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NATURAL GAS: THE DOMESTIC SUPPLY AND COST FOR THE APPROACHING PEAK WINTER MONTHS

HEARING

BEFORE THE

SUBCOMMITTEE ON COMPETITION, FOREIGN COMMERCE, AND INFRASTRUCTURE

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

SECOND SESSION

OCTOBER 6, 2004

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NATURAL GAS: THE DOMESTIC SUPPLY AND COST FOR THE APPROACHING PEAK WINTER MONTHS

WEDNESDAY, OCTOBER 6, 2004

U.S. SENATE,
SUBCOMMITTEE ON COMPETITION, FOREIGN COMMERCE, AND INFRASTRUCTURE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:40 p.m. in room SR–253, Russell Senate Office Building, Hon. Gordon Smith, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. GORDON H. SMITH, U.S. SENATOR FROM OREGON

Senator SMITH. I'd like to call this Subcommittee hearing to order, the Committee on Commerce, Science, and Transportation. I want to thank the witnesses who have agreed to testify before the Subcommittee today. We are here to discuss the supply and price forecast for natural gas and the impact of continued high prices on residential consumers and industrial customers.

This hearing is timely for several reasons. The demand for natural gas has traditionally followed a seasonal pattern, peaking in the winter heating months. In the Northwest, consumers are going into this winter paying significantly more for natural gas than they were just a year ago. Last week, the Oregon Public Utilities Commission approved steep rate increases for three natural gas companies that serve Oregon homes and businesses. These rate increases have been driven by the skyrocketing wholesale cost of natural gas. The rate increases for residential customers will range from 12 to 18 percent. The business customers of the state's largest gas utility will face increases of almost 20 percent. Needless to say, this will further strain the family budgets of Oregonians, particularly seniors on fixed incomes and low-income residents. In addition, the consequences of these increases will be dire for the state's Low Income Energy Assistance Program, which helped over 54,000 Oregonians last year before running out of money. The impact on businesses will be no less dire.

Today, we will hear from Mr. Gary Huss, on behalf of the National Association of Manufacturers, about the toll that high gas prices are having on his business and businesses like his that rely on gas for direct heat or as a feed stock.

The Industrial Energy Consumers of America estimates that U.S. businesses have paid an extra $90 billion in natural gas costs since June 2000. Since that time, an estimated 90,000 jobs have been lost in the U.S. chemical manufacturing sector.

With respect to foreign competition, the American Chemistry Council projects that the U.S. chemical industry has lost 50 billion in business to foreign competition. They also claim that prior to 2000, affordable gas helped make the chemical industry the Nation's largest exporter and a low-cost producer. Now it is a net importer and a high-cost producer, largely due to high natural gas prices.

The Energy Information Agency will be represented here today by Mr. Gary Caruso. It released its projection for the cost of heating fuel this winter. Essentially, regardless of where you live or the type of fuel you use to heat your home, you're going to pay significantly more this winter. Across the nation, across every energy sector—be it natural gas, oil, gasoline, or electricity—prices will remain high.

That is another reason why this hearing is so timely. The 108th Congress still has time to pass national energy legislation before we adjourn. We must also pass the FISC–ETI Conference Report that includes an expansion of the types of renewables that are eligible for the electricity-production tax credit and important provisions relating to the proposed Alaska North Slope natural gas pipeline. This pipeline is expected to begin transporting Alaskan gas to the Lower 48 states in 2018, with total Alaskan gas production forecast to be 2.7 trillion cubic feet by 2025.

I want to thank my colleagues from Alaska for their tireless efforts to make this pipeline a reality. This pipeline will be an important new domestic source of natural gas in the years ahead. Until the late 1980s, the United States was self-sufficient in natural gas. Since that time, production has not kept pace with demand and net imports as the share of consumption tripled between 1989 and 2000. Until now, the gap between supply and demand has been met by imports through pipelines from Canada and Mexico and by imports of liquified natural gas, LNG, to the existing LNG import terminals.

In the future, LNG will play a much bigger role in meeting import needs. Expansions are planned at existing LNG import terminals, and more than 44 LNG import terminals have been proposed in the U.S., British Columbia, and Mexico, including ten along the West Coast of the United States. The siting and security issues related to these import terminals can and must be resolved in order to move forward with this needed infrastructure to meet our energy needs.

I look forward to hearing from our witnesses today, and I will first turn to the Chairman of the Appropriations Committee, the next Chairman of this Committee, Senator Stevens, and then Senator Lautenberg, for their opening statements.

STATEMENT OF HON. TED STEVENS,
U.S. SENATOR FROM ALASKA

Senator STEVENS. Thank you very much, Mr. Chairman.

I come today to thank you for holding the hearing and to tell you I'm going to review the statements. I have to go back to the current involvement we have with the intelligence bill. But I do hope that we can have an impact on this problem greater than is predicted. I heard about the predictions from the Federal agencies and the gas association.

I'm one who believes that if you look at the map of the world and look at the production in Russia and that part—the eastern portion of that continent, and look at Canada, and then look at our state and realize that we're between those two areas of production, and realize that two thirds of the outer continental shelf of the United States is off Alaska, in addition to our land mass, which is one fifth the whole United States, I think there's a great deal of gas in Alaska. We've only drilled for gas once, to my knowledge, with any intensity, and that's in the Cook Inlet, and we've been very successful. We really have not drilled for gas in the Arctic. The gas we have there was associated with the oil production. And there has been no incentive to drill for gas in the areas where there might be substantial potential, because there has been no transportation system.

Now, we've just started the initial—thanks to you, Mr. Chairman; you've been very forceful, I understand, in the conference on the bill to start the tax provisions, and we hope to get the balance of that authorization that was in the energy bill in something before it passes this year. Because I think if we announce to the industry that we're going to do everything we can as a government to give incentive to build this gas pipeline, that will stir up the industry and bring people back looking for gas in Alaska.

There's going to be some drilling under the old Naval Petroleum Reserve Number 4 this next spring, and that will cause 25 million acres that President Harding withdrew right after Teapot Dome scandal to be drilled; it has really never been drilled. In the area where it was drilled during World War II, there were some shallow gas and oil wells, but that's never been totally drilled. And the area that is south of the Brooks Range, where the gas came in once, we've never gone back to drill that. Some of that may be off limits now because of withdrawals, but a portion of it is still available for drilling.

I do believe that the land mass and the area off of our land mass in the outer continental shelf, if we explore it, there is substantial gas—and probably oil, too—potential out there.

So I congratulate you for helping us getting this started as far as the gas pipeline is concerned, but I also congratulate you for getting some of these basic estimates online.

I'm not arguing with your near-term projection, Mr. Caruso, I just think the far term really is too speculative right now to say that we'll only produce, by 2025, that percentage. I think we'll be up equal to Canada by the time we start drilling out the Arctic and the South Slope of Alaska, as far as the gas potential is concerned.

But thank you very much for what you're doing——

Senator SMITH. You're welcome, Senator Stevens, and——

Senator STEVENS. If you'll excuse me——

Senator SMITH. You bet.

Senator STEVENS.—I'm going to FedEx your statements, gentlemen, to my friends up north. There's two who are very anxious to build this pipeline.

Thank you very much.

Senator SMITH. Thank you, sir.

Senator Lautenberg, opening statement?

STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM NEW JERSEY

Senator LAUTENBERG. Thanks, Mr. Chairman.

You know, when one hears Senator Stevens talk about Alaska, you realize the size and excitement that surrounds Alaska. When Senator Stevens says that Alaska comprises one fifth of the land mass of the United States—and I don't know what the percentage of the land mass is that we have in New Jersey, but it's pretty darn small; however, we have a significant part of the national population, about eight million people there, and we're concerned, Mr. Chairman, about the things that everybody worries about.

The first thing that hits is the increase in prices that has come along, and moving at a very fast pace, upward. And then the other side of the coin is the falling supplies.

Now, the government has—I think, wisely—promoted the use of natural gas at every turn as a clean, abundant energy source. But in less than a decade, the average price of natural gas has tripled in the United States, and the Energy Information Administration—we welcome you, Mr. Caruso—is forecasting that heating a home with natural gas this winter will cost nearly 50 percent more than it did prior to the year 2000. This is an unacceptable situation. Hundreds of thousands of lower-income households have already been disconnected from the gas company, or soon will be. And what are these families going to do this winter? How will they keep their homes heated?

In my home state of New Jersey, natural gas accounts for about 30 percent of the energy production that we use. The steep increases in price and uncertainty about our future supplies have created real hardships for New Jersey families and businesses, just as it is in many other states.

It's clear that we need policies for the future to manage our natural gas supplies, and I think the best way to extend them, perhaps, is on the demand side of the equation, through energy efficiency improvements. And I understand, Mr. Chairman, that there were—that we're hearing about liquified natural gas as part of the solution to our current supply-and-demand dilemma.

I look forward to this discussion. And I have, in the traditional energy—or environmental concerns that I have had about the safety and the environmental impacts of LNG, a new facility has been proposed in Logan Township in my state, and we're still weighing the advantages and disadvantages of that. And I'm concerned that we may be moving a little too fast toward LNG as the solution to our problem without having sufficient regulations in place. And I think that we need to think through this option very carefully and make sure we have strong safety and environmental protections before we commit to increase the number of our LNG ports. I understand these are big vessels to carry the quantity that makes eco-

nomic sense; and we welcome them, but we want to know exactly what we're getting ourselves into or, rather, what we're bringing into our country.

And I commend you, Mr. Chairman, for having this hearing.

Senator SMITH. Thank you, Senator. We appreciate your comments.

And we will turn to our first panel, Mr. Gary Caruso, Administrator of the Energy Information Agency—Administration. And we welcome you, sir.

STATEMENT OF GUY F. CARUSO, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. CARUSO. Thank you.

Senator SMITH. I said Gary, I'm sorry. It's Guy. I apologize.

Mr. CARUSO. Thank you, Mr. Chairman and Senator Lautenberg, for being here this afternoon and allowing me to present the Energy Information Administration's Winter Fuel Outlook, which we released this morning, as you noted. And I'd be pleased to submit that full report for the record, if that was desirable.

Senator SMITH. We will receive it, happily.

Mr. CARUSO. And I will also go into a little bit of detail about our longer-term forecast that Senator Stevens referred to, as well, and be happy to go into more detail, as you desire, on that.

But, in the short run, which is the focus of the Winter Fuels Outlook Report, Senator Lautenberg is correct, and that is that we are going to see substantially higher fuel prices this winter based on the outlook that we published this morning. For natural gas, the typical consumer will be paying about 15 percent more this winter than they did last winter. That is——

Senator SMITH. Fifteen percent or——

Mr. CARUSO. One-five. For this winter, compared with last winter. If one goes back to 2000 or prior to that, the percentage increase is even higher, as can be seen in this chart. [All charts submitted follow Mr. Caruso's prepared statement, herein.]

Heating oil and propane will also—consumers of heating oil and propane will also see higher prices this winter—for heating oil, about 28 percent compared with last year; and propane, about a 22 percent increase. So, indeed, consumers will be feeling the pinch because of the tight crude markets and tight gasoline—natural gas markets that have led to these higher prices. And, of course, when Hurricane Ivan hit, there was a considerable impact on our Gulf of Mexico offshore production, which has exacerbated both the supply and the price situations.

The one piece of good news that I can report in the *Winter Fuel Outlook* is that inventories of natural gas have been built up quite strongly during the summer months, and we are now at the top end, as shown in the second chart, of our normal working gas and inventory levels, which should enable us to meet the demand of our households and businesses this winter, even in the extremely cold winter scenario which we have modeled. Nevertheless, the prices will be, as mentioned, higher.

Over the longer run, gas will continue to play an important role in our energy picture, an increasingly important role; but, as was

noted, production will not keep pace with consumption, and we see a growing need for imports in this country. In 2003, we imported about 15 percent of our gas, and we see that growing substantially by 2025, to more than—almost as much as 25 percent in the—in our long-term outlook. And we also see prices coming down from these recent highs by 2010 because of the—what we believe will be a substantial increase in LNG imports, and some improvement in domestic production from unconventional sources, as well. Nevertheless, prices will be higher, even in the long run, than they were in—previous to this runup since the year 2000, as can be seen in the chart before you, showing wellhead prices and prices to various consumers, from the electric generation through to the residential consumer.

