ENERGY AND THE ENVIRONMENT: THE FUTURE OF NATURAL GAS IN AMERICA

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INTRODUCTION

Natural gas has been regarded as the ideal fossil fuel for multiple uses from electricity generation to manufacturing, in part because of its efficiency, in part because of its relative cleanliness, and in part because of its relatively low delivered cost. For many years, natural gas was a wise and easy choice; America is blessed with an abundant supply and gas burns cleaner and is considered by some to be more environmentally preferable to other fuels. That abundant supply translated to low prices, and those low prices helped fuel a strong and vibrant economy. Now however, the days of low gas prices are over, and the nation is in the midst of a very real natural gas crisis.

Most people probably do not realize the importance that natural gas plays in their daily lives, but they certainly have noticed that they are paying more for energy than they did a year ago. As more of a family's income is diverted for energy costs, less money can be spent on providing for their children's education, less money can be invested in their small business, less money can be saved for retirement. Not surprisingly, these higher prices are most acutely felt by the poor and those on fixed incomes.

Many of our nation's workers have unfortunately felt the result of high natural gas prices in the most severe way—they have lost their jobs. Natural gas is a principal feedstock to several industries including chemical and petrochemical manufacturing, the pulp and paper, steel, and fertilizer industries. When the domestic costs of production increase relative to global competitors, U.S. domestic manufacturing companies lose out.

Policymakers and the public are struggling to determine why the U.S. is in the grip of this natural gas crisis. Why have natural gas prices increased so dramatically? Why has the market been unable to correct itself to find balance? Most importantly, how can Congress effect federal policies that will temper the natural gas crisis?

As the Mayor of Tulsa and later a Representative and Senator representing the oil and gas producing State of Oklahoma, I have been involved with natural gas policy spanning five decades. As Chairman of the U.S. Senate Committee on the Environment & Public Works, I have focused on the situation with renewed fervor. On March 25, 2004, I chaired an oversight hearing concerning the environmental considerations affecting natural gas prices. At that hearing, representatives of the natural gas production industry, manufacturing sector, environmental groups, farmers, and even a Northeastern Governor testified. The conclusions and lessons learned from that hearing were far-reaching and significant. Yet, the most dramatic finding was that U.S. federal laws and policies have contributed in large measure to the nation's natural gas crisis.

In large part, changes to the Clean Air Act and other air-related regulations have driven increased demand for natural gas. Yet, other federal environmental

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policies have effectively prevented a sufficient and corresponding increase in supply of natural gas. These conflicting federal policies have complicated and slowed the market's effort to adjust itself.

Further, national environmental groups, that only a few years ago, praised natural gas as the bridge fuel to a clean environment, today oppose increasing supplies. Interest groups have largely chosen sides between the political parties and, in the main, refuse to work within well-established and historically appropriate frameworks. Instead, they seem to prefer to engage in unfortunate and unnecessary political gamesmanship while U.S. competitiveness suffers.

The issue of providing energy to the nation while maintaining a clean environment has become overly politicized. In many cases spin and rhetoric are preferred over facts and science. This document rejects the rhetoric and focuses on the facts. Section I analyzes the reasons that have contributed to the increased demand of natural gas, the increase in prices and their effect on several sectors of the U.S. economy. Section II discusses the obstacles that have and continue to prevent the nation from balancing its need for natural gas with its ability to increase supplies. Section III details recommendations that Congress should consider to help lead the U.S. out of the natural gas crisis and back toward a competitive and vibrant economy.

As Alan Greenspan, Chairman of the Federal Reserve said, "[w]e have been struggling to reach an agreeable tradeoff between environmental and energy concerns for decades. I do not doubt we will continue to fine-tune our areas of consensus. But it is essential that our policies be consistent."¹

I. NATURAL GAS DEMAND: CAUSES & IMPACTS

This section provides a brief summary of natural gas use in the U.S., describes the causes that have led to the dramatic increase, and details specific impacts on the natural gas residential users and businesses as a result.

A. Natural Gas Use

Natural gas has traditionally been an important fuel choice for certain uses, but its role has increased significantly in the last twenty years.² Today, natural gas comprises 24% of U.S. energy use (see chart), with most of that increase attributed to the electricity generation sector.³ In fact, experts project that natural gas-fired electricity generation will nearly double in the next decade. Almost all new power-generating capacity coming on line in the U.S. is gas-fired, and one half of new homes are now heated by gas.⁴

^{1.} Oversight on Natural Gas: Hearing Before the S. Comm. on Energy & Natural Resources, 108th Cong. 17 (2003) (statement by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System).

^{2.} COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: DEMAND 2-3 (2003) [hereinafter DEMAND REPORT].

^{3.} Id. at 2-4 to -5.

^{4.} Enhancing Energy Security: Hearing Before the H. Comm. on Resources, 108th Cong. (2003) [hereinafter Gupta] (statement by Raj Gupta, Chairman and CEO, Rohm & Haas Co. on behalf of the American Chemistry Council), available at http://resourcescommitee.house.gov/archives/108/testimony/rajgupta.htm.

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This increased demand for natural gas, when combined with other factors, leads to high and volatile prices. Historically, the single greatest factor affecting natural gas demand is the one which policymakers and gas users have the least ability to influence—the weather. Volatility in natural gas prices typically fluctuate with changes in weather conditions.⁶ Residents increase their energy use to accommodate extremes in hot or cold.⁷ Therefore, in colder or more northern regions of the country, increases in natural gas reflect the very basic human need for survival.

However, "[t]he seasonal pattern of natural gas demand is being altered by its growing use by electric power generators. Power generators expanded their demand for natural gas by 36% over the period 1997–2002."⁸ The Energy Information Administration found that between 2000 and 2003, 93% (187 gigawatts) of new generation capacity was gas-fired.⁹

While these figures provide a national perspective, it is important to note

8. ROBERT PIROG, CONG. RESEARCH SERV., NATURAL GAS PRICES & MARKET FUNDAMENTALS 7 (2004) [hereinafter PIROG], available at http://www.ncseonline.org/NLE/crsreports/04dec/RL32091.pdf.

9. Mary O'Driscoll, *Higher fuel Prices Shifting Power's Attention to Coal*, GREENWIRE, Apr. 27, 2004, at 3 ("By comparison, 5 new gigawatts [of new capacity] came from wind farms while coal saw only 1 gigawatt in additional capacity....").

^{5.} COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: INTEGRATED REPORT 19 (2003) [hereinafter INTEGRATED REPORT].

^{6.} AM. GAS ASS'N, AVOIDING THE WILD RIDE: WAYS TO TAME NATURAL GAS PRICE VOLATILITY 6–7 (2003) [hereinafter AGA].

^{7.} Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce, 108th Cong. (2003) [hereinafter Caruso] (statement of Guy Caruso, Administrator Energy Information Administration), available at http://energycommerce.house.gov/108/hearings/06102003hearing944/print.htm ("One development that could generate more difficult market conditions than are already in prospect is the weather. An abnormally hot summer followed by a cold winter could push natural gas deliverability to the limit and cause record average prices this winter.").

that some states rely on natural gas more heavily than others and consequently, the situation is more acute. For example, the State of California consumes approximately six to ten billion feet of natural gas per day, much of it in the electric power generation sector. "If California were a country, it would rank as the tenth largest user of natural gas worldwide."¹⁰

This dramatic increase in natural gas use by the generation sector has created price pressure for all users of natural gas. That competition for gas by generators resulted in wholesale prices from about \$2 per million Btu (MMBtu) during the 1980s up to \$10 per MMBtu during the winter of 2000–2001.¹¹

Power generation demand for natural gas is the fastest growing segment of demand for natural gas and is expected to continue to be the same for at least the next decade.¹² The California Energy Commission expects that natural gas demand for electricity generation will grow 1.5% per year through 2013.¹³ Nationally, the Energy Information Administration forecasts that if current trends continue, 80% of new electricity generation will be fueled by natural gas.¹⁴ "Today, gas is the source of about 15 percent of all electricity generated but this number is projected to increase to 26 percent by 2020."¹⁵

One may consider the rise in natural gas use as a relatively good development; natural gas is regarded as the cleanest burning fossil fuel and is therefore preferred over other sources, and is especially championed by environmental groups.¹⁶

B. Impacts of High Natural Gas Prices

1. Individuals

Although natural gas may be an environmentally friendly choice over other sources, dramatic increases in the price of natural gas have had significant and detrimental impacts on the U.S. economy as a whole, and on both consumers and workers as individuals.

Increases in natural gas demand have increased the price of gas for all users. Unfortunately for many, energy use is not typically an optional or luxury good. In an industrialized and globally competitive world, energy use represents a very real and fixed cost of doing business and more fundamentally, of life.

12. AGA, supra note 6, at 12.

15. PAUL WILKINSON ET AL., AM. GAS FOUND., NATURAL GAS OUTLOOK TO 2020, 16 (2005) [hereinafter GAS FOUNDATION].

16. For example, the Union of Concerned Scientists state, "[a]lthough natural gas is a fossil fuel and so is made up mostly of carbon, global warming emissions from gas are much less than coal or oil. Compared to coal, gas produces 43 percent fewer carbon emissions for each unit of energy produced, and 30 percent less than oil. Gas also produces no solid waste, unlike the massive amounts of ash from a coal plant, and very little sulfur dioxide and particulate emissions." *See* UNION OF CONCERNED SCIENTISTS, CLEAN ENERGY: HOW NATURAL GAS WORKS, http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=84 (last visited Sept. 7, 2005).

^{10.} CAL. ENERGY COMM'N, REPORT OF THE STAFF, NATURAL GAS ASSESSMENT UPDATE (2005) [hereinafter CALIFORNIA REPORT].

^{11.} AGA, *supra* note 6, at 6–7. The natural gas Henry Hub spot price is currently hovering above \$7 per MMBtu. See ENERGY INFO. ADMIN., WEEKLY NATURAL GAS UPDATE, http://tonto.eia.doe.gov/oog/info/ngw/ngupdate.asp (last visited Sept. 6, 2005).

^{13.} See CALIFORNIA REPORT, supra note 10, at 10.

^{14.} PIROG, supra note 8.

Consumers and businesses have moderated and may continue to moderate their energy use marginally, but in the end, they require energy to maintain their quality of life, to power their economy, and, in some cases, simply to survive the sometimes difficult North American winters. In short, energy is not a luxury; it is a necessity.

High natural gas prices hurt all consumers because "energy prices act like a tax on consumers^{*17} By paying a *de facto* "energy tax" consumers have less money to spend or to invest. According to the Industrial Energy Consumers of America, since June 2000, consumers have paid nearly \$200 billion more for natural gas than they paid in the previous five years.¹⁸ In macroeconomic terms, "[w]ith disposable income running around \$8-1/2 trillion, the 'energy tax' is now roughly 1 percent of after-tax incomes and rising."¹⁹

The increased price of natural gas has very real impacts on families. For example, in Ohio, home heating costs were projected to increase at least \$220 per household.²⁰ Although that may seem like a nominal amount, during the winter season of 2000–2001, one gas company in Ohio saw residential nonpayment jump from \$10 million a year to \$26 million, resulting in a 50% increase of residential customers who were disconnected from gas service.²¹ Mr. Donald Mason, Commissioner of Ohio's Public Utilities Commission, put the numbers into human terms:

It is hard to measure the suffering that takes place to a family that has high heating bills; only to have their hot water and heating disconnected, which could even occur during the summer months. Additionally, those families that do manage to make payments, substitute those payments for other important items, or delay paying other bills. Either outcome affects consumer credit and family stability.²²

The human toll associated with high natural gas prices is felt all across the nation. In New England, homeowners spent \$400 (from \$900 to \$1300) more to heat their homes from the winter of 2002 to the winter of 2003.²³ Experts project that in colder climates like the Northeast, households could pay upwards of \$1700 to heat their homes.²⁴

Like most taxes, the rise in natural gas prices hits people on fixed or near fixed incomes, like the elderly and low-income residents, most heavily. According to the Census Bureau, there are more than 3.6 million impoverished elderly in the U.S.²⁵ Mr. Jim Martin, President of 60 Plus Association stated that

17. MORTGAGE BANKERS ASS'N OF AM., MBA ECON. COMMENTARY ISSUE #116, RISING ENERGY PRICES: A QUANDARY FOR THE FED (June 2004) [hereinafter MORTGAGE BANKERS ASS'N OF AM.], http://www.mortgagebankers.org/marketdata/econ.comm/ec0604.html.

