopgap mechanism that should provide the U.S. with a means of immediately reducing GHG emissions while developing alternative carbon-neutral energy resources. By encouraging the development of LNG as an additional source of natural gas, the United States is one step closer to climate stabilization and ultimately to achieving a carbon-neutral energy economy.