Where will our supply come from? As I mentioned, one of the major increases in the supply will be in net LNG imports, and we expect there will be a considerable number of new LNG regasification terminals built to supplement the four existing terminals that are currently in operation.

The other large increase in our long-term outlook is from Alaska. We do expect the Alaska natural gas pipeline to be built. We see it coming on in the year 2018 in our latest model runs, and this varies based on price and the supply/demand picture.

The third major increase will come from unconventional sources of natural gas, mainly in the Iraqi mountain area, and that would be tight sands and coalbed methane. But, indeed, for the traditional sources of Lower 48 production of natural gas, whether it be onshore or offshore, we see the depletion rates there leading to declines in production in the Lower 48 so that we will a need substantial increase in imports, whether they be from Canada or via LNG.

The next chart shows how the role of Canada will diminish over the next 20 years as a supplier of gas to the United States. Canada was supplying most of our imports just as recently as 2002, with only 2 percent being LNG. By 2025, Canadians' natural gas exports to the U.S. will be substantially less than LNG, and, indeed, there are other forecasts, such as the National Petroleum Council, which believe that LNG will be an even—will play an even more important role. In this case, we're assuming about 15 percent of our gas will be LNG by 2025, and the NPC study, for example, indicated about 25 percent.

So, clearly, the role of LNG will increase dramatically over this forecast period, and the 44 proposed projects that Senator Lautenberg mentioned, certainly we expect a substantial number of those will come to fruition and will be an important part of our long-term natural gas picture.

With that very brief overview of our winter outlook and longer-term outlook for natural gas, Mr. Chairman, I'd be very pleased to answer any questions you or other Members may have.

[The prepared statement of Mr. Caruso follows:]

PREPARED STATEMENT OF GUY F. CARUSO, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to appear before you today to discuss the Winter Fuels Outlook and the short and longer-run forecasts for natural gas supplies and prices.

The Energy Information Administration (EIA) is the independent statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analysis, and projections for the Department of Energy, other government agencies, the U.S. Congress, and the public. We do not take positions on policy issues, but we do produce data and analysis reports that are meant to help policymakers determine energy policy. Because the Department of Energy Organization Act gives EIA an element of independence with respect to the analyses we publish, our views are strictly those of EIA. They should not be construed as representing those of the Department of Energy or the Administration.

Overview

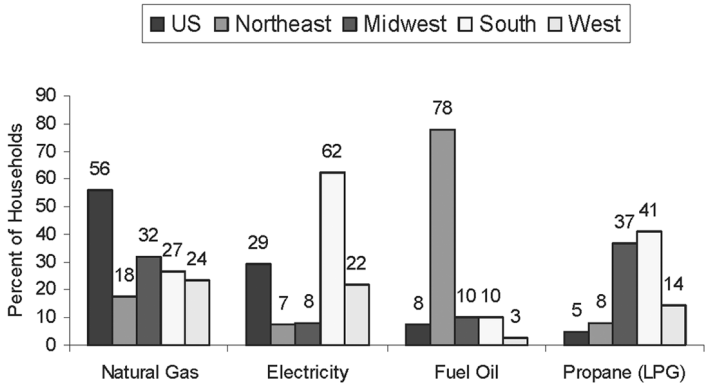
Concerns about crude oil supplies, low excess production capacity, volatility in crude-oil prices, and tightness in natural gas markets are expected to keep nominal crude oil and wellhead natural gas prices well above historical levels for the near term. Higher prices combined with a projected slightly colder-than-normal winter season (particularly in regions with major heating needs) mean that most households and businesses will be spending more for heating fuels natural gas, heating oil, propane, and electricity—than they did last winter.

Natural gas currently is, and will remain, a primary source of energy in the United States. In the long term, we expect to meet growing demand through increased domestic production and through expanded imports of liquefied natural gas (LNG). After declining from near-term high levels, end-use natural gas prices are expected to trend downward through 2010 before beginning to gradually increase through 2025.

Heating Fuels, by Type and Region

Heating fuel consumption varies by type of end user, such as households or commercial buildings, and by Census region, as well as by variations in price and weather. In 2001, the most recent year for which we have detailed data, of the 106 million households who use heating fuel, 56 percent or 59.1 million households used natural gas as their main space-heating fuel, while 29 percent or 30.9 million households used electricity, 8 percent or 8.0 million used fuel oil, and 5 percent or 4.9 million used liquefied petroleum gases (LPG), primarily propane.

Figure 1: Distribution of Main Space Heating Sources Used in Households by Census Region, 2001



Note: Three percent of U.S. households use kerosene for main space heating, primarily in the South.

Source: Energy Information Administration, 2001 Residential Energy Consumption Survey.

While natural gas is used heavily in all four Census regions, electricity is used as the main space-heating fuel by more than half of the households in the South (19.3 million households). Fuel oil use is heavily concentrated in the Northeast. Almost 78 percent of LPG use is in the South and Midwest. LPG is concentrated in rural areas (3.5 million households out of 4.9 million households nationally). Heating fuel use in the commercial buildings sector generally follows similar patterns.

Winter Fuels Outlook

For the near term, our outlook is for crude oil and natural gas prices to remain higher than historical levels. Higher prices combined with a projected slightly colder-than-normal winter season (base case) mean that most households and businesses will be spending more for fuels than they did last winter.

Table 1: Illustrative Consumer Prices and Expenditures for Heating Fuels, Winter Season 2004-2005

	Average 1998-2000	Actual 2001-2002	Actual 2002-2003	Actual 2003-2004	*Projections 2004-2005*	*% Change*
Natural Gas (Midwest)						
Consumption (mcf*)	88.8	81.3	94.9	*89.1*	*92.3*	*3.7*
Avg. Price ($/mcf)	7.61	7.41	8.40	9.77	*10.86*	*11.2*
Expenditures ($)	676	602	797	870	*1003*	*15.3*
Heating Oil (Northeast)						
Consumption (gallons)	673	577	743	700	698	*-0.3*
Avg. Price ($/gallon)	1.12	1.10	1.34	1.36	*1.75*	*28.8*
Expenditures ($)	754	637	995	953	*1223*	*28.4*
Propane (Midwest)						
Consumption (gallons)	877	803	940	*882*	*914*	*3.7*
Avg. Price ($/gallon)	1.10	1.11	1.20	1.30	*1.53*	*17.3*
Expenditures ($)	965	888	1124	1147	*1396*	*21.6*

Consumption based on typical per household use for regions noted. Prices are retail national averages.

*thousand cubic feet.

- Last winter, per-household natural gas expenditures in the Midwest rose more than 8 percent despite a weather-induced 7 percent decline in consumption. *This winter, expenditures are projected to rise 15 percent due to a 4 percent increase in consumption and an 11 percent increase in prices.*
- Last winter, heating oil expenditures for a typical Northeast household declined slightly as a 2 percent decline in consumption offset a small increase in prices. *This winter, expenditures are projected to rise by 28 percent with higher prices accounting for almost all of the increase.*
- Last winter, expenditures for the average household in the Midwest using propane as a heating fuel rose slightly as an 8-percent price increase negated a 7-percent consumption decline. *This winter, expenditures are projected to rise by about 22 percent due to a 4 percent increase in consumption and a 17 percent increase in prices.*

While these calculations illustrate recent and projected trends in heating expenditures, actual expenditures for an individual household can vary significantly depending on local factors as weather variation and price differences among fuel suppliers serving a given region, and due to individual home characteristics such as size, heating equipment efficiency, the effectiveness of insulation, and thermostat settings.

Natural Gas

High crude oil prices and strong economic growth put upward pressure on natural gas prices this year until mid-summer, when cooler-than-expected temperatures kept peak electricity demands down, reducing summer natural gas demand below expectations. Prices began easing in July then fell to a September average of about $5.00 per million Btu at the Henry Hub, a decline of about $1.30 from the June average. The relatively weak demand and low prices resulted in very strong storage injections from mid-to late summer. Hurricane Ivan disrupted at least 2 billion cubic feet per day of natural gas production in the Gulf of Mexico during the second half of September. Operations in the Gulf may take a number of weeks to return to normal.

As of October 1, working gas inventories, estimated at 3.072 trillion cubic feet, were close to the upper bound of the normal range and 222 billion cubic feet above last year's level. Also, given continued net injections during October, working gas inventories by October 31 are expected to be the highest they have been since 1990. The April-to-September rate of stock additions was well above the average refill rate of the previous 5-years, brought about by weak summer demand from cooler-than average weather. As a result, end-of-season (March 31, 2005) working-gas inventories are projected to be about 200 billion cubic feet above the year-ago level and about 530 billion cubic feet above the all-time low of 730 billion cubic feet at the end of the winter of 2003.

Although underground storage levels are high, other factors, such as production losses in the Gulf of Mexico, modest growth in both U.S. production growth and imports, and increased winter demand, contribute to natural gas prices (wellhead and retail levels), which are expected to be above those of the previous winter season, particularly during the fourth quarter of 2004. The base case wellhead price is projected to average $6.04 per thousand cubic feet up nearly 23 percent from last winter's average of $4.92 per thousand cubic feet. Residential prices, which reflect wellhead prices with a lag and also include cost of transmission and local distribution, are projected to average $10.86 per thousand cubic feet, up 11 percent from the average $9.77 per thousand cubic feet last winter.

Total winter-season natural gas demand is expected to average about 1.5 percent higher than last winter due to cooler weather in regions with large concentrations of gas-heated homes and continued increased demand in the commercial and power-generation sectors. Not only is the typical residential and commercial customer expected to increase gas consumption during this heating season compared to last winter, but the number of such customers is expected to increase as well.

Domestic dry natural gas production during the upcoming winter is expected to remain flat compared to last winter, somewhat less than would have been expected had Hurricane Ivan not disrupted Gulf of Mexico production. The lagged effects of continued high prices in 2004, which induced additional drilling activity, are expected to raise winter output above last winter levels despite the above-average levels of gas in storage available to meet winter demand.

Net imports are projected to provide 9.55 billion cubic feet per day this winter in the base case, higher than last winter's average of 9.26 billion cubic feet per day. The bulk of net imports are shipped via pipeline from Canada. Last winter, imports from Canada declined by about 0.7 billion cubic feet per day from the previous winter but were more than offset by increased LNG imports. Pipeline imports from Canada are expected to decline again this year by an amount that will not be entirely offset by higher LNG imports. Meanwhile, gradual increases in natural gas exports to Mexico are expected to continue.

Heating Oil

Last winter season, the average household's consumption of heating oil fell by 6 percent—due to warmer-than-normal weather—while the average per-gallon heating oil price increased by 2 percent. As a result, the average heating oil consumer saw little change in total heating expenditures.

This winter season, tight global oil markets and elevated world and domestic oil prices are expected to raise heating oil prices and expenditures considerably. Retail heating oil prices in the base case are projected to average $1.75 per gallon, up 29 percent from last winter's average. Per-household heating oil demand is projected to be slightly below last winter's demand, but per-household heating expenditures are expected to rise 28 percent compare to last winter. This is the largest projected increase of all the fuels.

Distillate fuel inventories (as of the end of September) are estimated to total 126.4 million barrels compared to the 131.3 million barrels last year, within the normal range of 121.1 to 141.4 million barrels. Moreover, inventories in the Northeast, the main consuming region of heating oil, are reasonably comfortable, standing at 51.5 million barrels, which is slightly less than the 52.6 million barrels at the beginning of the previous winter and within the normal range of 45.4 to 62.9 million barrels. Total end-of-season stocks are projected to be 102.1 million barrels, slightly lower than the 104.0 million barrels seen at the end of last winter.

Net imports are expected to play a slightly smaller role in meeting the winter distillate requirement compared to last winter. Often the swing supplier of heating oil, net imports are expected to average just 245,000 barrels per day, down from 269,000 barrels per day last winter, and well below the record winter average of 335,000 barrels per day. On a short-term basis, net imports have been as high as 722,000 barrels per day.