18. Letter from the Energy Consumers of Am. to Sec'y Gale Norton (Mar. 28, 2005), http://www.ieca-us.com/downloads/natgas/Secretary_Norton_032805.doc.

19. MORTGAGE BANKERS ASS'N OF AM., supra note 17.

20. Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce, 108th Cong. 23 (2003) [hereinafter Mason] (statement of Donald L. Mason, Commissioner Public Utility Commission of Ohio).

21. Id.

22. Mason, supra note 20, at 24.

23. GLOBAL INSIGHT, INC., THE IMPACT OF HIGH GAS PRICES ON JOBS, THE ECONOMY AND CONSUMERS 6 (2003) [hereinafter GLOBAL INSIGHT, INC.], available at http://www.accnewsmedia.com/docs/1300/1228.doc?DocTypeID=4&TrackID=.

24. Id.

25. Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. (2004) (statement of Jim Martin, President, 60 Plus

high natural gas prices, "not only endanger[] our economy, [they are] especially threatening to American seniors [who are] struggling to make ends meet."²⁶ Elderly Americans are particularly vulnerable because, "[s]eniors on fixed incomes must somehow stretch finite dollars to cover their increasingly costly basic needs."²⁷ In effect, they are forced to choose between paying for food, energy, or pharmaceuticals. Yet, high natural gas prices are not solely evidenced in heating or electricity bills. Mr. Martin wisely noted that, "[n]atural gas is essential to produce foods, medicines and a host of necessities" and "is likely even embedded in many of the utensils and TV trays that rest upon our kitchen tables."²⁸

2. Businesses

High natural gas prices act as a multiplier for the relative costs on domestically produced products. Ultimately, this is reflected in higher prices charged to consumers. Natural gas is used as a fuel or feedstock for industrial use. It powers our factories, furnaces, and is a necessary chemical component for hundreds of products. All consumers feel the financial pinch of high natural gas prices "as higher input costs are absorbed into production costs for all sorts of products . . ."²⁹ Therefore, high natural gas prices increase the costs of production, providing gas-dependent industries a very difficult choice: close down domestic operations or temporarily incur the increased prices and hope prices come down.

The degree to which natural gas prices have affected businesses is challenging to describe in terms that most people can appreciate. Yet, one trade association found that it would be as if a household suddenly had to pay "\$16 for a gallon of milk, \$12.70 for a pound of ground beef, and \$9.21 for a gallon of gasoline."³⁰

High natural gas prices have hurt businesses small and large. "In Connecticut, for example, pizza shops complain that their natural gas bills have increased \$500–700 per month."³¹ Small businesses typically operate on thin profit margins and do not have significant financial cushions to incur new costs. They likely pass those higher prices on to their customers who may or may not be willing to pay more for the same pizza.

3. Manufacturers

The U.S. industrial or manufacturing sector represents a diverse and wide

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Association).

^{26.} Jim Martin, *Natural Gas Price Shock*, WASH. TIMES, Nov. 14, 2004 [hereinafter *Natural Gas Price Shock*], *available at* http://www.60plus.org/energy.asp?docID=444.

^{27.} Id.

^{28.} Natural Gas Price Shock, supra note 26.

^{29.} Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. (2004) [hereinafter Velazquez] (statement of David Velazquez, Vice President, Business Planning for Conectiv Energy for the Edison Electric Institute).

^{30.} See THE AM. CHEMISTRY COUNCIL, ACC MEDIA KIT ON NATURAL GAS, http://accnewsmedia.com/site/page.asp?TRACKID=&VID=&CID=253&DID=974&PSID=&KID=90&KCID= 253 (last visited Sept. 15, 2005).

^{31.} Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce, 108th Cong. 32 (2003) [hereinafter English] (statement of Carl L. English, President and Chief Executive Officer, Consumers Energy on behalf of the American Gas Association).

number of companies. As such, understanding the precise effect that high natural gas prices have on those companies is complicated. Regardless of a particular company's characteristics, higher natural gas prices "alone changes the competitive environment for many industrial consumers."³²

On April 5, 2005, Alan Greenspan, Chairman of the Federal Reserve noted, "U.S. natural gas prices since late 2002 have been notably higher, on average, than prices abroad, thereby putting significant segments of the North American gas-using industry in a weakened competitive position."³³

In the case of large domestic businesses, such as capital-intensive manufacturers, the effect of natural gas prices is even more complicated and acute. These companies compete in a global marketplace where labor costs are a fraction of those in the U.S., and where environmental requirements may be nonexistent. U.S. manufacturers have successfully worked within the most stringent regulatory environment in the world, pay high wages, and still produce the best and most reliable products in history. However, the costs to produce those goods have risen so dramatically that factories are going bankrupt, temporarily or permanently mothballing their facilities, or otherwise laying off large contingents of their labor force. The principal reason for this tragic turn in the high paying manufacturing sector (the historic backbone of the U.S. economy): high natural gas prices.

According to the National Association of Manufacturers, industries that rely on natural gas "include chemicals, fertilizer, food processing, aluminum recycling, glass making, steel casting, and metal heat treating."³⁴ The following six industries in particular account for "80 percent of industrial natural gas": chemicals, petroleum refining, primary metals, food and beverage, paper, and non-metallic product industries (stone, clay, and glass).³⁵ The chart below depicts how natural gas is used by industrial users both as a feedstock and fuel.

^{32.} DEMAND REPORT, supra note 2, at 3-1.

^{33.} ALAN GREENSPAN, REMARKS BEFORE THE NATIONAL PETROCHEMICAL & REFINERS ASSOCIATION (2005), available at http://www.federalreserve.gov/boarddocs/speeches/2005/20050405/default.htm ("Indeed, ammonia and fertilizer plants in the United States have been particularly hard hit as the costs of domestic feedstocks have risen relative to those abroad.").

^{34.} See NAT'L ASS'N OF MFRS., INDUSTRY AND THE ECONOMY NEED MORE NATURAL GAS SUPPLY (2003), available at http://www.nam.org/s_nam/doc1.asp?CID=141&DID=225963.

^{35.} DEMAND REPORT, supra note 2, at 3-4.

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One might consider that a proper market response of higher production costs would simply be higher prices. However, these six gas-intensive domestic industries face intense international competition that has serious implications on their viability.³⁷ "Because the current gas pressures are most intense in North America, U.S. exports are relatively more expensive on the world market."³⁸ Further, global market competition means that "U.S. companies are unable to pass these added costs for natural gas along to their customers if [their] products

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^{36.} Id. at 3-3.

^{37.} Id. at 3-1.

^{38.} GLOBAL INSIGHT, INC., supra note 23, at 5.

are to remain competitively priced with those produced by our foreign competitors."³⁹

Natural gas prices have serious implications far beyond companies' ability to earn profits. In fact, high natural gas prices so seriously increase production costs that manufacturers' very survival is in jeopardy.

"Glass manufacturers, which also use large amounts of natural gas, have reported earnings falling by 50% as a result of natural gas prices. In our industrial and commercial sector, competitiveness in world markets and jobs at home are on the line."⁴⁰ With respect to the chemical manufacturing industry, "every one-dollar increase in the price of natural gas, over the course of a year, [translates to] approximately \$4.2 billion in additional costs."⁴¹ According to the American Chemistry Council's testimony submitted for the Environment Committee's March 2004 hearing on natural gas issues, "[i]n the past five years, the US chemical industry lost \$50 billion . . . to foreign competition."⁴² To put that into perspective, "[a]ffordably-priced natural gas helped make chemicals the nation's largest export industry" which helped sustain hundreds of thousands of high paying jobs.⁴³ Today, largely due to high natural gas prices, "[t]he US has become a net importer . . . of chemical products

In explaining the erosion of the U.S. chemical manufacturing industry to global competitors, R. William Jewell, vice president for energy at Dow Chemical stated, that "[w]e have the highest natural gas prices in the industrialized world....³⁴⁵

Note, Mr. Jewell focused on "the industrialized world" rather than poor or developing nations, which are typically raised when discussing the implicit disparity of international competition. "The Dow Chemical Company moved 1.4 billion pounds of production from the U.S. to Germany in large part because of high energy costs. For the first time in the history of our industry, energy costs in Europe [are] substantially below those in the U.S., leaving domestic industries at a disadvantage."⁴⁶

The map below illustrates Mr. Jewell's point that too many unemployed workers learned the hardest of ways.

43. Id. at 224.

^{39.} Gupta, supra note 4, at 51.

^{40.} English, *supra* note 31, at 32.

^{41.} Gupta, supra note 4, at 51.

^{42.} Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. 224 (2004) [hereinafter American Chem. Council] (statement of the American Chemistry Council).

^{44.} American Chem. Council, *supra* note 42, at 224.

^{45.} Greg Schneider, Chemistry Industry in Crisis: Natural Gas Prices are Up, Factories are Closing and Jobs are Vanishing, WASH. POST, Mar. 17, 2004, at E01.

^{46.} Gupta, supra note 4, at 52.

Figure 3⁴⁷

Natural Gas Costs around the World (\$US per million BTUs)



The disparity between high U.S. natural gas prices versus the rest of the world has meant widespread worker lay-offs. "Across the country, 1 in every 10 chemical-related jobs has vanished in the past five years—nearly 100,000 workers"⁴⁸

The chemical industry is far from alone in their struggle to stay afloat in a high natural gas priced environment. The U.S. forest and paper industry, which employs 1.3 million people, has been hard hit as well.⁴⁹ The American Forest & Paper Industry "[has] lost more than 120,000 high paying manufacturing jobs and closed more than 220 plants.⁵⁰

That most American of all industries, farming, has been hurt badly as well. The cost of natural gas accounts for up to 90% of the total costs of manufacturing fertilizer. In a report to Congress, the U.S. General Accounting Office found that, "[u]nfortunately for domestic nitrogen fertilizer manufacturers, the price of natural gas in the United States can far exceed its price in other parts of the world" and that "domestic manufacturers are at a competitive disadvantage when domestic natural gas prices rise."⁵¹

^{47.} AM. CHEMISTRY COUNCIL, NATURAL GAS COSTS AROUND THE WORLD, http://www.americanchemistry.com/s_acc/sec_mediakits.asp?CID=217&DID=1308 (last visited Oct. 7, 2005).

^{48.} American Chem. Council, supra note 42, at 1.

^{46.} Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. 1 (2004) (statement of James Rubright, Chairman & CEO Rock-Tenn Co. on behalf of the American Forest & Paper Association).

^{50.} *Id.* at 2.

^{51.} U.S. GEN. ACCOUNTING OFFICE, GAO-03-1148, NATURAL GAS: DOMESTIC NITROGEN FERTILIZER

Bob Drake of the Oklahoma Farm Bureau stated that high natural gas prices have "cost U.S. farmers and ranchers an extra \$2.6 billion to produce the same amount of food and fiber in 2003 when compared to the 2002 growing season."⁵² As is the case with domestic chemical plants, U.S. fertilizer plants have been forced to shut down. Since 2000, "11 ammonia nitrogen fertilizer plants . . . representing 21 percent of domestic capacity" and "[a]n addition[al] 15 to 20 percent of the fertilizer industry is temporarily" shuttered.⁵³

For an economist, the effect of U.S. gas-dependent industries appears as an economic phenomenon known as, "demand destruction." According to natural gas usage data, demand may appear to have decreased from one year to the next due to a harsh truth: the source of that demand—the manufacturing plant—has shutdown.

In analyzing the effects on the manufacturing sector in the winter of 2001, Dr. Jeffrey R. Currie, Managing Director of Goldman, Sachs & Co. concluded that "[t]he loss [in] industrial demand was massive, a 20 percent permanent decline that resulted in the loss of at least 200,000 manufacturing jobs."⁵⁴ The chart below demonstrates the relationship between increases in natural gas prices and the corresponding reduction in U.S. jobs.





C. Why has Natural Gas Demand Increased So Dramatically?

As stated earlier, natural gas prices have increased as demand, mostly in the

PRODUCTION DEPENDS ON NATURAL GAS AVAILABILITY AND PRICES 19 (2003).

^{52.} Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. 2 (2004) (statement of Bob Drake, Vice President, Oklahoma Farm Bureau).

^{53.} The Impact of High Natural Gas Prices on Small Farmers and Manufacturers: Hearing Before the Subcomm. on Rural Enterprises, Agriculture & Technology of the H. Comm. on Small Business, 108th Cong. 2 (2004) (statement of Hal Swaney, Missouri Farm Bureau).

^{54.} Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce, 108th Cong. 67–68 (2003) (statement of Jeffrey R. Currie, Managing Director, Goldman, Sachs & Co.).

^{55.} Id.

electricity generation sector, has increased. The U.S. historically relied on coal as the principal fuel for electricity generation. The national economy grew significantly and with that growth U.S. businesses and homes demanded more energy. However, federal air quality regulations along with other environmental regulations promoted the use of natural gas as a cleaner generating fuel than coal and less controversial than nuclear.⁵⁶

The environmentally driven preference for natural gas over coal has occurred irrespective of more traditional market-based rationales. For example, according to the Industrial Energy Consumers of America, "[a]s a power generation fuel, coal is far more reliable than natural gas because several months of coal supply can be stored on site, while natural gas is only reliable so long as gas the flows."⁵⁷

Regardless of the relative merits of coal, environmental policies seemed to have dictated fuel choice in the generation of electricity. The Congressional Joint Economic Committee found that, "environmental [laws] passed in the 1980s and 1990s [and their subsequent regulations,] encouraged utilities to use clean burning natural gas rather than coal or oil."⁵⁸

The Clean Air Act Amendments of 1990 (CAAA) substantially changed the way in which air emissions were regulated. The CAAA "were primarily focused on reducing sulfur dioxide (SO2) and nitrogen oxide (NOx) emissions from electric power plants and, to a lesser extent, from industrial and transportation sources."⁵⁹ "To comply with the [new] mandates, . . . generators and industry turned increasingly to natural gas, either by switching existing facilities from other fuels to gas or investments in new, gas-only equipment."⁶⁰

In fact, 90% of new power plants are gas-fired in large part as a result of government environmental policies.⁶¹ The charts below illustrate how natural gas-based generation increased dramatically relative to coal after the Clean Air Act Amendments of 1990.

56. "Air quality regulations and uncertainty are the biggest environmental issue facing the power industry that will ultimately affect natural gas demand, however, the power industry also faces substantial challenges in water quality, solid waste disposal, and the spent nuclear waste disposal issue." DEMAND REPORT, *supra* note 2, at 5-14.

57. PAUL N. CICIO, INDUS. ENERGY CONSUMERS OF AM., COMMENTS ON THE INDUSTRIAL ENERGY CONSUMERS OF AMERICA CONCERNING PROPOSED RULE TO REDUCE INTERSTATE TRANSPORT OF FINE PARTICULATE MATTER AND OZONE 10 (2004).

58. JOINT ECON. COMM., THE PRESSURES ON NATURAL GAS PRICES (2004).

61. H.R. SPEAKER'S TASK FORCE FOR AFFORDABLE NATURAL GAS, 108th CONG., FINAL SUMMARY OF FINDINGS (2003), *available at* http://www.nei.org/documents/Congressional_Report_Natural_Gas.pdf.

^{59.} DEMAND REPORT, *supra* note 2, at 6-5.

^{60.} Id.

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Figure 6⁶³



 SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, NATURAL GAS SHARE OF TOTAL GENERATION (2005) (relying on data developed for the Committee by the Energy Information Administration).
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, COAL SHARE OF TOTAL GENERATION (2005) (relying on data developed for the Committee by the Energy Information Administration).

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Some states' percentage of natural gas-dependent electricity is closer to 100%, and many of those states today are starving for more natural gas, no matter the price. For example all of California's power plants "since 1998 have been natural-gas-fired facilities."⁶⁴ California's Energy Commission concluded that natural gas has allowed power plant developers "to meet local air quality regulations that implement the federal Clean Air Act."⁶⁵

Implementations of the EPA's current regulations, such as New Source Review among others, have also driven the electricity generation industry away from coal and toward natural gas to meet customers' needs. This effect is difficult to quantify because the Energy Information Administration does not include the potential impact of proposed regulations such as the EPA's Clean Air Interstate and Clean Air Mercury rules in considering its projections.

D. Supply

The U.S. natural gas market may appear to be unable to correct itself since supply has yet to meet increased demand. Indeed, "a supply constrained market will hunt down and kill the incremental demand necessary to balance. Price is an effect, not the cause."⁶⁶ According to the American Gas Foundation, today's gas market is "supply-constrained—that is, domestic gas production is at or near 100 percent of [potential] production"⁶⁷

This begs the question: Does the U.S. have abundant natural gas resources? The answer is unequivocally and unconditionally yes. The United States has abundant natural gas resources. According to the National Petroleum Council, using today's technology, the U.S. alone has 1,451 trillion cubic feet (TCF) and North America's resource totals 1,969 TCF of natural gas.⁶⁸

Considering that the U.S. has a significant natural gas resource base, why then is the market supply constrained?

II. OBSTACLES TO MODERATING NATURAL GAS PRICES

According to the American Gas Foundation's February 2005 study, if current policies continue, natural gas prices will rise to nearly double what they are today in the next fifteen years.⁶⁹ As detailed earlier, the Nation has experienced widespread economic dislocation resulting from current high gas prices. It is critical that Congress act today to keep natural gas demand destruction from snowballing into economy-wide destruction.

As discussed in the preceding section, U.S. environmental policies, principally through the regulation of air emissions, increased demand for natural gas. Section II will detail the environmental-based policies that have acted as very real constraints on increasing supplies of natural gas.

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^{64.} CALIFORNIA REPORT, supra note 10, at 11.

^{65.} Id.

^{66.} American Iron and Steel: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. (2004) (statement of Guy H. Ausmus, Chairman, American Steel Institute) (speaking on the effect of demand destruction).

^{67.} GAS FOUNDATION, supra note 15, at 32.

^{68.} INTEGRATED REPORT, supra note 5, at 110.

^{69.} Prices rise to \$13.76 by 2020. GAS FOUNDATION, supra note 15, at 33.

A. Onshore

The United States has significant natural gas resources within the lower forty-eight states.⁷⁰ In order to meet national demand for natural gas, producers must explore beyond traditional locations. Traditional sources of gas are in mature basins, and therefore have experienced declining production.⁷¹ Offsetting this decline will be increasing production from non-conventional resources, especially in the Rocky Mountains.⁷²

However, much of those non-conventional areas are the very same that have effectively been deemed off-limits. "[T]he trend towards increasing leasing and regulatory land restrictions in the Rocky Mountain region . . . is occurring in precisely the areas that hold significant potential for natural gas production."⁷³



The Rockies contain 238 TCF of gas or 24% of the resource base in the lower forty-eight.⁷⁵ Yet, as the map indicates, 69 TCF or 29% of that gas "is currently off-limits to exploration and development, either due to statutory leasing withdrawals or to the cumulative effects of conditions of approval

73. NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: SUMMARY 33 (2003), available at http://npc.org/reports/NG_volume_1.pdf [hereinafter SUMMARY REPORT].

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^{70. &}quot;There is ample supply to meet current demand for natural gas" See DOMESTIC PETROLEUM COUNCIL, NATURAL GAS: CLEAN ENERGY TO KEEP AMERICA GOING STRONG, available at http://www.dpcusa.org/natural/pdf/access.pdf (last visited Sept. 15, 2005).

^{71.} INTEGRATED REPORT, supra note 5, at 121.

^{72.} Id.

^{74.} INTEGRATED REPORT, supra note 5, at 127.

^{75.} NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: SUPPLY 6-1 (2003), available at http://www.npc.org/reports/STG-final.pdf [hereinafter SUPPLY REPORT].

associated with exploration and development activities.⁷⁶ Further, there is either no access to or higher production costs to 125 TCF, or over half of the Rockies total gas resource base.⁷⁷

According to Mr. Laurence Downes, Chairman of the American Gas Association, "America is not running out of natural gas, and it is not running out of places to look for natural gas. America is running out of places where we are *allowed* to look for gas."⁷⁸

The reasons for such limited access to these critical gas resources are numerous and varied. Of course many public lands have bans on production activities, such as National Parks and designated Wilderness Areas. Other areas have been deemed "effectively off-limits" because the regulatory uncertainty prohibitively raises the costs of production. The following discussion shall be confined to areas that are "technically" available for multiple use activities, including natural gas production.

When a producer obtains a lease to explore and produce natural gas on public lands, oftentimes the lease includes stipulations. Lease stipulations often restrict activity to certain periods of the year or focus on particularly designated areas.

B. Lease Stipulations and Conditions of Approval

Lease stipulations and conditions of approval typically may be related to the presence of animal or bird species. The mere presence of a species during certain times of the year may limit or restrict a producer's proposed activity. However, those restrictions are routinely based on assumptions rather than facts. For example, a producer's activity could be restricted because the area may, within a six-month period, be used by mule deer. Therefore, the producer may only be permitted to explore or produce during the remaining six months of the year.

It is important to note that this restriction preventing any disturbance during a six-month window attaches regardless of what the actual impact on the deer may or may not be. In fact, such restrictions routinely apply without a prior finding of harm or even any scientific evidence demonstrating a probability of injury. For example, the Bureau of Land Management (BLM) began restricting certain types of drilling and construction operations of 380,000 acres of land in southeastern New Mexico from April through June to avoid disruptions to prairie chicken mating.⁷⁹ Only after the industry insisted on a scientific study of the issue did the BLM indicate that it would reduce the area to 196,000 acres.⁸⁰

Further, during the permitting process for exploration and production activities on public lands, federal agencies will often require "conditions of approval." Conditions of approval are largely based in federal environmental law and may act as an additional impediment to exploration and development—

^{76.} Id.