Propane

Spot propane prices are primarily determined by crude oil and natural gas wellhead prices. Retail propane prices are influenced by heating oil and natural gas prices and alternative petrochemical feedstocks. Because of projected increases in crude oil, natural gas, and heating oil prices, residential propane prices for the upcoming winter season are expected to average $1.53 per gallon compared to $1.30 per gallon last winter.

Despite last winter's mild weather, propane demand averaged a record 1.48 million barrels per day, 3.2 percent above the previous heating season, in part due to strong petrochemical feedstock demand and a record corn crop (propane is used the agricultural sector to dry corn after harvest to prevent spoilage). Continued economic growth, an even larger corn crop, and increased heating degree-days are expected to account for much of the projected 1.8 percent demand growth in the upcoming winter season.

Propane inventories began the last winter at the lowest level since 2000 (at 62.5 million barrels) and declined by 34.6 million barrels during the heating season. This was slightly less than the average draw rate due, in part, to the relatively mild winter conditions. As a result, end-of-season inventories were 27.9 million barrels, well within the normal range. During the summer, stockholders added 38.6 million barrels bringing beginning-of-season stocks to 66.5 million barrels. End-of-season (March 31, 2005) stocks are projected to be 29.0 million barrels.

While small in volume, propane imports are critical when demand exceeds available supply. Through the first half of 2004, propane imports averaged 188,000 barrels per day, up more than 27 percent from that of the first half of 2003. Imports from Canada and other sources are expected to maintain their strong year-over-year growth rates during this winter season, assuming U.S. propane prices remain attractive to foreign suppliers.

Electricity

This winter, residential electricity prices are projected to average 8.50 cents per kilowatthour (kWh), slightly below the average 8.65 cents per kWh last winter. Retail electric prices are not very sensitive to demand surges or fuel price shocks that may occur in the winter. Increased costs of fuel and wholesale electricity would tend to be smoothed out in retail prices over a period of several months.

The prospects of colder weather in regions where electricity is used heavily for heating combined with continued economic growth will likely result in increased residential as well as total electricity demand for the winter. Growth in total electricity demand is projected to be 3.1 percent. Residential consumption is projected to increase 3.4 percent, commercial demand is expected to grow 2.9 percent, and industrial demand is expected to grow by 4.3 percent.

Cold Winter Case

An alternative cold-weather case estimates the potential impacts of energy supply, demand, and prices, assuming base case values for real gross domestic product (GDP) and other key macroeconomic drivers. The cold weather case assumes a 10 percent increase in aggregate heating degree-days from the base case level. Based on winter-season heating degree-day data from 1974 to 2004, the probability of a winter at least 10 percent colder than that projected for the base case is 4.2 percent. A winter that is 10 percent colder throughout the season is assumed to result in an additional 10-percent increase in heating-related demand across fuels.

In the 10 percent colder case, retail prices for the three primary fuels would be expected to rise, reflecting higher marginal costs associated with the incremental demand. Heating oil prices would average $1.84 per gallon, 4.9 percent above those in the base case. As a result, the average total expenditure for a heating oil household would rise about 15 percent above the base case. Residential natural gas prices would rise by about 6 percent from the base case. Some of the increased cost of natural gas that would stem from colder weather would be rolled into future natural gas bills extending beyond the heating season. Changes in propane prices, which are highly related to changes in natural gas prices, would result in residential propane prices averaging $1.59 per gallon, up about 4 percent from the base case. As a result, total per-household propane expenditures would rise more than 14 percent from base case projections.

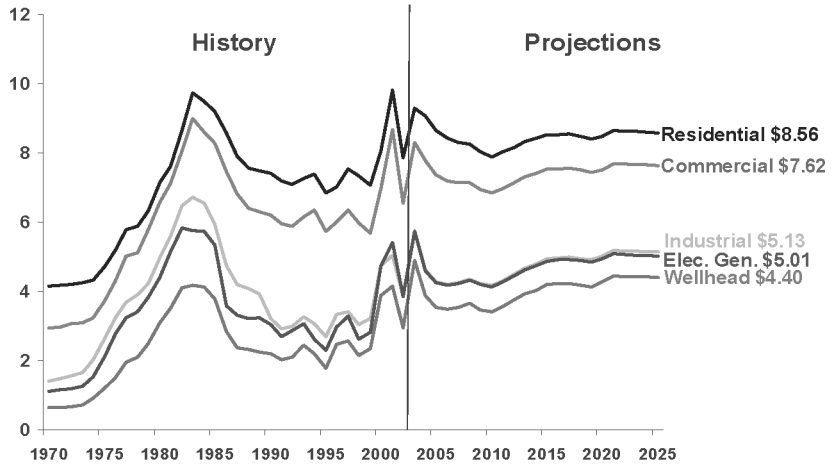
Long-Term Natural Gas Supply and Price Projections

The United States is the largest natural gas consuming country in the world. U.S. domestic production is also large relative to current world production, with only Russia supplying more natural gas. However, the United States historically has also met up to 16 percent of consumption with net imports of pipeline natural gas. Im-

ports by pipeline declined sharply in 2003 and are expected to show a decline again in 2004. Recent and likely further expansion of international trade involves importing LNG.

Over the longer term, average annual natural gas wellhead prices in the lower 48 states are projected to decline from recent highs between now and 2010 and then increase gradually, reaching $4.40 per thousand cubic feet in 2025, in constant 2002 dollars.

Figure 2: Natural Gas End-Use and Wellhead Prices by Sector
(2002 dollars per thousand cubic feet)



Price increases are held in check somewhat by increased LNG imports, technology improvements, and domestic production from unconventional sources and Alaska, but these are unable to fully offset the impacts of resource depletion and increased demand. Prices are projected to increase unevenly as major new, large-volume supply projects—specifically new LNG terminals and an Alaska pipeline—temporarily depress prices when initially brought online. In nominal dollars, the 2025 price is the equivalent of almost $8.50 per thousand cubic feet.

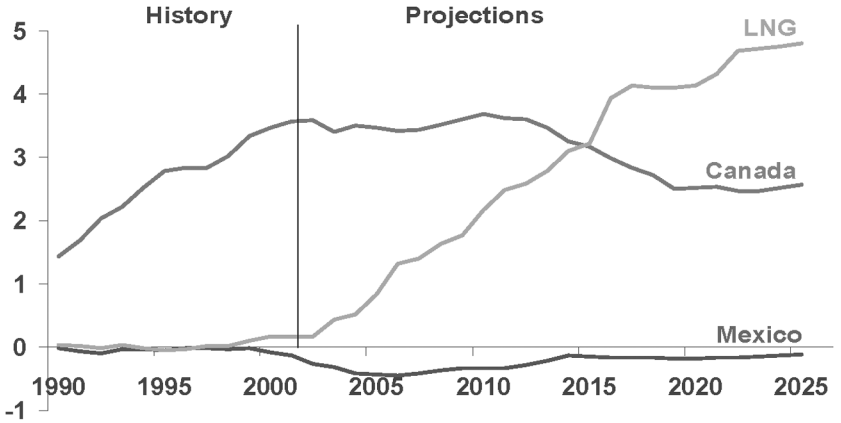
For the most part end-use prices track the wellhead prices. However, EIA projects declines in average transmission and distribution margins, as a larger proportion of the natural gas delivery infrastructure becomes fully depreciated and fixed costs are spread over a larger base. In addition, some of the higher growth areas are in regions that are closer to supply sources.

End-use natural gas prices are expected to increase gradually starting in about 2010 as a result of increasing wellhead prices. The average end-use price is expected to increase by 78 cents per thousand cubic feet between 2010 and 2025 (in constant 2002 dollars), compared with an increase of 98 cents per thousand cubic feet in the average wellhead price of domestic and imported natural gas supplies over the same period. Part of this difference is attributable to an increasing share of natural gas sold to electric generators, the sector with the lowest prices.

By 2010, residential natural gas prices in inflation-adjusted terms are expected to decline from current levels. From 2010 to 2025, residential natural gas prices are expected to rise 68 cents per thousand cubic feet in real terms, reaching $8.56 per thousand cubic feet in 2025. Because of increases in efficiency and conservation, however, annual natural gas expenditures per household are projected to increase by only 1 percent, to $632. Industrial natural gas prices are expected to decline from $5.76 per thousand cubic feet in 2003 to $4.16 per thousand cubic feet by 2010 and gradually increase by 97 cents to $5.13 by 2025, in real terms.

Changes in prices over the forecast period reflect changes in both supply sources and consumption patterns. By 2025 total U.S. natural gas consumption is expected to increase to 31 trillion cubic feet, while production is expected only to reach 24 trillion cubic feet. Increasing use of imports makes up the 7-trillion-cubic-feet difference between consumption and production.

Figure 3: U.S. Natural Gas Net Imports, 1990-2025
(trillion cubic feet)



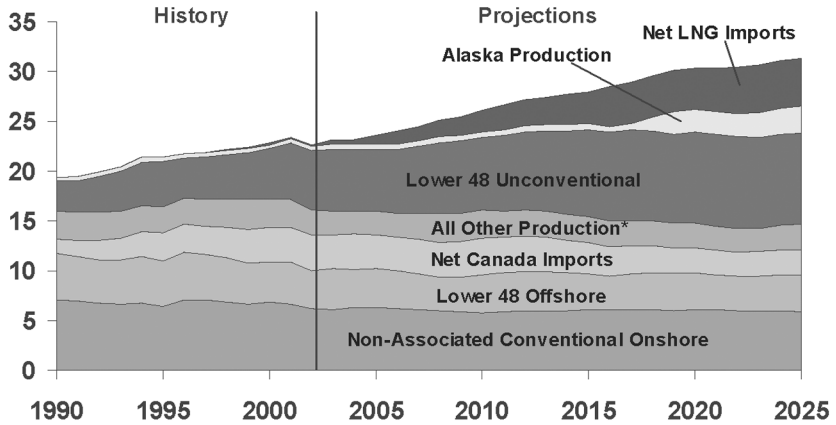
Net imports are projected to rise from 3.5 trillion cubic feet in 2002 to 7.2 trillion cubic feet by 2025. Nearly all of the increase is expected to come from LNG, with a 4.6-trillion-cubic-feet increase expected over 2002 levels. This is nearly a 16 percent annual growth rate. By 2025, we expect net LNG imports to equal 15 percent of total U.S. gas consumption, compared to less than 1 percent in 2002. Net LNG imports are expected to rise from 5 percent of net imports in 2002 to 66 percent in 2025. By 2025 we expect expansion at the four existing terminals and construction of new LNG terminals along the Gulf Coast, in the Bahamas, along the East Coast, and in Baja California, Mexico.

Imports from Canada are expected to peak at 3.7 trillion cubic feet in 2010, after a pipeline from the Mackenzie Delta begins service in 2009. Production off the eastern coast of Canada and unconventional production are expected to be increase supply, but they are not expected to make up for the anticipated rapid decline in conventional production from western Canada and Canadian demand increases. LNG becomes the largest source of U.S. imports in 2015, as Canadian production declines.

Mexico is projected to continue to be a net importer of U.S. natural gas. Expected new LNG import terminals on Mexico's east and west coasts will be important contributors to Mexican *supply. Net* exports to Mexico are forecast to decline after 2006 as LNG imports into Baja California begin to supply both the U.S. and the Mexican markets.

Increases in U.S. natural gas production come primarily from unconventional sources and from Alaska. Unconventional gas production is expected to increase by 3.2 trillion cubic feet over the forecast period—more than any other source, largely because of expanded tight sands gas production in the Rocky Mountain region. Annual production from unconventional sources is expected to account for 38 percent of production in 2025, compared to 31 percent in 2002.

Figure 4: Natural Gas Supply, 1990-2025
(trillion cubic feet)



*Includes total associated-dissolved, supplemental natural gas production, and Mexico imports.

Alaska gas production is expected to increase by 2.3 trillion cubic feet over the forecast period from 0.4 trillion cubic feet in 2002 to 2.7 trillion cubic feet in 2025. It accounts for most of the growth in domestic conventional gas production. Alaska gas production begins flowing to the lower 48 states in 2018, with 3.9 billion cubic feet per day delivered to the lower-48 States in 2019. Expansion of the Alaska gas pipeline raises lower 48 deliveries to 4.8 billion cubic feet per day in 2025.