^{77.} SUPPLY REPORT, supra note 75, at 6-1.

^{78.} Energy Policy Act of 2005: Ensuring Jobs for Our Future with Secure and Reliable Energy: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy & Commerce, 109th Cong. (2005) (statement of Laurence Downes, Chairman, American Gas Association).

^{79.} ENVIL. ASSESSMENT DIV., U.S. DEP'T OF ENERGY, ENVIRONMENTAL POLICY AND REGULATORY CONSTRAINTS TO NATURAL GAS PRODUCTION 36 (2004) [hereinafter ARGONNE REPORT].

^{80.} Id.

through excessive delay in approval and increased costs—beyond the initial lease stipulations.⁸¹ Again, conditions of approval occur when a producer initiates the permit process to perfect the lease he already obtained. The development of conditions of approval attached to the permit is driven in large part by the National Environmental Policy Act, one of the first major environmental laws in the world.

C. The National Environmental Policy Act

The National Environmental Policy Act (NEPA) was established in 1969 and is regarded as the U.S.'s basic charter for environmental protection. NEPA is a procedural statute designed to ensure that major federal actions consider the human environment. Today, the term "human environment" may sound strange to the listener since environmental discussions are often framed in human versus environment. However, NEPA's explicit goal is to "create and maintain conditions under which man and nature can exist in productive harmony"⁸² Extending that concept further, the Council on Environmental Quality promulgated regulations stating that "[h]uman environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."⁸³

Therefore, NEPA was expressly designed so the federal permitting process would reflect the practical and real relationship that exists between environmental and human goals. That process driving the decision-making was intended to respect and work within that relationship. However, in practice, a wedge has been driven between the human and the environment. The mutual relationship carefully balanced in regulation and in NEPA itself has been broken apart. Today, "the overall welfare and development of man"⁸⁴ is portrayed by many as a goal that acts to the detriment of "maintaining environmental quality .

Adding to the discord and inefficiency of resource development is the fact that federal agencies have not implemented NEPA in a consistent and integrated way. Depending on the proposed project, an assortment of federal agencies may often have some form of jurisdiction, authority, or consultative role in permitting. Yet, those same agencies may have different timetables, requirements, and statutory missions that lead to inconsistent and uncertain decision-making.⁸⁶ For example, BLM was prepared to issue new leases for a project in Wyoming, but "[a]t the last moment, the [U.S. Fish and Wildlife Service] reported that it had not completed its required assessment[s] . . . and would delay the issuance³⁸⁷ "The lack of coordination and cooperation

^{81.} INTEGRATED REPORT, *supra* note 5, at 178–79.

^{82.} National Environmental Policy Act of 1969, 42 U.S.C. § 4331(a) (2000).

^{83. 40} C.F.R. § 1508.14 (2005). Further, "[w]hen an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." *Id.*

^{84. 42} U.S.C. § 4331(a).

^{85.} Id.

^{86.} See THE NEPA TASK FORCE REPORT TO THE COUNCIL ON ENVTL. QUALITY, MODERNIZING NEPA IMPLEMENTATION 24–34 (2003), available at http://ceq.eh.doe.gov/ntf/report/pdftoc.htm [hereinafter NEPA TASK FORCE].

^{87.} ARGONNE REPORT, supra note 79, at 63.

between two divisions within the single Department . . . delays access to muchneeded natural gas supplies."⁸⁸

Opponents of natural gas exploration and production have effectively used the inconsistent determinations and lack of coordination between federal agencies to thwart the process. The NEPA process is unfortunately, but skillfully, used to create uncertainty and ultimately delay, if not outright halt proposed projects. "Opponents of development understand that NEPA... offer[s] opportunities for delay. Delay in making decisions can have a critical impact on development."⁸⁹

With respect to oil and gas exploration and production, delay can be, and often is, tantamount to stopping the project. If the borrower cannot satisfactorily demonstrate certainty, then he/she will not obtain financing for the venture. "[T]his NEPA process . . . has become the principal tool used by obstructionists to delay or halt natural gas development."⁹⁰ By careful use of the NEPA-related permitting process, opponents create that uncertainty and thereby manufacture financial risk. In order to obtain financing for a venture—personal or business— a bank, lending institution or investor requires the likelihood of a return within a time certain. "Producers must reinvest their capital continuously and cannot allow it to stagnate because of permitting delays."⁹¹ In testimony before the Committee on Environment & Public Works, Mike Caskey, Vice President and Chief Operating Officer for Fidelity Exploration and Production put it another way:

Imagine the owner of any other business, who obtains all the permits necessary to conduct business, sets up an office, invests in hiring workers and makes a commitment to buy equipment, supplies and startup needs and isn't allowed to conduct business because of frivolous litigation that targets the well-established licensing process.⁹²

Some are so focused on their agendas that they refuse even to acknowledge facts that do not fit in with their own circumscribed interests. The Committee on Environment & Public Works heard from a diverse group of natural gas interests, but especially from businesses, farmers, and a Governor fearful that their jobs and economies are in jeopardy due to the natural gas crisis. After hearing from several witnesses who have experienced job losses, a lawyer for the Southern Utah Wilderness Alliance (SUWA), Stephen Bloch, testified against exploration and production of natural gas in certain areas.

SUWA, like other groups made some controversial and, many believe, unfounded statements that ran counter to the facts as we heard them. After reading much testimony and listening repeatedly to various claims, I chose to ask Mr. Bloch directly about his organization's position. A portion of the Committee's transcript is below:

Senator INHOFE. Mr. Bloch, your website refers to our state of affairs as "the

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^{88.} Id.

^{89.} INDEP. PETROLEUM ASS'N OF AM., DEVELOPING DOMESTIC NATURAL GAS SUPPLY 3 (2005), available at http://www.ipaa.org/meetings/NaturalGasConference.pdf [hereinafter IPAA].

^{90.} Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. 109 (2004) [hereinafter Caskey] (statement of Mike Caskey, Executive Vice President and Chief Operating Officer, Fidelity Exploration & Production Co.).

^{91.} IPAA, supra note 89.

^{92.} Caskey, supra note 90, at 172-73.

fabricated energy crisis." What do you mean by "fabricated energy crisis." Do you think it is not real.

Mr. BLOCH. No, Senator; I think SUWA and the conservation community is as concerned as everyone you have heard from already at this hearing. I think our concern is the use of the so-called "crisis" to lift some of the important environmental protections afforded by statutes, such as NEPA, to lift the protections of those statutes and to allow for an expedited process, starting from the leasing stage all the way to production. That is going to cause significant environmental damage as a result. So I think that is our concern.⁹³

Spurred by the lack of clarity on the part of the witness, I continued:

Senator INHOFE. Do you believe there is an energy crisis?

Mr. BLOCH. I think I would agree with the other statements made today that there seems to be shortages of natural gas in some of the places where it is needed most."⁹⁴

Bob Drake from the Oklahoma Farm Bureau had testified just a few moments before how high natural gas prices are eroding America's ability to grow food and fiber. Given the seemingly conflicting testimony, I again attempted to clarify the record:

Senator INHOFE. So there is an energy crisis? Yes or no?

Mr. BLOCH. It certainly appears that way from what we have heard.95

Ohio's Senator Voinovich had listened to testimony from a manufacturer in his state that was experiencing tremendous strain, with the likelihood of closing operations directly due to high natural gas prices. Like me, Senator Voinovich was anxious to understand this group's position, and asked the witness to be as clear and direct as possible.

Senator VOINOVICH. I had the same concern. On your website you mentioned "fabricated energy crisis." Were you here this morning for the testimony?

Mr. BLOCH. Yes, I was, Senator.

Senator VOINOVICH. After hearing that testimony, would you say that there really is an energy crisis?

Mr. BLOCH. As I stated earlier, I would agree that all the speakers indicated that there is a crisis. 96

This brief insight into the attitudes of some of the traditional opponents of energy projects indicates the difficulty we face in dispensing with agendas and moving on to common ground. Only after quite literally facing people on the brink of going out of business did this particular representative acknowledge the unfortunate fact—we are indeed experiencing an energy crisis.

The concern over litigation is so grave that environmental impact statements (EIS) are now routinely collected in multiple volumes rather than just pages.⁹⁷ Yet, the plain language of NEPA's regulations directs agencies to

^{93.} Environmental Impacts of Natural Gas Supply: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. 107 (2004) [hereinafter Inhofe and Bloch] (statements of Sen. Inhofe and Mr. Bloch).

^{94.} Id

^{95.} Inhofe and Bloch, supra note 93.

^{96.} Id.

^{97.} IPAA, supra note 89.

reduce paperwork and background data and even provide summaries.98

Federal agencies are so concerned with challenges and related litigation that their permitting actually may be violating the very Act and regulations that establish the permitting process itself. The fact is that NEPA's intent, as established in the black letter of the law and regulations, is not being executed. Rather, litigation and court decisions increasingly "find" the "intent of NEPA and determine requirements for compliance."⁹⁹

Rather than work toward proper and useful environmental analysis that improves agency decision-making, "NEPA has become an end unto itself"¹⁰⁰ Federal agency personnel know that the information they use go far beyond the requirements in the Act and implementing regulations, but they feel the need to "litigation-proof" their environmental analysis and review. Fearful of litigation, federal officials often require environmental impact statement at the outset even when no significant impacts have been found.¹⁰¹

The irony, of course, is that the public is harmed many times over by the misuse of the very process designed to provide public participation. The public has implicit and explicit rights to comment and participate in public land use decisions. However, that "participation" all-too-often means litigation. Litigation forces agency personnel to "litigation-proof" their documentation by drafting multivolume EISs. Yet, such documentation is effectively impenetrable and virtually inaccessible by the vast majority of the public.

D. Endangered Species Act

The Endangered Species Act (ESA) is under considerable scrutiny for several reasons. Proponents of reform, such as the Western Governors Association, have long called for a dialogue on the subject and proper implementation. The Environment & Public Works Committee is currently reviewing the Act and considering reform. With respect to ESA and natural gas exploration and production, the challenges relate to citizen nominations for additions to the list of endangered or threatened species.

The problem is that there are no qualification requirements to nominate a species for listing. Any group or individual can file a petition to list without scientific data.¹⁰² The result is that opponents of natural gas exploration and production take advantage of the liberal public participation provisions to stop activity. Opponents simply petition that a particular species should be listed as a protected species. Once a species is listed, the species' habitat becomes effectively off-limits to exploration and production or any other activity that could result in a "take" of the species.¹⁰³

For example, several groups petitioned the U.S. Fish & Wildlife Service (USFWS) that the Prebles meadow jumping mouse should be listed as an endangered species. Without proper and full scientific review, the USFWS

^{98. 40} C.F.R. § 1500.4 (2005).

^{99.} ARGONNE REPORT, supra note 79, at 63.

^{100.} SUPPLY REPORT, supra note 75, at 6-42.

^{101.} Id.

^{102.} SUPPLY REPORT, supra note 75, at 6-32.