Conventional onshore non-associated production decreases by 310 billion cubic feet over the forecast period, as traditional sources of natural gas are depleted, even with continued technological improvement. Non-associated offshore production declines by 210 billion cubic feet, as shallow water production declines.

Electric generators, not including commercial and industrial combined heat and power facilities, lead the increase in consumption over the forecast. Consumption in this sector is expected to increase by about 50 percent over the forecast, from 5.6 trillion cubic feet in 2002 to 8.4 trillion cubic feet in 2025. Demand by electricity generators is expected to account for 27 percent of total natural gas consumption in 2025.

Most new electricity generation capacity is expected to be fueled by natural gas; consequently, natural gas consumption in the electricity generation sector is projected to grow rapidly throughout the forecast. Although average coal prices to electricity generators are projected to fall throughout the forecast, natural gas-fired generators are expected to have advantages over coal-fired generators, including lower capital costs, higher fuel efficiency, shorter construction lead times, and lower emissions.

The industrial sector, excluding lease and plant fuel, remains the largest gas-consuming sector, with significant amounts of gas used in the bulk chemical, refining, and mining sectors. Industrial consumption is expected to increase by 3.0 trillion cubic feet over the forecast period, driven primarily by macroeconomic growth, which rises 3 percent annually as measured by GDP. The chemical and metal-based durables sectors show the largest growth.

Combined consumption in the residential and commercial sectors is projected to increase by 2.1 trillion cubic feet from 2002 to 2025, driven by increasing population, healthy economic growth, and slowly rising prices in real terms. Natural gas will remain the overwhelming choice for home heating throughout the forecast period, with the number of natural gas furnaces rising by 17 million units.

Thank you, Mr. Chairman and members of the Committee. I will be happy to answer any questions.

EIA's Winter Fuels Outlook and Long Term Natural Gas Projections

Guy F. Caruso
Administrator
Energy Information Administration

Subcommittee on Competition, Foreign Commerce, and Infrastructure
Committee on Commerce, Science and Transportation Committee
United States Senate

October 6, 2004
Washington, D.C.

www.eia.doe.gov
Energy Information Administration

Selected Average Consumer Prices and Expenditures for Heating Fuels During the Winter

	Average 1998-2000	Actual 2001-2002	Actual 2002-2003	Actual 2003-2004	*Projections 2004-2005*	*% Change*
Natural Gas (Midwest)						
Consumption (mcf*)	88.8	81.3	94.9	*89.1*	*92.3*	*3.7*
Avg. Price ($/mcf)	7.61	7.41	8.40	9.77	*10.86*	*11.2*
Expenditures ($)	676	602	797	870	*1003*	*15.3*
Heating Oil (Northeast)						
Consumption (gallons)	673	577	743	700	698	*-0.3*
Avg. Price ($/gallon)	1.12	1.10	1.34	1.36	*1.75*	*28.8*
Expenditures ($)	754	637	995	953	*1223*	*28.4*
Propane (Midwest)						
Consumption (gallons)	877	803	940	*882*	*914*	*3.7*
Avg. Price ($/gallon)	1.10	1.11	1.20	1.30	*1.53*	*17.3*
Expenditures ($)	965	888	1124	1147	*1396*	*21.6*

Consumption based on typical per household use for regions noted. Prices are retail national averages.
*thousand cubic feet.

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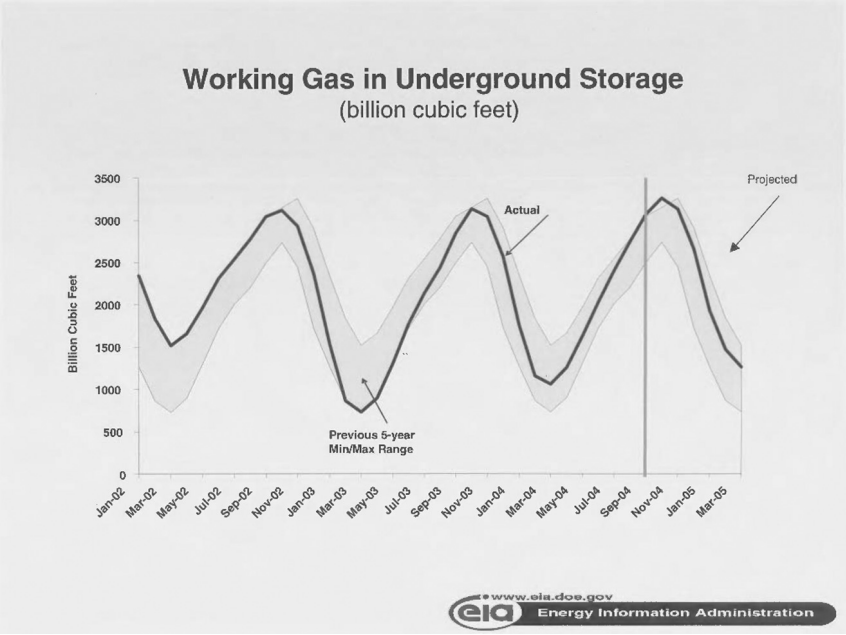
Working Gas in Underground Storage
(billion cubic feet)
Billion Cubic Feet
3500
3000
2500
2000
1500
1000
500
0
Actual
Projected
Previous 5-year
Min/Max Range
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
Jan-03
Mar-03
May-03
Jul-03
Sep-03
Nov-03
Jan-04
Mar-04
May-04
Jul-04
Sep-04
Nov-04
Jan-05
Mar-05
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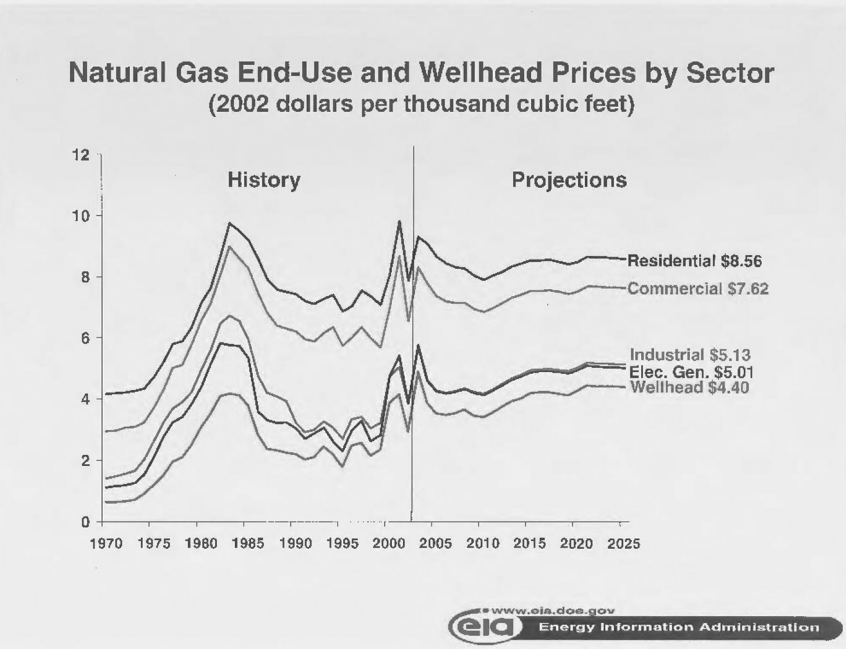
Natural Gas End-Use and Wellhead Prices by Sector
(2002 dollars per thousand cubic feet)
History
Projections
12
10
8
6
4
2
0
Residential $8.56
Commercial $7.62
Industrial $5.13
Elec. Gen. $5.01
Wellhead $4.40
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
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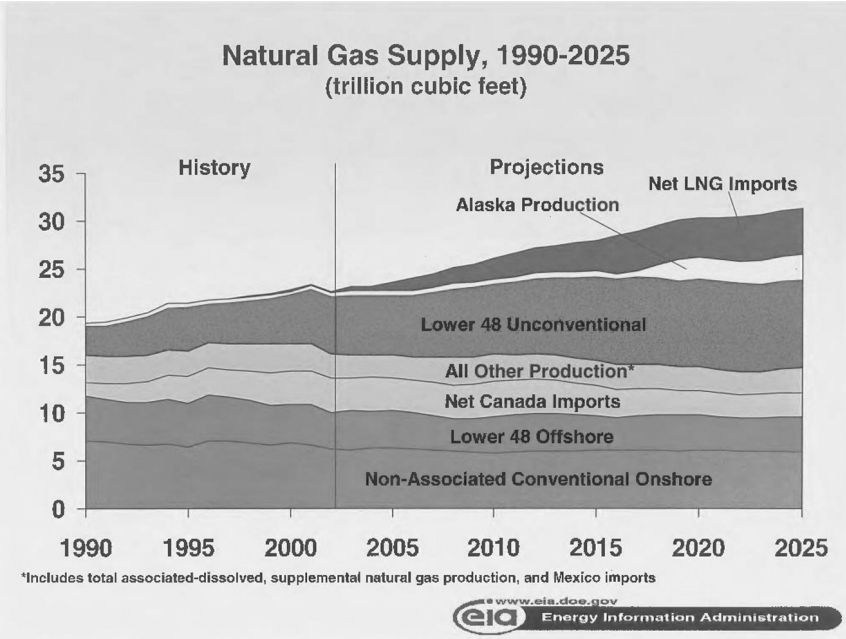
Natural Gas Supply, 1990-2025
(trillion cubic feet)
History
Projections
Net LNG Imports
Alaska Production
Lower 48 Unconventional
All Other Production*
Net Canada Imports
Lower 48 Offshore
Non-Associated Conventional Onshore
35
30
25
20
15
10
5
0
1990
1995
2000
2005
2010
2015
2020
2025
*Includes total associated-dissolved, supplemental natural gas production, and Mexico imports
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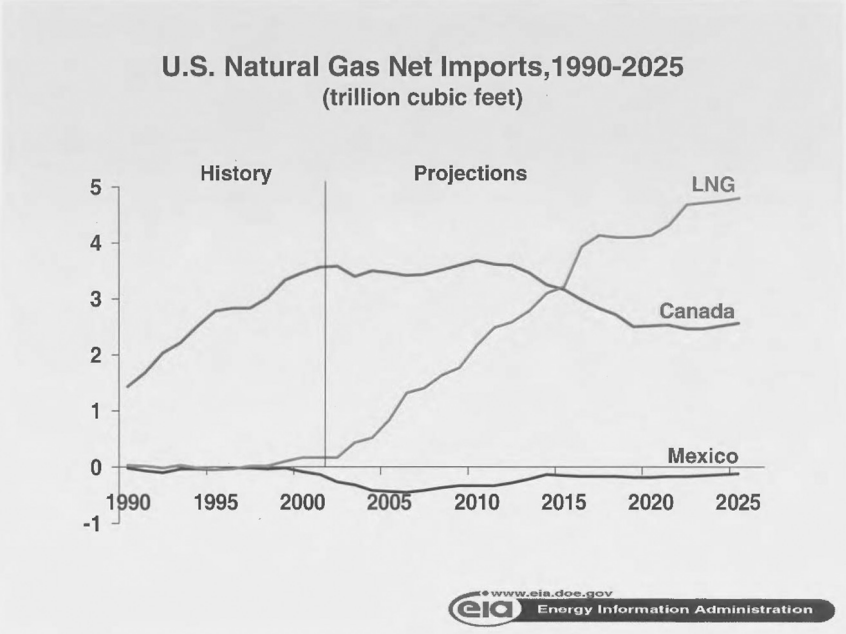
U.S. Natural Gas Net Imports,1990-2025
(trillion cubic feet)
History
Projections
LNG
Canada
Mexico
5
4
3
2
1
0
-1
1990
1995
2000
2005
2010
2015
2020
2025
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Senator SMITH. Thank you, Guy. It's a very helpful presentation.

Just a few questions. How much have heating fuel costs increased since 2000?

Mr. CARUSO. Let me—sorry—I'll have to read it off the chart. Sorry.

The actual cost of natural gas for a typical consumer in 2001/2002 was $600-per-household, and we're projecting, this year, about $1,000. So that's a $400-per-household increase in just 4 years.