^{103.} Critical habitat designations and section 7 consultations were estimated to have caused delays to a natural gas project of six months to two years with an estimated cost over thirty years to the local economy from \$261 million to \$979 million. See ARGONNE REPORT, supra note 79, at 29–30.

designated the Prebles mouse and restricted 31,220 acres in Colorado and Wyoming and 359 miles of streams and rivers as designated habitat.¹⁰⁴ The Service initially proposed double the critical habitat but concluded that the additional land was already under protections.¹⁰⁵ The result of the "more reasonable proposal" drew ire from some. Eric Bonds, a spokesman for the Biodiversity Conservation Alliance stated, "I fear that the Fish and Wildlife Service has erred on the side of extinction."¹⁰⁶

Similarly, many groups have petitioned the Fish & Wildlife Service to list the sage grouse, a bird that inhabits eleven natural gas-rich states.¹¹⁰ The USFWS considered listing the species but ultimately declined and opted for a cooperative approach instead. Secretary of Interior Gale Norton called the collaborative approach a success story.¹¹¹ Rather than asserting the blunt instrument of the federal government, the USFWS will work with grassroots and local conservation organizations to help the species thrive.¹¹² Like the Prebles mouse, one would think that those concerned about helping the species would feel empowered with the decision as they now have an official mandate to help. However, Mark Salvo, Director of the Sagebrush Sea Campaign said of the decision, "'[I]ocal conservation plans are mostly window dressing and are insufficient to save the [sage] grouse'....³¹¹³

One only needs to consider the habitat that would effectively be made offlimits if the sage grouse were listed under ESA. As the bird's name implies, sage grouse live in and around sage.¹¹⁴ Below is a map that superimposes sage (light gray) over the natural-gas rich basins (dark gray).

104. FWS Halves Critical Habitat for Preble's Mouse, GREENWIRE, June 23, 2003 [hereinafter FWS Report].

105. Id.

106. FWS Report, supra note 104.

107. Natalie M. Henry, FWS Proposes Removing Protection for Preble's Mouse, GREENWIRE, Jan. 31,

2005. 108.

108. *Id.* 109. Henry, *supra* note 107.

110. April Reese, Locals Shoulder Conservation in Wake of Listing Decision, LAND LETTER, Feb. 17,

2005.

111. *Id*.

112. Reese, *supra* note 110.

113. Interior to Deny Sage Grouse Federal ESA Protection, GREENWIRE, Jan. 7, 2005.

114. *Id.*





This map illustrates why some groups may be advocating for federal protection rather than innovative local conservation efforts. The effect of the Prebles mouse's designation would have stopped development; the likely effect of sage grouse designation would have stopped or at least restricted exploration and production of natural gas.

Therein lies the problem—the ESA is being used by those opposed to some or all to meet their own objectives rather than to help endangered or threatened species. One natural gas producer put the ESA issue in very simple terms: You want to find a threatened or endangered species, go find a well.

E. Hydraulic Fracturing

Hydraulic fracturing is a technique used to allow natural gas to move more freely from rock pores. The National Petroleum Council estimates that sixty to eighty percent of all wells drilled in the next decade to meet natural gas demand will require fracturing. The practice of hydraulic fracturing is regulated by the States. The EPA has consistently declined to regulate it under the Safe Drinking Water Act. Some have sued the EPA for its decision in hopes of forcing federal regulation. One group successfully sued in Alabama. That suit prompted the EPA to conduct a nationwide and comprehensive study of hydraulic fracturing, and intended to use the conclusions as a springboard for potential regulation.

In the belief that well-grounded and academically rigorous science, and not special interest groups and trial lawyers, should be the foundation for regulation, I introduced an amendment with the then-Chairman of the Energy Committee,

^{115.} OFFICE OF FLUID MINERALS, BUREAU OF LAND MANAGEMENT, INTERMOUNTAIN WEST ENERGY PRODUCTION AREAS (2004).

Senator Jeff Bingaman, concerning hydraulic fracturing. My language required a full National Academy of Sciences (NAS) study of hydraulic fracturing while precluding the EPA from regulating the practice until the results were determined. My provision was attached to the 107th Congress' energy bill by a vote of seventy-eight to twenty-one.

The 107th and 108th Congresses failed to pass an energy bill. However, the EPA realized that well-grounded science was the appropriate foundation for regulation to be built upon. In June 2004, the EPA published the final version of its hydraulic fracturing study. During the study period, the EPA reviewed more than 200 peer-reviewed publications, interviewed roughly fifty state and local government agency employees, and communicated with scores of private concerned citizens.¹¹⁶ The EPA concluded that, "the injection of hydraulic fracturing fluids into CBM [(coalbed methane)] wells poses little or no threat to USDW [underground sources of drinking water)] and does not justify additional study^{*117}

Although the EPA's conclusions were certain, some members of the public were concerned over potential contamination from constituent liquids used in hydraulic fracturing. In response to those concerns, the EPA entered into memoranda of agreement with 95% of the oil and gas industry that hydraulically fractures wells will not use the liquids of concern.¹¹⁸

Notwithstanding the facts learned after careful scientific review of hydraulic fracturing, and the agreements reached between the producing industry and the EPA, some contend that hydraulic fracturing is harmful.¹¹⁹ Like the Prebles mouse, well-grounded science and the facts concluded that excessive federal involvement was unwarranted, unnecessary, and unwise.

F. Natural Gas Infrastructure

Expanding U.S. natural gas pipeline infrastructure is a necessary prerequisite to moderating high gas prices for residents and businesses alike. Currently, the nation's existing gas pipeline system is fully utilized, and lacks reserve capacity with which to transport additional supplies.

116. A full review of the practice of hydraulic fracturing and history of the litigation can be found online at http://www.epa.gov/safewater/uic/cbmstudy/docs.html.

117. ENVTL. PROT. AGENCY, EXECUTIVE SUMMARY: EVALUATION OF IMPACTS TO UNDERGROUND SOURCES OF DRINKING WATER BY HYDRAULIC FRACTURING OF COALBED METHANE RESERVOIRS ES-1 (2004), available at http://www.epa.gov/safewater/uic/cbmstudy/pdfs/completestudy/es_6-8-04.pdf.

118. Id. at ES-2.

^{119.} See, e.g., Tom Hamburger, Exemption Likely to Drilling Rules, L.A. TIMES, Apr. 14, 2005.

Figure 9¹²⁰



U.S. Natural Gas Pipeline Infrastructure

Assuming more gas were available, in some regions gas pipelines would be challenged to bring sufficient gas used to heat residents' homes. For example, New England has no fossil fuels of its own so pipeline infrastructure is critical to deliver gas. During the Environment Committee's March 2004 hearing on natural gas issues, Rhode Island Governor Donald Carcieri detailed the very real near crisis that occurred in his State during the winter when the distribution system was "forced to shut off service to approximately 250 customers in order to preserve the remaining [ones]."¹²¹

Increasing the capacity of existing pipelines and constructing new infrastructure is expensive, but those are investments that must occur for demand for gas to be met.¹²² Yet, the cost of inaction is even more expensive. Actions that delay or defer decisions force the investment costs higher, or result in capital flow to other projects not subject to the same delay. According to a detailed study by the Interstate Natural Gas Association of America (INGAA), "a two-year delay in natural gas infrastructure construction will cost U.S. gas consumers

^{120.} COMM. ON NATURAL GAS, DEMAND TASK FORCE REPORT, BALANCING NATURAL GAS POLICY: TRANSMISSION & DISTRIBUTION TASK FORCE REPORT T-7 (2003) [hereinafter TRANSMISSION & DISTRIBUTION REPORT].

^{121.} Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. (2004) (statement of Governor Donald Carcieri, Governor of Rhode Island).

^{122. &}quot;Pipeline and distribution investments will average \$8 billion per year . . . to sustain . . . existing infrastructure." NAT'L PETROLEUM COUNCIL, BALANCING NATURAL GAS POLICY: TRANSMISSION & DISTRIBUTION T-3 (2003) [hereinafter TRANSMISSION REPORT].

in excess of \$200 billion "¹²³

With such high stakes from costs to consumers, to the possibility of compromised health or even increased mortality, one would assume that pipelines would be constructed in short order. However, pipeline construction or expansions are burdened with a host of permitting challenges even though interstate pipelines are provided special status intended to avoid them.

The Natural Gas Act of 1938 grants the Federal Energy Regulatory Commission (FERC) exclusive federal jurisdiction concerning the authorization, siting, and construction of interstate gas pipelines. However, the FERC's authority has been frustrated in several legal decisions as of late. Although the FERC has exclusive siting authority over interstate pipelines, the Commission is still required to comply with NEPA as the designated lead agency. To that end, the FERC has made great strides in meeting timely permit approvals through various Memoranda of Understanding with other federal agencies in 2002 and improved its processes.¹²⁴ Unfortunately, some state and federal agencies refuse to work within the FERC and NEPA process and will wait (and have waited) until the FERC concludes its review before even beginning their work in earnest.¹²⁵ These agencies have important permitting or review responsibilities, however, their failure to initiate them within the FERC's mandated lead role leads to an inefficient, if not completely ineffectual process.

By "sitting-out" of FERC's timeline, the agencies at issue conduct duplicative environmental reviews. This results in increased delay in permitting time and increases the likelihood that other agencies will impose conditions at odds with the FERC's own conditions.¹²⁶

Although state regulatory action would be preempted where conflicts with the FERC could not be worked out, state action pursuant to federally delegated authority (as in the Clean Water Act (CWA) or Coastal Zone Management Act (CZMA)) presents a different legal question. Pipeline opponents, abetted by state government officials, have taken advantage of this situation by using the permitting authority under the CZMA and/or the CWA to frustrate pipeline projects already approved by the FERC.¹²⁷

Pipeline permitting challenges manifest themselves in many ways, but the result is the same. Whether a federal agency is acting in a dilatory way or in response to locally led opposition, the result is that residents and businesses pay more than they should. For example, New York City has been unable to expand its natural gas pipeline capacity the last four years despite growing gas demand.¹²⁸ This inability has resulted in price spikes that have exceeded \$40 per MMBtu compared with average prices around \$6 per MMBtu. New York City residents and businesses pay significantly more than other residents in the

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^{123.} ENERGY & ENVTL. ANALYSIS, INC., INGAA FOUND., AN UPDATED ASSESSMENT OF PIPELINE & STORAGE INFRASTRUCTURE FOR THE NORTH AMERICAN GAS MARKET 10 (2004) (emphasis omitted) [hereinafter INGAA].

^{124.} TRANSMISSION REPORT, supra note 122, at T-25.

^{125.} INTERSTATE NATURAL GAS ASS'N OF AM., SUBMISSION TO THE SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES NATURAL GAS CONFERENCE (Jan. 24, 2005) [hereinafter NATURAL GAS CONFERENCE].

^{126.} *Id*.

^{127.} NATURAL GAS CONFERENCE, *supra* note 125.

^{128.} Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. (2004) [hereinafter Santa] (statement of Donald Santa).

region.129

As with the New England states, California must import natural gas via pipeline from surrounding states.¹³⁰ Due to California's continually increasing demand for natural gas, its dependence on imports is projected to increase.¹³¹ To address its need for natural gas, California has sought to import gas from Canada in addition to other states. Yet, some have mobilized to oppose Canadian exports of gas to the U.S. in general and California in particular. For example, a joint Sierra Club and Natural Resources Defense Council (NRDC) report argues against increasing the pipeline infrastructure to deliver the cleanest-burning fossil fuel to California and other places.¹³²

It is worth noting that some consistently change their position on key issues depending on their sentiments that day. As noted above the NRDC opposes increasing pipelines from Canada. However, NRDC attorney, Patricio Silva testified before the House Energy & Commerce Committee in opposition to increasing domestic supplies of natural gas. In support of his position he said, "[i]t is important to point out that with natural gas the issue is less about the need to find new supplies, than the need to develop infrastructure to deliver these supplies to market."¹³³

G. Liquefied Natural Gas

Liquefied natural gas (LNG) is a critical component in meeting domestic demand. LNG is made by liquefying gas through a refrigeration process that reduces the volume of the gas to approximately 1/600 its original size.¹³⁴ LNG is then shipped by specially constructed double-hulled tankers to gasification terminals and then transported through pipelines to meet demand.¹³⁵

With traditional domestic supply basins maturing, and a consistently difficult permitting environment, energy experts have looked increasingly to LNG as a key solution to our natural gas crisis. Again, environmental regulations are one of, if not the most, significant factor driving the demand for natural gas, yet "the environment" is consistently cited as the principal reason for opposing LNG. Federal Reserve Board Chairman Alan Greenspan highlighted this fact in a hearing before the House Committee on Energy and Commerce, "[i]n the United States, rising demand for natural gas, especially as a clean-burning source of electric power, is pressing against a supply essentially restricted to North American production."¹³⁶

The U.S. currently has four LNG receiving terminals: Everett,

135. Id. at L-5 to -6.

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^{129.} Id.

^{130.} However, California could choose to produce more of its own natural gas rather than rely so heavily on its neighboring states.

^{131.} Santa, supra note 128, at 16.

^{132.} See NATURAL RES. DEF. COUNCIL & SIERRA CLUB OF CANADA, AMERICA'S GAS TANK: THE HIGH COST OF CANADA'S OIL & GAS EXPORT STRATEGY (2002).

^{133.} National Energy Policy: Natural Gas: Hearing Before the Subcomm. on Energy & Air Quality of the H. Comm. on Energy & Commerce, 107th Cong. (2001) (statement of Patricio Silva, Natural Resource Defense Council).

^{134.} TRANSMISSION REPORT, supra note 122, at L-5.

^{136.} Natural Gas Supply and Demand Issues: Hearing Before the H. Comm. on Energy and Commerce, 108th Cong. (2003) (statement of Alan Greenspan, Chairman of the Federal Reserve Board).

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Massachusetts, Lake Charles, Louisiana, Elba Island, Georgia, and Cove Point, Maryland. In response to high natural gas prices, policymakers and industry have shown significant interest in constructing new LNG receiving terminals. The map below depicts the existing and some of the proposed LNG projects pending.



The Administrator for the Energy Information Administration (EIA), Guy Caruso went so far as to say that, "[n]early all of the increase in U.S. net imports is expected to come from LNG."¹³⁸ In making its projections for U.S. natural gas prices, EIA focuses its high price scenario around a lack of new LNG terminals.¹³⁹ The respected experts at Energy & Environmental Analysis, Inc. concluded that approximately ten additional LNG terminals must be constructed in order to meet natural gas demand.¹⁴⁰ Therefore, knowing the importance of such facilities to the Nation, one would believe that several facilities would be permitted and constructed relatively promptly.

However, attempts to permit and build new LNG facilities have frequently been frustrated. It is worth noting that the most challenged LNG terminals have been located in the regions most demanding new gas supplies. One of the most gas-needy states, California (again), is opposing LNG terminals asserting that the FERC actually lacks jurisdiction as the lead agency over LNG terminals.¹⁴¹

^{137.} TRANSMISSION & DISTRIBUTION REPORT, supra note 120, at L-35.

^{138.} Energy Supply and the American Consumer: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. (2004) (statement of Guy Caruso, Administrator, Energy Information Administration of the Department of Energy).

^{139.} See ENERGY INFO. ADMIN., U.S. DEPT. OF ENERGY, ANNUAL ENERGY OUTLOOK 2005 66 (2005) [hereinafter ENERGY OUTLOOK].

^{140.} INGAA, supra note 123, at 40.

^{141.} See AARON M. FLYNN, CONG. RES. SERV., LIQUEFIED NATURAL GAS (LNG): JURISDICTION CONFLICTS IN SITING APPROVAL (2004).

Those state and local governments, with the assistance of "not-in-mybackyard" activist groups contest the needed facilities asserting environmental and safety concerns. For example, several attempts to construct facilities in the gas-dependent Northeast have been repeatedly challenged. In March 2005, the Delaware Coastal Zone Industrial Board voted unanimously against a proposed BP LNG terminal in Logan Township., New Jersey that would extend into Delaware's coastal waters.¹⁴² In searching for authority to oppose the facility, the Board claimed that the terminal would have violated a ban on manufacturing, even though state Department of Natural Resources and Environmental Conservation officials said the addition of chemicals during the regasification process is insufficient to meet the definition of manufacturing under state law.¹⁴³ Whether the State had legal authority or not, one resident zeroed in on the real issue: "'[n]obody wants it in their back yard. But this is our back yard—Logan Township.'"

In response to safety and environmental concerns from coastal residents, some industry representatives have looked to offshore LNG terminals. Again, in attempts to meet the Northeast's skyrocketing demand for gas, a proposal is under consideration to build a \$700 million liquefied natural gas terminal in Long Island Sound that would provide about one billion cubic feet of natural gas daily to Connecticut and New York.¹⁴⁵ Some opponents are already expressing concern that the project could pose potential safety and environmental problems to people along the shoreline, notwithstanding the fact that the facility would be nine miles away.¹⁴⁶

Although safety seems to be the concern of state and local government officials, advocacy groups have staked their positions on opposing LNG terminals. The Sierra Club's California and Nevada chapters voted to oppose both onshore and offshore LNG facilities even though the Club supported natural gas over nuclear and coal.¹⁴⁷ Opposition centered in the environmental community led to Calpine withdrawing its proposal to construct an LNG facility in Eureka, California.¹⁴⁸

Opposition to new LNG facilities to meet demand is not confined to the U.S. A proposed \$650 million LNG project in Baja, Mexico that would meet about one-fifth of California's current demand was approved by Mexico's environmental secretariat.¹⁴⁹ Yet, Greenpeace and the Mexican Environmental Law Center said that they will file legal claims against the facility claiming that the country's Environmental Department did not gather enough scientific information concerning affects on birds living on nearby Coronado Islands.¹⁵⁰

^{142.} Del. Board Rules Against Building BP Facility in State Waters, GREENWIRE, Mar. 31, 2005, available at http://www.eenews.net/greenwire/include/print.php?single=03310506.

^{143.} Id.

^{144.} Del. Board Rules Against Building BP Facility in State Waters, supra note 142 (citations omitted).

^{145.} Long Island Sound Project Raises Fears of Accidents, GREENWIRE, Apr. 5, 2005, available at http://www.eenews.net/greenwire/include/print.php?single=04050507.

^{146. &}quot;The fact that you're nine miles out is the key point . . .[,] [e]ven under the wildest disaster scenario that someone could imagine, it's not going to affect anyone on the shoreline." Id.

^{147.} See Calpine Latest LNG Player to Withdraw Plans for California, OIL DAILY, Mar. 19, 2004, at 5. 148. Id.

^{149.} Enviros Plan to Block Mexico Facility, GREENWIRE, Jan. 19, 2005, available at http://www.eenews.net/greenwire/include/print.php?single=01190505.

^{150.} Id.

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The conflicts between new LNG facilities and opponents are similar to cases involving interstate pipelines—in both instances opponents assert that the federal lead permitting agency lacks authority and/or the local government objects to the federal decision under some authority retained by the state or local government. In the case of LNG, the FERC and the U.S. Coast Guard have jurisdictional authority.¹⁵¹ Permitting an LNG terminal can take several years.¹⁵² Although the FERC has made great strides in improving the NEPA environmental review process, federal and/or state agencies may be so strident in their opposition that they will use the delaying tactic of "sitting-out" the process and then asserting opposition after-the-fact. It is important to note that improving and rationalizing the process is no simple task. Under NEPA, the FERC must prepare an environmental impact statement and a review of thirteen Environmental Resource Reports, five of which are applicable specifically to LNG facilities.¹⁵³

H. Outer Continental Shelf

Offshore or Outer Continental Shelf (OCS) natural gas has proven to be some of the most significant and important supply sources in meeting U.S. demand.¹⁵⁴ In fact, "[a]pproximately 26% of domestic daily natural gas is produced from the Outer Continental Shelf (OCS)."¹⁵⁵

The OCS natural gas resource base is enormous and technological advancements in exploration and production techniques allow for ever-increasing production yields. Those real world technological advancements led the Minerals Management Service, which oversees development in the OCS, to update its assessment of technically recoverable gas by 12%.¹⁵⁶

However, the OCS could provide substantially more gas to power domestic manufacturers and heat homes. Yet, areas on both coasts and the Eastern Gulf of Mexico are off-limits to exploration and production.

Keeping the OCS off limits from exploration and production has been a bipartisan issue. Through Interior Appropriations Bills, Congress enacted moratoria from 1982 to 1992.¹⁵⁷ President George H.W. Bush issued a Presidential Directive extending the moratoria area until 2000 and President Clinton extended and expanded the off limits policy until 2012.¹⁵⁸

Opening the OCS moratoria areas for exploration and production has become a crucial and visible issue for many environmental groups. The Natural Resources Defense Council states that it "opposes lifting the current OCS moratoria" and "[t]he prospect of opening these areas will likely be extremely

^{151.} TRANSMISSION REPORT, supra note 122, at L-46.

^{152.} Id.

^{153.} Long Island Sound Project Raises Fears of Accidents, supra note 145.

^{154.} The OCS "is composed of lands beyond the generally 3-mile area of state jurisdiction in most offshore waters and beyond the 10-mile area of state jurisdiction in the Gulf of Mexico waters off Texas and Florida." MARC HUMPHRIES, CONG. RES. SERV., OUTER CONTINENTAL SHELF OIL AND GAS: ENERGY SECURITY AND OTHER MAJOR ISSUES 1 (2003).

^{155.} SUPPLY REPORT, supra note 75, at 6-45.

^{156.} Ben Geman, Interior Increases Offshore Gas Estimate; Oil Amount Unchanged, GREENWIRE, Dec. 23, 2004, available at http://eenews.net/greenwire/include/print/php?single=12230407.

^{157.} Enviros Plan to Block Mexico Facility, supra note 149, at 1.

^{158.} Id.; see also ARGONNE REPORT, supra note 79, at 38-43.

derived from the natural environment. Because of these obvious facts, some would suggest this relationship results in conflict between man's needs versus the environment. This perception is not only detrimental to developing reasonable natural gas policy, but it ignores the self-evident relationship linking man and the environment, a relationship that has been recognized time and again throughout environmental law.

Humans exist with and within the environment, and reasonable policy will recognize as much. Unfortunately, rather than advocating based on what the law actually says, some advance ever-more-radical interpretations to expand the man versus environment divide.

It is imperative that the public learn the facts about natural gas exploration, production, transportation, and distribution so that it can assist in developing reasonable and effective policy. Further, the public should be reminded that the reason why natural gas demand has increased so steadily was in direct response to their demand for cleaner fossil fuel.

B. Public Education: The Role of Environmental Stewardship and Technology

The oil and gas industry has incorporated environmental stewardship as an integral part of normal business operations. Technological improvements have aided the industry in balancing the goals of resource extraction with sound environmental practices. Although the industry proudly retains its traditional wildcat roots, oil and gas companies are some of the most technologically advanced businesses today. "In the past, wildcat wells were drilled with little more than intuition. Today, modern analysis techniques have vastly improved the success rate for discovery of economical quantities of oil and gas."¹⁷⁰

The industry is able to go farther, deeper, in shorter timeframes and with ever decreasing disturbances to the environment.