Senator SMITH. Substantial. And how much will the average family, then, spend to heat their home this winter? It must vary quite a bit from region to region, but——

Mr. CARUSO. It does, considerably. We have used, in our chart here, as a typical household, a natural gas household using natural gas to heat their home in the Midwest, and that's about a thousand. But, for example, heating oil, let's say, in New Jersey, the average consumer would probably be closer to $1,200 because of the higher price of heating oil. And propane is used to a large degree in the Midwest and the South for heating, and that will be almost $1,400 per family for that source of fuel.

It turns out that electricity in the—which is mainly favored by the—in the southern states of this—for heating, will actually have the smallest increase in price to the consumer this particular winter.

Senator SMITH. Obviously, natural gas has to be delivered through pipelines, unless it's LNG. Are there areas of the country that don't have the pipeline infrastructure and have inadequate infrastructure, in terms of pipelines? And, if so, what are those regions? And are their prices substantially higher?

Mr. CARUSO. Well, the infrastructure issue, including natural gas pipelines, is clearly what is an important part of why we have such a very tight natural gas supply/demand picture in this country. In the Rocky Mountain area, where we expect substantial increases in unconventional gas, there is a need for continuing to build new pipelines to deliver that gas to consumers, particularly in the West Coast. There's clearly the need for the Alaska natural gas pipeline system that Senator Stevens mentioned. So we have built a lot of new natural gas pipelines in the last decade or so, but the need is to build even more. And in New England is the one area—another area where there was a substantial build in the last decade or so, but remains relatively limited in its access to natural gas because of its long distance from the main producing areas of Texas, Louisiana, Oklahoma, and the Gulf of Mexico.

Senator SMITH. Guy, one of the things I have observed—and this'll be my last question; I'll turn it over to Senator Lautenberg for his questions—but one of the things I've observed during the last energy crunch for electricity is that lots of gas—natural gas generators were put in. I've got about three of them I can think of within 50 miles of my home in Oregon. What's that done to prices of natural gas? And, you know, frankly, it just strikes me as a very inefficient way to create electricity through natural gas, as opposed to heating homes directly with natural gas. But it has to have had a tremendous impact, in terms of driving these prices up. Is that your understanding?

Mr. CARUSO. Well, it's certainly the area within the natural gas demand structure that has grown the fastest in the last 10 years. Most of the new electric power generation has been combined-cycle gas turbines, and that has been a major factor in the increase in demand. And, to that extent, of course, that has put upward pressure on prices. And it has been pure economics. These combined-cycle gas turbines have been—capital cost has been—the lowest per-kilowatt-hour generated has been relatively quick to build, and they've been relatively small in size, so that the risk to the utility was so—it was a natural and, I think, the correct business decision——

Senator SMITH. But maybe not any longer, if the price of natural gas keeps going up.

Mr. CARUSO. Well, that was when price of the gas was two dollars, or even lower.

Senator SMITH. What is the percentage of natural gas going to electrical generation?

Mr. CARUSO. If you include cogeneration, it's in the low 20s. It's about 21 or 22 percent. But I'll certainly get the——

Senator SMITH. But it's the biggest increase——

Mr. CARUSO. Oh, by far, yes.

Senator SMITH.—in the use of natural gas.

Mr. CARUSO. In the last decade or so, more than 95 percent of new electric generation has been natural gas fired.

Senator SMITH. Thank you.

Senator Lautenberg?

Senator LAUTENBERG. Thanks, Mr. Chairman.

Mr. Caruso, one of the things in—I'm going to ask a couple of fairly elementary questions just so that I'm sure about my familiarity with natural gas and LNG and—propane is derived from where?

Mr. CARUSO. Propane can be either a derivative from natural gas or from petroleum at the refinery. There's two ways of producing propane, and so it can come from either one.

Senator LAUTENBERG. So there—is there a cost of processing that adds to the cost of propane that makes it higher? And the appeal for propane, I guess, is that it can be relatively easily put into containers and shipped that way.

Mr. CARUSO. It's most useful for those areas that aren't served by pipeline—as the Chairman mentioned, for rural areas and those where the final—the distribution of natural gas has not reached the local community. So propane is often used in those areas.

Senator LAUTENBERG. Is propane a more volatile substance than natural gas?

Mr. CARUSO. Um——

Senator LAUTENBERG. In terms of flammability or——

Mr. CARUSO. I don't think it's any more—you know, if it's handled properly, I think it is—it's not any more or less.

Senator LAUTENBERG. No. The——

Mr. CARUSO. It's under pressure, so, therefore, to that extent, it might be a little bit more——

Senator LAUTENBERG. Because I know there are restrictions in a lot of communities where propane gas tanks can be put, whether

or not they have to be subsurface, or shouldn't be. I'm not really sure about it. I just know that I had to pay for it. So——

[Laughter.]

Senator LAUTENBERG. And is natural gas—they use the term—I hear "stored." "Stored" means in its natural environment? Just leave it in the ground? Is that——

Mr. CARUSO. Yes.

Senator LAUTENBERG.—is that the best way to——

Mr. CARUSO. Storage is a critically important component in the natural gas peak heating season, because production is pretty flat, year—month to month in the U.S. We don't see a great deal of variation from month to month. So during the summer months, what the industry does is re-injects natural gas into salt domes and other natural cavities that are placed strategically around the United States—there are around at least 400 of these sites—that we monitor on a weekly basis. And during the winter, it's pulled out of those storage and put into distribution pipelines to reach the final consumer. In fact, in the typical winter season, we will consume, say, 70 bcf per day, billion cubic feet per day, of which about 20 of that would come from storage. So it's critically important.

Senator LAUTENBERG. Storage, though, is a process; it's not just lying in the ground waiting to be brought out. There has to be a system for storage. Do they build tanks for storing natural gas, or is the volume so great that to be efficient that it just wouldn't pay to do anything like that?

Mr. CARUSO. That would be—that is among the more—the most costly. And although there are some at local utilities, that's a much smaller component. Most of it is—there's large storage in salt domes and other natural cavities underground.

Senator LAUTENBERG. Does Department of Energy get a lot of environmental concerns expressed about LNG, in terms of any potential environmental damage? And if you get those kinds of concerns, how do you deal with them? How do you address those concerns?

Mr. CARUSO. Well, the Federal Energy Regulatory Commission is the body within the government that regulates, of course, the interstate commerce, so they're very much involved in the issues with respect to safety and the movement of LNG, as well as the Coast Guard for safety. And DOE, in its Office of Fossil Energy, also has participated in studies with respect to the safety of LNG. And EIA, my organization, has not been directly involved, but I know that the Office of Fossil Energy has recently been involved in studies of the safety of LNG and——

Senator LAUTENBERG. Well, there are two issues. One is safety. And New Jersey had a very bad experience with explosions in the natural gas pipeline in fairly densely populated areas. And, as a result of that, it's very hard to plan pipeline service around, because people are afraid to have these pipes too near their homes. And I think there are fairly fundamental protections that could be installed—sectioning off power—pressure measurements and things of that nature. So the safety factor, why they can't easily convince people to have pipes running under the schoolhouse or under their own home. But what are the environmental concerns that are expressed that you deal with?

Mr. CARUSO. Well, EIA, of course, is—being a statistical agency, we don't——

Senator LAUTENBERG. Right.

Mr. CARUSO.—get directly involved——

Senator LAUTENBERG. But you get——

Mr. CARUSO.—but certainly we——

Senator LAUTENBERG.—you get the current concerns expressed through you.

Mr. CARUSO. I think in terms of environmental issues, you know, natural gas, because of its cleaner burning qualities with lesser emissions of CO_2 than, let's say, other fuels—coal or oil—one of the reasons that there has been such a rush to use more gas, particularly in electric power generation, has been that it is among the fossil fuels considered the more environmentally friendly. So, to that extent, natural gas actually is—there are concerns, of course—use of the fossil fuels, more generally; but natural gas, among the fuels, has been, as I say, one we receive less concern about.

Senator LAUTENBERG. Are you familiar with what—the problems that arise from trying to develop the transportation system—the ships, et cetera, that—to carry LNG and what conditions that imposes on the waterways or ports, et cetera?

Mr. CARUSO. Not in a specific sense, but, clearly, this whole issue of the energy infrastructure of this country requires—and I think it has been addressed in the discussions on the conference energy bill—that there is the need to have enhanced infrastructure from—not only from the tankers, but the port facilities, as well as the pipelines that you mentioned earlier. So I'm aware that there will be a need to build a substantial number of new facilities to handle the LNG, and, of course, the tankers, to bring it in, but I think the industry, best of my knowledge, is prepared to do that, and in a way that's—I think would satisfy the demands in the—that we project.

Senator LAUTENBERG. Now, the LNG, the rush to increase the number of LNG ports suggests that we are prepared to be further dependent—and I don't know that that's such a bad thing with such a precious commodity—on foreign imports, because it just makes the supply that's available, that's further away, able to reach our shores. So we have to look fairly closely at that.

You know, Mr. Chairman, very quickly, and I'll close, before I was in the Senate, I've always been interested in the environment, as I know our Chairman is, and when I heard that there was consideration of a trans-Canada pipeline, trans-Alaska, et cetera, being put in place, I thought, "Wow, that's really a threat to the environment." And then we turned to the ships, and Valdez, Exxon Valdez, et cetera, appeared, and you say, "Well, you won't get that out of a pipeline." So I think we have to get as much as we can, safely and quickly, available through our own sources and through a system of piping that can help us deliver that—the material.

Thank you, Mr. Caruso.

Mr. CARUSO. Thank you.

Senator LAUTENBERG. Thanks, Mr. Chairman.

Senator SMITH. Thank you very much, Senator. And thank you, Mr. Caruso.

We may have a few other questions we'll submit in writing.

Senator SMITH. But, in the interest of time, because I know there are a series of votes scheduled shortly, probably no later than 4 o'clock, I want to hear from our second panel.

So we'll call up Mr. Paul Wilkinson, Vice President, Policy Analysis of the American Gas Association; Mr. Gary Huss, President, National Association of Manufacturers; and Ms. Wenonah Hauter, Director, Critical Mass Energy and Environmental Program, Public Citizen.

Gary Huss, I understand you may have a plane to catch or a time limitation. Shall we take you first?

Mr. HUSS. Whichever your preference. It doesn't matter.

Senator SMITH. Why don't we start with you, just in case you might? So we appreciate your traveling here and being part of this.

STATEMENT OF GARY D. HUSS, PRESIDENT, HUDAPACK METAL TREATING, INC. ON BEHALF OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. HUSS. Thank you, I appreciate it.

Chairman Smith and Mr. Lautenberg, I am Gary Huss, President of Hudapack Metal Treating in Elkhorn, Wisconsin. It's a great honor, as a member of the National Association of Manufacturers, to have an opportunity to address you regarding our concerns about the huge impact of energy costs, especially natural gas, on our company in the manufacturing industry.

At the outset, Mr. Chairman, I would like to thank you for your solid voting record in supporting manufacturing in America. This morning, the NAM released its voting record for the 108th Congress, and we greatly appreciate your voting to support our 23 key manufacturing votes on an 87 percent basis.

Senator Lautenberg, on behalf of the NAM we look forward to working with you more so in the coming year. Thank you.

Hudapack Metal Treating has been heat treating steel and stainless steel parts for almost 20 years. Heat treating is a process where heat, requiring considerable use of natural gas, is applied to steel parts and then fast-cooled to metallurgically change the structure of the parts. Without heat treating, steel is relatively soft and pliable, and does not last in its ultimate use.

We operate two plants in Wisconsin and one in Illinois, and provide our 160 employees with relatively high-paying jobs with good health, life, short-term, disability, and retirement plans. Maintaining these levels of benefits and employment has been very difficult since the natural gas prices skyrocketed upward in 2000.

As is the case with all energy-intensive manufacturers, during the past 4 years Hudapack Metal Treating has been faced with major cost increases that threaten our survival as a company. In fact, the results of a poll taken in last week's meeting of the Board of the National Association of Manufacturers revealed that 93 percent of the Directors from small and medium manufacturing companies believe that higher energy prices are having a negative impact on their bottom lines.