Ensuring minimal environmental impacts and maximizing returns on investment are the principles that transformed exploration and production from an art form to cutting edge science. Unfortunately, critics of the oil and gas industry seem to ignore the great environmental gains realized in the last ten years, much less the last thirty.

States now regulate the spacing of oil and gas rigs under the prevention of waste principle. "These regulations require separation of wells by appropriate distances so that wells do not either interfere with other production or become more numerous than necessary, thus wasting materials and energy."¹⁷¹ However, well spacing regulations were first established in Texas and implemented by armed troops to prevent violent conflicts between wildcatters.¹⁷² Exploration techniques have fully transitioned from a luck-based art form using divining rods to hard science employing satellites, microprocessors, remote sensing, and supercomputers to generate three-dimensional time-lapse imaging of subsurface reservoirs.¹⁷³

^{170.} LEE GERHARD & WILLIAM LAWSON, INTERSTATE OIL & GAS COMM'N, THE ENVIRONMENTAL EVOLUTION OF THE PETROLEUM INDUSTRY 10 (2001) [hereinafter GERHARD & LAWSON].

^{171.} Id.

^{172. &}quot;Drillers tried to nestle drilling rigs as close to each other as possible to take their share of the resource before someone else could coax it across a property line to their well." GERHARD & LAWSON, *supra* note 170.

^{173.} OFFICE OF FOSSIL ENERGY, U.S. DEP'T OF ENERGY, ENVIRONMENTAL BENEFITS OF ADVANCED OIL

At times, the public seems to perceive environmental responsibility as a cost to doing business that is unrelated to production. Yet, the chief objective of what many today regard as environmental mitigation techniques were primarily aimed at increasing production and fair business practices. The fact of the matter is that "higher productivity means less impact on the environment and better protection of our [natural resources]."¹⁷⁴

For example, exploration and production technology has minimized surface disturbance from six acres in 1991 to just over one and a half acres today.¹⁷⁵ Improved drilling technology has allowed multiple wells to be drilled from a single location or access to several gas reservoirs from a single well to extended locations in excess of twenty-five miles.¹⁷⁶

Figure 11¹⁷⁷



AND GAS EXPLORATION AND PRODUCTION TECHNOLOGY 13 (1999), available at http://www.fe.doe.gov/programs/oilgas/publications/environ_benefits/env_benefits.pdf [hereinafter DOE REPORT].

174. Id. at 12.

175. Advances in Technology: Innovations in the Domestic Energy and Mineral Sector: Hearing Before the Subcomm. on Energy & Mineral Resources of the H. Comm. on Resources, 108th Cong. 5 (2004) (statement of William Whitsitt, President, Domestic Petroleum Council), available at https://www.ipaa.org/govtrelations/testimony/whitsitt.pdf.

176. Id. at 6.

177. Advances in Technology: Innovations in the Domestic Energy and Mineral Sector: Hearing Before the Subcomm. on Energy & Natural Resources of the H. Comm. on Resources, 108th Cong. 4 (2004) (statement of William Whitsitt, President, Domestic Petroleum Council).

As already detailed in the preceding sections of this report, U.S. households, electric generators, and workers desperately need more natural gas. Moving beyond alarmist rhetoric and looking at the facts defining today's oil and gas industry should not be a partisan exercise. The Clinton Administration acknowledged as much when it stated, "[t]he U.S. oil and gas industry has integrated an environmental ethic into its business culture and operations" and "has come to recognize that high environmental standards and responsible development are good business." ¹⁷⁸

In recent years, the natural gas industry has done a good job in educating the public about their operations and relationship with the environment. For years, companies have invested in the communities in which they operate in many ways, from education projects to protecting open space to assisting farmers in water monitoring programs. Representing the gas producing states, the Interstate Oil and Gas Compact Commission, surveys and acknowledges the work of some of these companies when giving their annual Chairman's Stewardship Awards.¹⁷⁹

Yet, the industry at large, along with the federal government should develop additional ways to partner with the public. The public participation process is an important component of environmental law. A fully informed public is better able to participate in the process and reach their own conclusions rather than rely on the skewed perceptions of special interest groups.

C. Efficiency

Energy efficiency is increased when an energy conversion device undergoes a technical change that allows it to provide the same service while using less energy.¹⁸⁰ Behavioral and financial investments in energy efficiency simply makes good common sense where appropriate.

The Bush Administration recognizes the important role that energy efficiency has in addressing the nation's energy needs. Out of 105 recommendations in the President's National Energy Plan, more than half specifically address efforts to improve energy efficiency and to improve the performance and lower the cost of alternative forms of energy.¹⁸¹ Several federal programs have been established in response to national interest that considers energy efficiency as an important tool for mitigating environmental impacts.¹⁸²

The EPA and Department of Energy's Energy Star program is one of the more recognized federal initiatives that have led to marked efficiency improvements. Since its inception in 1992, Energy Star has been a leader in informing consumers of more energy efficient products through a distinctive labeling campaign. Typically, Energy Star-rated products, appliances, or more

^{178.} DOE REPORT, supra note 173, at 3 (emphasis omitted).

^{179.} See http://www.iogcc.oklaosf.state.ok.us/ for more information on recipients of the awards.

^{180.} FRED SISSINE, CONG. RESEARCH SERV., ENERGY EFFICIENCY: BUDGET, OIL CONSERVATION, AND ELECTRICITY CONSERVATION ISSUES 1 (2005), *available at* http://www.usembassy.it/pdf/other/IB10020pdf#search.

^{181.} Oversight on Natural Gas: Hearing Before the S. Comm. on Energy and Natural Resources, 108th Cong. (2003) [hereinafter Garman] (statement of David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, United States Department of Energy), available at http://www.energy.senate.gov/hearings/testimony.cfm?id =847&wit id=815.

^{182.} Id. at 2.

recently, building designs may cost more at the time of purchase, but allows the consumer to decide whether the long-term savings is worth it compared to a marginally higher priced product at the time of purchase. Many businesses and homeowners have, in fact, made the upfront investments and have realized savings many times over. For example, "a home fully equipped with Energy Star qualifying products will operate on about 30 percent less energy than a house equipped with standard products, saving the typical homeowner about \$400 each year."¹⁸³

In any discussion of energy policy, it is critical that one consider the choices comprehensively and in the proper context. When it comes to energy efficiency, the American public and businesses have made great strides the last few decades in improving energy efficiency in their own right.

For example, since the mid-1970s, the industrial sector has reduced the amount of energy required to produce one unit of output by nearly 40%.¹⁸⁴ Bob Drake of the Oklahoma Farm Bureau testified before the Environment & Public Works Committee, that "today's agriculture is more energy efficient than ever before" and that "across this nation, farmers are producing 30 percent more crop using 30 percent less energy-related inputs, including fertilizer, than we did only a generation ago."¹⁸⁵ U.S. consumers have reduced the amount of natural gas used per customer by 16% from 1980 to 2001.¹⁸⁶

In some instances, a particular industry may have picked the largest and low-hanging energy efficiency fruit in order to have survived as long as it has in an era of global competition. U.S. industry is very price sensitive and deploys energy efficiency technologies when they become available and conditions are favorable.¹⁸⁷ The unsustainably high price of natural gas may and in some cases already has outpaced the tremendous energy efficiency gains to be realized. This means that a business will not invest in costly efficiency technologies if it would be forced into bankruptcy before ever realizing the benefits of those investments.

D. Energy Efficiency versus Conservation

Energy efficiency is not a new concept, but it has increasingly become the politically correct component of responsible and balanced energy policy. As indicated earlier, the President included scores of energy efficiency proposals in his National Energy Plan and consistently speaks about energy efficiency in the context of comprehensive energy policy. Many of the expected groups praise the virtues of energy efficiency and lambast policymakers for not forcing through ever-more energy efficient mandates on the American people.

However, the truth of the matter is that the pro-energy efficiency groups

^{183.} ENVTL. PROT. AGENCY, ENERGY STAR – THE POWER TO PROTECT THE ENVIRONMENT THROUGH ENERGY EFFICIENCY 3, *available at* http://www.energystar.gov/ia/partners/downloads/ energy_star_report_aug_2003.pdf (last visited Sept. 7, 2005) (emphasis omitted) (citation omitted) [hereinafter ENERGY STAR].

^{184.} JOINT ECON. COMM., 108TH CONG., THE PRESSURES ON NATURAL GAS PRICES 2 (2004), available at http://jec.senate.gov/_files/naturalgas.pdf.

^{185.} Environmental Impacts of U.S. Natural Gas Production: Hearing Before the S. Comm. on Environment & Public Works, 108th Cong. (2004) (statement of Bob Drake, Vice President, Oklahoma Farm Bureau).

^{186.} ENERGY STAR, supra note 183.

^{187.} Garman, *supra* note 181, at 6.

oftentimes do not consider efficiency goals in the context of comprehensive legislation, but rather are the same organizations that oppose increasing supplies of energy. Why? The answer comes in two parts.

First, improved energy efficiency increases, rather than decreases energy consumption.

It has become an article of faith amongst environmentalists that improving the efficiency of energy use will lead to a reduction in energy consumption. However, economists of all persuasions are united in their belief that the opposite will occur. They argue that the effect of improving the efficiency of a factor of production, like energy, is to lower its implicit price and hence make its use more affordable, thus leading to greater use.¹⁸⁸

Mithra Moezzi of the Ernest Orlando Lawrence Berkeley National Laboratory states that, "energy consumption per capita is increasing despite or perhaps because of the emphasis on energy efficiency in energy policies."¹⁸⁹

The effect of increased energy consumption as a result of improved energy efficiency has given rise to a split among ecologically-minded economists. What they argue is not for greater efficiency, which leads to more consumption, but less consumption.¹⁹⁰ Less consumption may be appropriately called conservation, or "doing without." Some argue that consumer-based energy efficiency programs such as Energy Star should be changed in favor of "a system that incorporates a measure of absolute consumption, such as energy consumption per household, may better reflect the energy implications"¹⁹¹

However, many environmental organizations have largely abandoned a conservation-based approach. "Improved efficiency has also become the manifesto of our environment movement because the concept is politically correct, fundable and the basis of economic growth."¹⁹²

The "environment movement" replaced conservation, the real goal sought, with energy efficiency after President Carter's defeat in 1980. In a nationally televised speech in 1979 during the second "energy crisis", President Carter said, "the nation was facing a crisis that was the 'moral equivalent of war', and he thus called on the American public to practice restraint in order to save energy."¹⁹³

To avoid seeming similarly defeatist, some chose "energy efficiency" as the new mantra to "disassociat[e] energy conservation with [the] pain, sacrifice, . . . and the dire supply shortage predictions of . . . [the Carter years that] did not come true."¹⁹⁴ Instead, a new strategy, either intended or not has evolved; speak in terms of the politically expedient and popular "energy efficiency" while at the same time work diligently against increasing supplies of energy so that energy prices increase. The effect that the Carter-minded conservationists sought occurs

^{188.} Horace Herring, *Energy Efficiency—A Critical View*, 31 ENERGY 10–20 (forthcoming 2006), *available at* http://www.elsevier.com/wps/find/journaldescription.cws_home/483/description#description.

^{189.} Mithra Moezzi, *The Predicament of Efficiency*, in AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON., 1998 SUMMER STUDY ON ENERGY EFFICIENCY IN BUILDINGS 2 (1998), *available at* http://enduse.lbl.gov/info/ACEEE-Pred.pdf.