At Hudapack, we have struggled with increases in group insurance, workers comp insurance; but these increases pale by comparison to our cost of natural gas. We have experienced substantial runups in natural gas prices up at City Gate since 2000. Natural-

gas prices are now averaging 75 percent higher than the 2002 price. For the first time in our history, the gas prices are higher this summer than last winter. I respectfully recommend that a study be undertaken to determine the extent to which pure speculation and market manipulation created this summer's price runup.

These escalating natural gas prices have become a real negative impact on my company. Although the economy has improved greatly and we are currently producing and shipping at a record pace, our pre-tax profit will be a very modest 2 to 3 percent of sales this year, compared with 15 percent we should achieve with the sales level we're at now.

As an employer, one of the biggest kicks I get out of being an employer, I enjoy issuing bonus checks. In 2000, we disbursed an average bonus check of a thousand dollars per employee. Since then, we haven't been able to pass out any bonus checks.

Senator SMITH. Are you saying, Gary, that 13 percent of your profit is lost that you could attribute directly to the price of natural gas?

Mr. HUSS. Very easily.

Senator SMITH. Interesting.

Mr. HUSS. We have also been limited in the cost increases we can charge our customers, because they have access to imported parts which may already be heat treated and compete with the ones that we produce. When our customers buy less-expensive imported parts, we not only lose the business, but so do the fabricator or the metal forger who sent the parts to us for the heat-treating process. In other words, natural gas prices not only affect the jobs in the heat-treating industry, but the high prices are also "outforcing" jobs in the businesses above me in the supply chain.

Since there is no real substitute for natural gas in most our processes, we are fully engaged in energy efficiency recuperation. It costs between $75,000 and $100,000 per furnace, depending on size, to accomplish this improvement. I have 10 to 15 furnaces that require this upgrade. With lower profits due to high gas costs, I can only do one or two of them per year.

Last year, last December, the NAM released a study which concluded that overall domestic manufacturers face at least a 22 percent price disadvantage as compared with our foreign competitors because we in this country face higher energy costs, higher healthcare and pension costs, a more punitive corporate tax structure, and a more costly regulatory burden, especially environmental, and a wildly out of control legal system. The cumulative effect of these factors and Congress' unwillingness to address them is "outsourcing" manufacturing jobs to foreign workers.

With respect to our disadvantage in high energy cost, Congress must face up to its responsibility to facilitate increases in natural gas supply. Congress needs to allow drilling in new fields. We need to get the gas where it is and facilitate the construction of the Alaska Pipeline. Congress also needs to help with the siting and permitting of new liquified natural gas facilities.

In summary, Congress needs to pass comprehensive energy legislation that will increase the supply in affordable—will increase the supply of affordable energy, facilitate improvement to the natural gas and electricity infrastructure, and provide incentives for addi-

tional energy efficiency investments. Please do so, because I would like to continue providing value to my customers and a quality of life to my workers here in the United States.

Thank you.

[The prepared statement of Mr. Huss follows:]

PREPARED STATEMENT OF GARY D. HUSS, PRESIDENT, HUDAPACK METAL TREATING, INC. ON BEHALF OF THE NATIONAL ASSOCIATION OF MANUFACTURERS

Chairman Smith and members of the Committee, I am Gary Huss, President of the Hudapack Metal Treating company in Elkhorn, Wisconsin. It is a great honor, as a member of the National Association of Manufacturers, to have the opportunity to address you regarding our concerns about the huge impact of energy costs, especially natural gas on our company and the manufacturing industry. The National Association of Manufacturers is the Nation's largest industrial trade association, representing small and large manufacturers in every industrial sector and in all 50 states.

Hudapack Metal Treating has been treating steel and stainless steel parts for almost 20 years. Metal treating is a process where heat, requiring considerable use of natural gas, is applied to metallurgically change the structure of the metal parts, thereby giving them strength and wear resistance. Without heat treating, metal is relatively soft and pliable. Using the spring as an example: the steel needs to be soft to be formed into the shape of the spring. The heat treat process, which in this case is called "austemper," gives the material the strength and resiliency to be a "*spring*."

We operate two plants in Wisconsin and one in Illinois and provide our 160 employees with relatively high paying jobs, good health, life, short-term disability and retirement plans. However, maintaining these levels of benefits and employment has been very difficult since natural gas prices skyrocketed upward in 2000!

As is the case with all energy intensive manufacturers during the past four years, Hudapack Metal Treating has been faced with major cost increases that threaten our survival as a company. High energy cost increases have historically driven the economy into recession, by reducing orders for capital equipment, and lowering consumer confidence. I must give the Federal Reserve Board and the President's three tax relief bills over the past three years credit for keeping the economy afloat in the face of unprecedented natural gas and oil costs.

In addition, credit must be given to the continuous improvements in energy efficiency in the manufacturing sector in particular, which has led the country to be 46 percent more efficient in energy use per unit of GDP versus 30 years ago. Despite these general improvements, high energy prices are still devastating to manufactures. In fact, the results of a poll taken at last week's meeting of the board of the National Association of Manufacturers, revealed that 93 percent of the directors from small and medium manufacturing companies believe that higher energy prices are having a negative impact on their bottom lines.

At Hudapack Metal Treating, we have struggled with increases in group insurance and workers comp insurance, but these increases pale by comparison to our cost increases for natural gas. We experienced a substantial run up in natural gas prices at the Northern Illinois City Gate during 2000 and 2001, and while prices did moderate in 2002, they were still 40 percent above 1999 levels. However, during the past two years, natural gas prices have skyrocketed, and have been averaging about 75 percent higher than the 2002 price.

More specifically, during the four winters ending with the winter of 1999/2000, natural gas prices at the Northern Illinois City Gate averaged $2.65 cents per thousand Btu's. However, the average of the past two winters' prices has been $5.55 cents per thousand Btu's, more than doubling of the late 1990s price. Worse, for the first time in our history, the prices were higher for this summers' gas at the city gate than the preceding winter's prices. This summer, natural gas averaged $5.94 per thousand Btu's or about 150 percent more than the average summer prices for the four years ending in the summer of 1999. In fact, this summer's prices have jumped 82 percent just since 2002. This is despite about a 10 percent reduction in natural gas use in the electricity sector this summer compared to 2002.

In my view, this summer's natural gas prices may well have been exacerbated by large investors, such as hedge funds and commodity-trading advisers, as suggested in an article on oil trading in *The Wall Street Journal* on September 2 of this year. I respectfully recommend that a study be undertaken to determine the extent to which pure speculation and market manipulation created this summer's price run-

up. However, even if commodity market activities were a substantial influence on prices this summer, the core problem remains the same because tight gas markets invite investor influence on prices. The nation needs adequate natural gas supplies to reduce both price spikes and volatility.

These escalating natural gas prices are having a real negative impact on my company. Although we at Hudapack Metal Treating are currently producing and shipping at a record pace, our pre-tax profit will only be very modest at approximately 2–3 percent of sales, compared with the 15 percent we should achieve at these sales levels. As an employer, I enjoyed issuing extra bonus checks. In 2000, we disbursed over $50,000 in bonuses. Since then, we have been unable to do any bonuses.

Although we are now passing a portion of our increased gas costs through, we are limited in the cost increases we can charge our customers. Our customers have access to imported metal products and parts that are already heat-treated and compete with the ones we produce. When our customers buy the less-expensive imported parts, not only do we lose business, but so do the part fabricator and the metal forger who sent their metal to us to heat-treat.

In other words, high natural gas prices not only affect the jobs in the heat-treating industry, but the high prices also are "outforcing" jobs in the businesses above me in the supply chain. Still worse, the more our foreign competitors take advantage of their lower cost structure, the more experience they will develop in matching our quality and our supply chain efficiency. Thus, just as foreign competition with low natural gas prices hurts jobs in my industry and those companies above me in the supply chain, so do imports put increasing pressure on my domestic customers as foreign competitors increase the complexity and the value-added of the products they sell to the U.S. market.

In the face of these higher natural gas costs, Hudapack Metal Treating has been trying to maintain its profitability and keep all of our workers fully employed. Since natural gas is critical to our whole business, and since there are no real substitutes for natural gas in most of our treating, we are fully engaged in energy efficiency measures. We have undertaken the task of adding recuperation of all of our burners for the furnaces. It costs between $75,000 and $100,000 per furnace, depending on size, to accomplish this upgrade. I have about 10–15 furnaces in two plants that need this upgrade. With lower profits due to the high gas costs, I can only do one or two upgrades per year. I would add that making these energy efficiency investments would be less difficult if there were more favorable corporate taxation and capital cost recovery rules.

Last December, the National Association of Manufacturers and the Manufacturing Alliance released a study entitled "How Structural Costs Imposed on Manufacturers Harm Workers and Threaten Competitiveness," which concluded that overall, domestic manufacturers face at least a 22 percent price disadvantage as compared with our major foreign competitors. This is because, compared to our trading partners, we have higher energy prices, higher health care and pension costs, a more punitive corporate tax structure, a more costly regulatory burden—especially environmental—and a wildly out-of-control legal system. In the past, U.S. manufacturing has been able to compete with imports made by low-wage competitors because of our extraordinary productivity. However, the cumulative effect of these other factors—and Congress' unwillingness to address them—is "outforcing" manufacturing jobs to foreign workers.

The U.S. manufacturing sector lost almost 3 million jobs during the period when natural gas prices started increasing in 2000, until we started adding jobs in the spring of this year. If Congress does not aggressively address these factors of energy costs, health care and pension costs, punitive taxes, regulatory burden and scandalous product-liability judgments, then it is pretty clear that most of these 3 million jobs lost over the past four years will not be coming back to the United States. For my company and others in the metal-treating industry, the recent run-up in natural gas prices has had a more acute impact than these other factors, but the natural gas cost increases have been piled onto the other structural cost disadvantages and caused some in my industry to close their doors.

The persistent high prices during this past summer, when natural gas prices are usually lower, underscore a number of changes that have occurred in the natural gas supply/demand balance. First, during the 1990s, natural gas became the overwhelming choice for new electric generation. Second, the natural gas domestic supply "bubble" shrank and disappeared during the 1990s, and Canadian imports grew every year to pick up the gap between domestic demand and supply. However, in 2003, Canadian gas imports began to drop. Despite active drilling in some areas of the United States, domestic production has been at its best level. Meanwhile, the industrial economy has been recovering. Consequently, there has not been enough gas to meet demand at reasonable prices.

In addition to creating a more favorable climate for energy efficiency investments for manufactures—such as my own investments in recuperation—Congress must face up to its responsibility to facilitate increases in natural gas supply. The very modest production response to the past four years of high natural gas prices is a clear indication that just drilling more holes in the same old fields is not a sustainable solution. Congress needs to allow drilling in new fields, especially in the Rocky Mountains and offshore. If more gas were available in Texas or Oklahoma, we would be getting it with these high prices. We need to get the gas where it is.

In addition, Congress needs to help with the siting and permitting of new liquefied natural gas facilities, which are a vital component of any natural gas supply strategy. Congress should also pass legislation that will facilitate the construction of the Alaska Gas Pipeline. Many of the predictions of environmental disasters from an Alaskan pipeline have proven to be false; and with state-of-the-art materials and technology, construction of a new natural gas pipeline will be safer and cleaner. It is the responsibility of Congress to protect our jobs, our economy and our Nation by ensuring that these initiatives are put on a fast track, without fear of lengthy litigation.

Unfortunately, none of the energy bills that have passed either body during the past two congresses have done enough to increase natural gas supplies. Nevertheless, Congress can help by recognizing that we need more of every type of energy supply including, coal, nuclear and affordable renewables.

Electric generators must be able to increase their use of other sources if natural gas is to be affordable for manufactures and homeowners. And *affordable* electricity is the key, because overall, manufacturers use more electricity than any other energy input. Clean coal technology has become better, nuclear technology has become safer. Still, Congress must avoid command and control approaches to limit carbon dioxide emissions, to force use of expensive renewables and to impose draconian mercury reductions, any one of which would drive electricity prices through the roof and compound manufacturing's structural cost disadvantage.

I applaud the majorities of both houses for supporting H.R. 6, the Energy Policy Act. Most Members of Congress have it right—we need improvements in every energy area. Congress needs to pass comprehensive energy legislation that will increase the supply of affordable energy, facilitate improvements to the natural gas and electricity infrastructure, and provide incentives for additional energy efficiency investments. Please do this as a first order of business next congress, because I want to continue providing value to my customers and quality lives for my workers, here in the United States of America. Thank you.

Senator SMITH. Thank you, Mr. Huss. That was a very real-life testimony you gave as to what this natural gas cost spike is doing to your company, the jobs you provide, and we're very sensitive—we want to move sensitive to that.

Mr. HUSS. Thank you.

Senator SMITH. Ms. Wenonah Hauter—am I pronouncing that right?

Ms. HAUTER. Yes.

Senator SMITH. Very good. We'll hear from you next.

STATEMENT OF WENONAH HAUTER, DIRECTOR, PUBLIC CITIZEN'S ENERGY PROGRAM

Ms. HAUTER. OK. Mr. Chairman, Senator Lautenberg, I appreciate the opportunity to testify.

I am Wenonah Hauter, and I'm Director of Public Citizen's Energy Program. Public Citizen is a 30 year old consumer advocacy organization with 160,000 members nationwide.

I'm going to spend my time discussing market manipulation and speculation that has led to rising gas prices. Beginning in 2000, natural gas companies exploited energy deregulation to engage in one of the largest consumer ripoffs in history. Despite moderately rising demand, which grew only 4.2 percent from 1999 to 2000, natural gas prices increased 245 percent from 1999 to 2001. This in-

crease was not justified by the underlying market conditions of adequate supply matching moderately growing demand.

During the past 2 years, Federal agencies and the State of California have authorized $2 billion in fines, penalties, refunds, and other enforcement actions against the natural gas companies for manipulating domestic natural gas markets. These fines represent only a fraction, though, of the total amount that consumers have been price-gouged. For example, California, alone, estimates that it is owed $9 billion for energy market overcharging. This has occurred because of inadequate regulation of the industry which engages in two types of abuse. The first is manipulation of energy trading markets where prices are set. And the second manipulation is of storage data which influences prices.

I want to look at five areas that we believe need to be reformed.

The first is the regulation of over-the-counter markets. The Commodities Futures Trading Commission is directly responsible for regulating commodities trade on futures exchanges such as the New York Mercantile Exchange, or NYMEX. But it also has the power to intervene against under-regulated over-the-counter markets. The Commodities Futures Trading Commission should use its authority and be given additional regulatory power to require transparency. Natural-gas futures trading only began in November 1989. And since that time, the market has been plagued with volatility. Contracts representing billions of Btu's of natural gas are traded every day. But, increasingly, a large share of this trading has been moved off the regulated exchanges, like NYMEX, and onto unregulated over-the-counter exchanges. The Bank of International Settlements estimates that in 2003 the global over-the-counter market has grown to $2 trillion, 150 percent increase since 1998. Traders operating on exchanges like NYMEX are required to disclose details of their trades to Federal regulators, but traders in over-the-counter exchanges are not required to disclose such information, allowing energy companies, investment banks, and hedge funds to escape Federal oversight and more easily engage in manipulation strategies.

Energy trading on these over-the-counter exchanges was greatly expanded at the beginning of 1993, when the CFTC granted an exemption requested by Enron and eight other companies for energy contracts that included natural gas from exchange-trading requirements and anti-fraud provisions of the Commodity Exchange Act. By doing so, the CFTC voluntarily limited its ability to police energy trading markets. The growth of these over-the-counter exchanges exploded in 2000, when Congress passed the Commodity Futures Modernization Act, which, among other things, largely exempted trading of energy commodities on these over-the-counter exchanges from any Federal Government oversight. As a result, many investment banks and energy companies opened their electronic exchanges, where the bulk of their activities were unregulated. Since the law took effect, the industry has been plagued by dozens of high-profile scandals attributed to the lack of the adequate regulatory oversight over traders' operations.

We've identified over 200 hedge funds with significant positions in natural gas trading markets. Given the sheer size of these funds and the investment banks that run them, they need to be regulated

so that we have more transparency over their actions. The government needs to be able to track shenanigans going on by having access to information. Companies engaging in futures trading should be required to report the details of their contracts, the prices, and who they are dealing with.

The second area that needs to be reformed is the NYMEX natural gas trading price limits. Trading exchanges can impose a price limit on dialing trading as a way to protect consumers. For example, with the "mad cow" scare, the Chicago Mercantile Exchange imposed a price limit on cattle of three cents per pound so that if the price fluctuates more than that amount, trading in cattle is stopped until the next day. That's about .4 percent of the current trading price of cattle. This is a very low threshold that protects against volatility. The same type of suspension is used in other commodity trading, such as milk and lumber.

But NYMEX has very weak price limits. If the price changes three dollars per Btu during a daily session, trading is suspended for just 5 minutes. This three dollar limit is roughly half the current price of natural gas, as compared to the much smaller range used in other commodities. We believe NYMEX needs to set stricter price limits.

The third area that needs to be addressed is the area regulated by the Energy—or by the Federal Energy Regulatory Commission, FERC, which is in charge of regulating pipeline activities, storage, LNG facility construction, and natural gas transportation issues, among others. FERC has a legal mandate to ensure that electricity prices under its jurisdiction are just and reasonable. And the same should be true for natural gas.

The Ninth Circuit Court of Appeals recently ruled that FERC has broader power than it currently exercises to force energy companies to provide refunds to consumers. The ability of FERC to order such refunds, however, is contingent upon the existence of the just and reasonable standard enshrined in the Federal Power Act. We need a similar standard for natural gas.

The fourth area that needs to be regulated are natural gas storage requirements. Lack of regulation in energy trading markets allows market gaming to set natural gas prices. It allows published natural gas storage levels to influence the price. If natural gas levels are high, the market will typically lower the price of natural gas. This correlation has resulted in the natural gas industry keeping less product in storage.

Although at this time we do have adequate storage, it is important to note that the correlation between storage levels and price is weaker today than it used to be historically, and that's because the industry is relying on futures trading more than storage as a hedging tool. Nevertheless, to be prudent, we need a federally controlled and regulated natural gas storage system to make sure that demand can be met at a reasonable price.

Last, I will mention the need to improve local control over the siting of liquified natural gas import facilities. FERC has recently denied states the right to adequately regulate LNG import facilities which are already built or are proposed. Considering the threat from terrorism, security concerns for LNG tankers and marine terminals are justified because of the sheer magnitude of the fuel in-

volved. Legislation has already been introduced in the House on this issue, and we believe this type of legislation is necessary to clarify FERC's jurisdiction over the facilities.

Rather than increasing our dependence on foreign sources of energy, we need to do everything we can to reduce projected natural gas demand through improvements in energy efficiency and encouragement of alternative energy.

In conclusion, Congress can restore accountability to natural gas markets and protect consumers by regulating over-the-counter natural gas trading exchanges, ordering trading exchanges to reform natural gas trading price limits, establishing a just and reasonable standard for natural gas, mandating natural gas storage requirements, and improving local control over LNG siting.

[The prepared statement of Ms. Hauter follows:]

PREPARED STATEMENT OF WENONAH HAUTER, DIRECTOR, PUBLIC CITIZEN'S ENERGY PROGRAM

Consumer Concerns with Natural Gas and LNG

Thank you, Mr. Chairman and members of the Senate Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs for the opportunity to testify on the issue of natural gas markets. My name is Wenonah Hauter and I am Director of Public Citizen's Energy Program. Public Citizen is a 30 year old public interest organization with over 160,000 members nationwide. We represent consumer interests through research, public education and grassroots organizing.

I last testified before the Senate Commerce Committee in April 2002, when I documented how Enron exploited deregulation to manipulate West Coast energy markets.

Since I gave that testimony, Federal and state governments have authorized over $4.1 *billion* in fines, penalties, refunds and other enforcement actions against natural gas companies for manipulating domestic natural gas markets—an amount far less than the amount by which natural gas companies are alleged to have manipulated prices. Anti-competitive actions by the handful of natural gas companies—made possible by inadequate regulation over the industry—are a determining factor in the 155 percent increase in natural gas prices for consumers since 1999.

In the wake of Enron's collapse, Congress recognized that strengthening regulations over corporations was necessary to protect consumers and investors. In the summer of 2002, Congress wisely passed the Sarbanes-Oxley Act, imposing regulations on the accounting industry and the auditing process for corporations. The majority of recent corporate accounting scandals have been concentrated in the energy industry. But the Sarbanes-Oxley Act addresses what is arguably the "secondary" problem: natural gas and power companies primarily engaged in accounting fraud as a means to hide the enormous revenues they were earning from price-gouging consumers. Congress has thus far ignored the glaring need for a Sarbanes-Oxley-type reform of *energy regulations*.

The two main types of abuse by natural gas companies are manipulation of energy trading markets (where prices are set) and storage data (which influence prices). Congress can restore accountability to natural gas markets and protect consumers by supporting Public Citizen's 5-point reform plan:

- Re-regulate natural gas trading exchanges to restore transparency.
- Order trading exchanges to reform natural gas trading price limits.
- Establish a "just and reasonable" standard for natural gas.
- Mandate natural gas storage requirements.
- Improve local control over LNG siting.

Restore Transparency of Natural Gas Trading Exchanges

Beginning in 2000, natural gas companies exploited energy industry deregulation to engage in one of the largest consumer rip-offs in history. Despite only moderately rising demand (which grew only 4.2 percent from 1999 to 2000), natural gas prices increased 245 percent from January 1999 to January 2001. This increase was not justified by the underlying market conditions: adequate supply matching moderately growing demand. This market manipulation trend may be continuing since Congress

and the two Federal regulatory commissions with jurisdiction have not reformed the rules that allowed the manipulation to occur.

Over the last two years, two Federal agencies (the Commodity Futures Trading Commission and the Federal Energy Regulatory Commission) have obtained $4.1 billion in settlements against natural gas companies for market manipulation. These fines cover manipulation of energy trading markets, but only represent a fraction of the total amount by which consumers have been price-gouged. For example, California alone estimates that it is owed $9 billion for energy market overcharging. This wide discrepancy between what consumers are owed and what the government has forced natural gas companies to pay exists because the Federal government, through legislative and regulatory action, has severely limited its ability to effectively oversee the industry.

Both the CFTC and FERC have been negligent in policing these markets effectively. The CFTC is directly responsible for regulating commodities trade on futures exchanges (such as the New York Mercantile Exchange), but also has the power under the Commodity Exchange Act to intervene against traders in the under-regulated over-the-counter (OTC) markets. FERC is responsible for most non-exchange natural gas market issues.

Natural gas futures trading only began in November 1989, and it is clear that the significant problems that continue to plague these trading markets do not warrant the weak Federal oversight. Contracts representing billions of BTUs of natural gas are traded every day on NYMEX. An increasing share of this trading, however, has been moving off regulated exchanges like NYMEX and into unregulated OTC exchanges. The Bank of International Settlements estimates that in 2003, the global OTC market has grown to over $2 *trillion,* a 150 percent increase from 1998.

Traders operating on exchanges like NYMEX are required to disclose details of their trades to Federal regulators. But traders in OTC exchanges are not required to disclose such information, allowing energy companies, investment banks and hedge funds to escape Federal oversight and more easily engage in manipulation strategies. The need for stronger consumer protections is more urgent as powerful new players—led by hedge funds and investment banks—now dominate natural gas trading.

Energy trading on these OTC exchanges was greatly expanded at the beginning of 1993 when the CFTC, under the chairmanship of Dr. Wendy Gramm, granted an exemption requested by Enron and eight other companies for energy contracts (including natural gas) from exchange-trading requirements and anti-fraud provisions of the Commodity Exchange Act. By doing so, the CFTC voluntarily limited its ability to police energy trading markets.

The growth of these OTC exchanges exploded in 2000 when Congress passed the Commodity Futures Modernization Act which, among other things, largely exempted trading of energy commodities on OTC exchanges from Federal government oversight. As a result, many investment banks and energy companies opened their own electronic exchanges where the bulk of their activities were unregulated. Since the law took effect, the industry has been plagued by dozens of high-profile scandals attributed to the lack of adequate regulatory oversight over trader's operations.

Public Citizen has supported efforts to re-regulate energy trading by subjecting OTC markets to tougher oversight and enhanced consumer protections. But the latest such effort, an amendment to the energy bill, was rejected by the Senate by a vote of 55–44 in June 2003 (Amendment 876 to S.14). The amendment would largely repeal the 1993 CFTC and 2000 Congressional deregulation acts.