^{190.} Herring, supra note 188, at 15.

^{191.} Moezzi, supra note 189, at 4.

^{192.} Herring, supra note 188, at 17.

^{193.} Id. at 7.

^{194.} Moezzi, supra note 189, at 9.

through price, and not through moral or comfort-based choice.

According to the Energy Information Administration (EIA), energy consumption falls in response to high prices, not higher rates of efficiency.¹⁹⁵ During the 1970s and early 1980s, energy consumption fell in response to high energy prices, and from the mid-1980s through the mid-1990s energy consumption "increased with declining energy prices and [more robust] economic growth."¹⁹⁶ The EIA currently predicts "generally lower energy consumption and a more rapid shift . . . away from industrial uses"¹⁹⁷ This shift in the EIA's numbers was earlier explained, unfortunately, through the very human-side of workers losing their jobs because natural gas prices increased beyond any potential savings than greater efficiencies could yield.

The EIA repeatedly concluded that energy use is a direct reflection of economic growth and output, also known as, providing workers with jobs. Policymakers should consider energy efficiency goals in light of comprehensive energy policy that will also increase natural gas supplies. Proposals that would increase the costs of production or living, such as, a carbon or consumption tax must be viewed with great caution. The strength and economic prosperity of the nation must not be risked for the moral-based and fundamentally flawed policies of the Carter era.

E. Environmental Regulations

As this paper detailed repeatedly, environmental laws and regulations have driven natural gas demand. Amendments to the Clean Air Act in 1990 were the most significant catalyst that led to gas demand growth. The EIA stated that "the CAAA have created increased demand for cleaner fuel sources, particularly natural gas" and that "more gas-fired generation units have been constructed, which has resulted in a significant increase in the amount of electricity produced from natural gas."¹⁹⁸

It is imperative that environmental regulations not choose one fuel source over another, but rather, provide for a diverse fuel mix for power generation.

Fuel diversity creates balance in the energy production portfolio, and by creating balance, limits the exposure to financial risks or unfavorable pricing practices either by fuel or technology suppliers. In a market where all of the fuel input costs are increasing, fuel diversity limits the ability of disruptions in any one fuel source to potentially cause a "shortage" with potential resulting price volatility and/or supply interruptions.¹⁹⁹

Great care should be given to legislative proposals that would effectively favor one fuel source over another. As Guy Ausmus, Chairman of the American Iron and Steel Institute concluded that the Nation was experiencing a natural gas crisis because, "[n]atural gas was given a preferred place in our economy . . . "200

^{195.} ENERGY OUTLOOK, supra note 139, at 6.

^{196.} Id.

^{197.} ENERGY OUTLOOK, supra note 139, at 5.

^{198.} ENERGY INFO. ADMIN., U.S. DEPT. ENERGY, CLEAN AIR ACT AMENDMENTS OF 1990, available at http://www.eia. doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/clnairact.html (last visited Sept. 6, 2005).

^{199.} Velazquez, supra note 29.

^{200.} Energy: Hearing Before the H.R. Subcomm. on Energy and Mineral Resources, 108th Cong. 3

Policymakers should recognize that laws, either international treaties like the Kyoto Protocol or domestic efforts to restrict greenhouse gas emissions, will unbalance the generation fuel mix. "Since coal is the most carbon intensive fossil fuel, any legislative or regulatory limits on carbon emissions will impact coal more heavily than natural gas."²⁰¹

The EIA concluded that the Kyoto Protocol would reduce coal-based electric generation between 2% and 74% of today's level by 2020, and electricity costs could increase 20% to 86%.²⁰² Therefore, mandatory carbon-reducing policy would result in one of two outcomes. Either natural gas and electricity prices would increase as generators shift away from coal or the nation reduces its overall economic output.

Certainty is a prerequisite for effective regulations. The regulated community, the regulators, and the public need to clearly understand the expectations and responsibilities of each other in order to promote the most efficient implementation and enforcement of those regulations. The effect of more efficiently implemented and certain environmental laws and regulations would improve the environment and human health. Yet, such reform efforts are oftentimes resisted if not outright opposed. Stakeholder interests on either side of an issue have invested considerable time and resources (financial, political, ideological, etc.) to operate within laws and regulations as currently implemented. Therefore, proposed changes to the status quo are viewed as a loss or worst, a waste of resources that may have been invested over decades.

These stakeholders argue for the status quo, or more often, against reform with claims that any change to existing law would be tantamount to a "rollback" or reduction of environmental protections. Again, such assertions are made regardless of the actual environmental and health benefits that would result after implementation of the proposed reform. The heart of the matter is not whether a market-based cap and trade regulation results in greater pollution reductions than command and control regulation, for example, but that the perceived effectiveness or relevance of those stakeholders would be reduced with changes to the status quo.

The ESA has consistently been criticized across a broad spectrum of private and public sector stakeholders for reasons ranging from ineffectiveness to a violation of property rights. Proponents of the status quo oppose reform efforts at all costs as they are fearful of losing influence or maintaining relevance. They have already realized or mastered the power of regulatory uncertainty and will oppose any changes regardless whether the changes could benefit species. For example, the Center for Biological Diversity asks the public to pre-sign an ESA declaration just in case, "various threats arise to the [ESA], in the form of legislation in the U.S. House of Representatives or the Senate or negative administrative actions" are proposed.²⁰³

^{(2004) (}statement of Guy H. Ausmus, Chairman, American Steel Institute), *available at* http://www.steel.org/AM/TemplateRedirect.cfm?Template=/CM/ContentDisplay.cfm&ContentFileID=1556.

^{201.} DEMAND REPORT, supra note 2, at 5-17.

^{202.} See Press Release, Energy Info. Admin., U.S. Dept. Energy, Higher Energy Prices, Cuts in Fuel Use May Be Needed to Comply with the Kyoto Protocol (Oct. 9, 1998), available at http://www.eia.doe.gov/neic/press/press109.html.

^{203.} See Action Network, Take Action: Sign the Endangered Species Act Legacy Pledge, http://actionnetwork.org/campaign/esa_pledge (last visited Sept. 6, 2005).

Yet, the fact is that since ESA's inception, only ten species have been delisted due to recovery, whereas nine domestic species have been delisted due to extinction.²⁰⁴ Landowners, policymakers and members of the public at large may have different emotional views of the ESA, but the actual recovery versus extinction scorecard indicates that reform is critically needed to give the current 1,264 listed domestic species a better chance at survival.²⁰⁵

This paper identifies how the ESA is used to control the land rather than the recovery of species. The uncertainty of the ESA provides the blunt tool of litigation to thwart exploration, production, and transmission of energy. In a recent Environment & Public Works Subcommittee hearing, Craig Manson, Assistant Secretary for Fish and Wildlife and Parks stated, "[u]nfortunately, the Service's work related to endangered species is in large part driven by lawsuits."²⁰⁶ Rather than focusing efforts on species recovery,

litigation over critical habitat has hijacked the program. Simply put, the listing and critical habitat program is now operated in a "first to the courthouse" mode, with each new court order or settlement taking its place at the end of an ever-lengthening line. The Service is no longer operating under a rational system that allows them to prioritize resources to address the most significant biological needs.²⁰⁷

As in the case of ESA, a diverse group of stakeholders have called for the modernization of NEPA. Recently, the Council of Environmental Quality issued a document advocating for various reforms in 2003 and is in the process of advancing some of those proposals,²⁰⁸ and the House Committee on Resources has recently initiated a Task Force on Improving NEPA.²⁰⁹

As detailed, NEPA is a procedural statute and therefore demonstrating its relative effectiveness is necessarily different than in the case of the ESA where one can judge success quantitatively. Further, NEPA may apply where federally managed public resources are implicated or when triggered pursuant to "major Federal actions significantly affecting the quality of the human environment"²¹⁰ Therefore, NEPA may relate to a rancher seeking to graze cattle on public lands, as well as, to an interstate natural gas pipeline. The breadth and application of NEPA creates different sets of challenges. The policymaker must balance the critical needs to improve uncertain and inefficient processes, as often may be the case with energy projects, against overreaching into areas where the process has worked well.²¹¹

In May 2005, the Committee on Environment & Public Works held an

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207. Id. at 4.

208. See NEPA TASK FORCE, supra note 86.

209. See H. COMM. ON RESOURCES, TASK FORCE ON IMPROVING THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA), http://resourcescommittee.house.gov/nepataskforce.htm (last visited Sept. 18, 2005). 210. Id.

^{204.} STAFF OF H. COMM. ON RESOURCES, 109TH CONG., IMPLEMENTATION OF ENDANGERED SPECIES ACT OF 1973 (2005), available at http://resourcescommittee.house.gov/issues/more/esa/ implementationreport.htm. For a list of foreign and domestic species, see U.S. Fish & Wildlife Serv., Dept. of the Interior, Delisted Species Report, http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets. Delisted?listings=0 (last visited Sept. 3, 2005).

^{205.} Id.

^{206.} Endangered Species Act: Hearing Before the S. Subcomm. on Fisheries Wildlife and Water of the S. Comm. on Environmental and Public Works, 109th Cong. 1 (2005) (statement of Craig Manson, Assistant Secretary for Fish, Wildlife and Parks, Department of the Interior).

^{211.} See H. Comm. on Resources, Task Force on Improving the National Environmental Policy Act (NEPA), http:// resourcescommittee.house.gov/nepataskforce.htm (last visited Sept. 18, 2005).

oversight hearing concerning the permitting of energy projects. The witnesses included a federal regulator, a wind-based energy company, an oil and gas industry representative, and an attorney from a leading environmental non-governmental organization.²¹² All of the witnesses agreed that the NEPA process should be certain, predictable, and not lead to delay. As noted, the Executive and Legislative branches are assessing reform options. Although passing meaningful reform will be challenging, this simple and honest recognition from a diverse group of stakeholders indicates that NEPA modernization is a realistic goal.

Policymakers should ensure that their efforts guard against potentially uncertain regulations, and would do well to clarify existing statutes where Congressional or regulatory intent has been called into question.

CONCLUSION

Environmental regulations have promoted natural gas over other fuel sources while other environmental policies have worked against increasing supplies. These inconsistent policies have resulted in sharp increases in the price of natural gas, electricity, and the loss of high paying domestic manufacturing jobs. Moderating those price effects must include additional exploration and production of natural gas. According to the Energy Information Administration, "every 1 percent that production falls... we can expect 5–10 percent higher peak prices this winter."²¹³

U.S. economic security requires policymakers, regulators, the natural gasrelated industries, and the public to address natural gas in the context of comprehensive energy policy and within a certain and predictable regulatory framework. As Chairman of the Committee on Environment and Public Works, I will work toward a comprehensive, balanced, and rational natural gas policy.

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^{212.} Witnesses were: J. Mark Robinson, Director of the Office of Energy Projects, Federal Energy Regulatory Commission, Mr. Dennis Duffy, Vice President of Regulatory Affairs, CapeWind, Sharon Buccino, Senior Attorney for the Natural Resources Defense Council, Ronald E. Hogan, General Manager for Questar Exploration and Production Company. See Oversight to Review the Permitting of Energy Projects: Hearing Before the S. Comm. on Environment & Public Works, 109th Cong. (2005), available at http://epw.senate.gov/hearing_statements.cfm?id=238225.

^{213.} Caruso, supra note 7, at 7.