The measure was defeated after a public spat between Warren Buffett, chairman of Berkshire Hathaway, and Federal Reserve chairman Alan Greenspan, over the danger posed by under-regulation of derivatives. Buffett called the underreguated derivatives markets "weapons of mass destruction" in March 2003, and Greenspan took the unusual step of publicly disputing Buffett's assertions.

As if deregulation by the CFTC and Congress were not bad enough, the CFTC has experienced a troublesome streak of "revolving door" appointments and hiring which may further hamper the ability of the agency to effectively regulate the energy trading industry. In August 2004, CFTC chairman James Newsome left the Commission to accept a $1 million yearly salary as president of NYMEX, the world's largest energy futures marketplace. Just weeks later, Scott Parsons, the CFTC's chief operating officer, resigned to become executive vice-president for government affairs at the Managed Funds Association, a hedge-fund industry group that figures prominently in energy derivatives markets. Such prominent defections may hamper the CFTC's ability to protect consumers.

It is prudent to enhance regulatory oversight over natural gas trading markets considering the new breed of trader that is beginning to dominate these markets. Public Citizen research has identified more than 200 hedge funds that have devel-

oped significant positions in natural gas trading markets. In addition, investment banks—led by Goldman Sachs and Morgan Stanley—have already firmly established themselves as dominant players in natural gas trading. Given the sheer size and political muscle behind these hedge funds and investment banks, greater transparency over their actions is needed now more than ever.

Reform NYMEX Natural Gas Trading Price Limits

Trading exchanges can impose price limits on daily trading as a way to protect consumers. For example, in response to the Mad Cow scare, the Chicago Mercantile Exchange (CME) imposed a price limit on cattle of 3¢ per pound—so if the price fluctuates more than that amount, trading on cattle is stopped until the next day. The 3¢ limit is about 0.4 percent of the current trading price of live cattle—a very low threshold that protects consumers and producers from volatility. Even commodities unafflicted with Mad Cow-like "scares" have strict price limits. Trading in milk futures contracts is suspended until the following day if the price changes more than 75¢ (about 5 percent of the current price). Trading in lumber futures is halted for the day if the price swings more than $10.00 per thousand board feet (3 percent of the current price). These severe price limits help control volatility and reduce damaging speculation. The CME implemented these strict price limits typically at the request of producers, since many of the price swings were hurting their bottom line.

But NYMEX has weak price limits on natural gas trading. If the price changes by $3/Btu during a daily session, then trading is suspended for only *5 minutes.* This $3 limit is roughly *half* the current price of natural gas (compared to the much smaller range of 0.4 percent to 5 percent listed in the above agricultural commodities). This means that NYMEX tolerates more volatility in natural gas trading markets, making it a more attractive market for speculators to profit at the expense of consumers. But, unlike agricultural products with tough price limits, the natural gas producers and speculators are making billions of dollars off these volatile natural gas markets.

Public Citizen urges the Senate Commerce Committee to pass a law forcing NYMEX to set stricter price limits for natural gas in order to better protect consumers.

Establish a "Just and Reasonable" Standard for Natural Gas

While the CFTC regulates the natural gas futures markets, the Federal Energy Regulatory Commission is in charge of regulating other aspects of natural gas markets. While FERC has a legal mandate to ensure that electricity prices under its jurisdiction are "just and reasonable," it has no such "fair price" standard for natural gas. As natural gas continues to have a bigger impact on the U.S. economy—not to mention setting the *de facto* price of electricity due to its use as fuel for power—Public Citizen strongly urges the Senate Commerce Committee to support legislation that would establish a "just and reasonable" standard for all natural gas production.

The 9th Circuit Court of Appeals recently ruled that FERC had broader power than it currently exercises to force energy companies to provide refunds to consumers for overcharging. The ability of FERC to order such refunds, however, is contingent upon the existence of the "just and reasonable" standard enshrined in the Federal Power Act. Without such a standard for natural gas, consumers are left unprotected.

Mandate Natural Gas Storage Requirements

While under-regulation of energy trading markets allows market gaming to *set* natural gas prices, published natural gas storage levels *influence* the price. If natural gas storage levels are at historically high levels, the market typically will lower the price of natural gas, since more natural gas is available to release in response to demand fluctuations.

For years there has been a strong correlation between the amount of working gas in storage and the wellhead price of natural gas. But in recent years, the natural gas industry has kept less product in storage, which in turn has sent strong signals to markets to help drive the price of natural gas higher. Acknowledging that there may be flaws in allowing natural gas companies to set storage levels by themselves, Public Citizen recommends the creation of a "Strategic Natural Gas Reserve," perhaps modeled on the Strategic Petroleum Reserve. A federally-controlled and regulated natural gas storage system would help ensure that natural gas storage levels are adequate to meet demand.

It is important to note that in recent years, the correlation between storage levels and prices has become less strong. This trend may be attributable to an over-reliance of natural gas users on futures trading, rather than physical storage, as a

hedging tool. In addition, the less-transparent natural gas trading markets since 2000 may also be contributing to this deviation from standard correlations, as market manipulation—rather than true supply and demand—sets prices.

Improve Local Control Over LNG Siting

Last year, Federal Reserve chairman Alan Greenspan called on the U.S. to quickly approve a "major" increase in Liquefied Natural Gas (LNG) import facilities, claiming that domestic supply and demand trends require increases in natural gas importation.

Such an analysis, however, ignores the benefits of reducing projected natural gas demand through improvements in energy efficiency and the encouragement of alternative energy.

The Department of Energy projects that natural gas demand will grow at a rate of 1.4 percent a year from now through 2025, with domestic production growing at a rate of 1.0 percent a year. But the DOE projections assume little to no improvements in natural gas consumption efficiency, and only limited development of alternative electricity generation during that time. If America's energy policies are prioritized to reduce demand and increase renewable fuels, the need to import LNG will greatly diminish.

Indeed, one of the biggest debates in energy policy is reducing America's dependence on foreign sources of energy. But importing LNG will make us more dependent on such imports, particularly from volatile regions of the world.

In 2003, we obtained 98 percent of our natural gas needs from domestic production and pipeline shipments from Canada and Mexico (83 percent of our natural gas needs are derived from domestic production). The reminder come from LNG imports, with 23 percent of those imports coming from OPEC nations (Algeria, Qatar and Nigeria). Increasing reliance on LNG will result in the U.S. becoming more dependent on OPEC.

Nonetheless, even assuming the need for an expansion of LNG facilities, the Senate Commerce Committee should make sure that such an expansion contains new protections for states to have adequate jurisdiction over safety, environmental and consumer protections. Given the concerns raised by state officials and at least 20 U.S. Senators regarding improper FERC assertion of jurisdiction over traditional state domains on electricity markets, it would seem that Congressional action asserting the rights of states on LNG siting may be required.

In March 2004, FERC denied California (and other states) the right to adequately regulate LNG import facilities located or proposed in the state. In July, the California Public Utilities Commission voted to appeal FERC's ruling. Public Citizen feels FERC has overstepped its authority under the Natural Gas Act. This is probably why a bill has been introduced in the U.S. House of Representatives (HR 4413) that would clarify FERC's exclusive jurisdiction over such LNG facilities. If FERC were on stronger ground, such proposed legislation would be unnecessary.

Finally, FERC has not provided adequate guarantees regarding the security concerns of LNG import facilities. LNG tankers and LNG marine terminals pose significant terrorist targets due to the sheer magnitude of the amount of fuel carried by LNG tankers (they carry up to ten times the amount of fuel in a typical crude oil ship) and the risk of fires and subsequent thermal radiation associated with the heating of the LNG at the marine terminals. States have already raised serious questions about the adequacy of FERC's security assessments. This is particularly important given assertions by the United State's former deputy counterterrorism czar that Al Qaeda operatives trained in Afghanistan came to the U.S. smuggled aboard LNG tankers from Algeria and considered Boston a "logistical hub" for the terror network's activities in the U.S. prior to the September 11 attacks. This, and the fact that Al Qaeda has already demonstrated the capacity to strike at sea, with the boat bombing of the USS Cole in 2000 and the oil tanker Limburg in 2002.

Details of the $4.1 billion in fines, penalties and other payments by natural gas companies to government authorities to settle allegations of market manipulation

Company	Payment ($millions)	Agency	Date	Description of Enforcement Action
Acquila (Kansas City, MO)	$ 26.5	CFTC	Jan-04	making false reports and manipulation of natural gas prices
Black Hills Corp (Rapid City, SD)	3.0	CFTC	Jul-03	Black Hills subsidiary Enserco Energy manipulated natural gas prices
Calpine (San Jose, CA)	1.5	CFTC	Jan-04	reporting false volume and price data of natural gas
CMS Energy (Jackson, MI)	16.0	CFTC	Nov-03	false reporting and attempted manipulation of natural gas prices
Dominion Resources (Richmond, VA)	5.0	FERC	Aug-03	improper sharing of natural gas storage inventory information
Duke Energy (Charlotte, NC)	28.0	CFTC	Sep-03	False reporting and attempted manipulation of natural gas
Dynegy (Houston, TX)	5.0	CFTC	Dec-02	Dynegy (ChevronTexaco owns 26%), through its 50% stake in West Coast Power (Xcel subsidiary NRG owns the rest) manipulated natural gas prices
El Paso Corp (Houston, TX)	1,690.0	FERC	Nov-03	manipulating natural gas pipeline capacity into California
El Paso Corp (Houston, TX)	20.0	CFTC	Mar-03	Intentionally manipulating natural gas prices
EnCana (Calgary, Canada)	20.0	CFTC	Jul-03	EnCana's subsidiary, WD Energy, manipulated natural gas prices
Enron (Houston, TX)	35.0	CFTC	Jul-04	manipulation of natural gas prices
Entergy Koch Trading (New Orleans)	3.0	CFTC	Jan-04	reporting false volume and price data of natural gas
Nicor (Naperville, IL)	0.6	FERC	Aug-04	Nicor's Northern Illinois Gas subsidiary improperly shared natural gas storage dat
NiSource (Merrillville, IN)	2.5	FERC	Aug-03	NiSource's Columbia Gas subsidiary improperly shared natural gas storage data
Oneok (Tulsa, OK)	3.0	CFTC	Jan-04	reporting false volume and price data of natural gas
Reliant Energy (Houston, TX)	18.0	CFTC	Nov-03	false reporting and attempted manipulation of natural gas prices
Shell (The Hague, Netherlands)	30.0	CFTC	Jul-04	Shell's Coral Energy subsidiary manipulated natural gas prices
Western Gas Resources (Denver)	7.0	CFTC	Jul-04	knowingly reported false natural gas price and volume info
Williams Cos (Tulsa, OK)	20.0	CFTC	Jul-03	Intentionally manipulating natural gas prices
Xcel (Minneapolis, MN)	16.0	CFTC	Jan-04	Xcel's subsidiary, e prime, manipulated natural gas prices
subtotal	**$ 1,950.1**			
Enforcement actions combining natural gas and power manipulation				
Duke Energy (Charlotte, NC)	$ 207.5	CA AG	Jul-04	power and natural gas manipulation
Duke Energy (Charlotte, NC)	2.5	FERC	Dec-03	manipulation of power and natural gas prices in the west coast energy market
Williams Cos (Tulsa, OK)	1,817.0	CA AG	Nov-02	violating the Unfair Competition Act by illegally pricing power & natural gas
Williams Cos (Tulsa, OK)	140.0	FERC	Jul-04	manipulation of power and natural gas prices in the west coast energy market
subtotal	$ 2,167.0			
grand total	**$ 4,117.1**			
Pending lawsuits alleging natural gas manipulation				
AEP (Columbus, OH)	-	CFTC	Sep-03	the CFTC sued AEP for 2,800 false natural gas trades and seeks $336 million
NRG (subsidiary of Xcel)	-	CFTC	Jul-04	The CFTC is suing NRG for manipulation of natural gas prices

SOURCE: Public Citizen's Energy Program www.citizen.org

Senator SMITH. Thank you very much.

Mr. Wilkinson?

STATEMENT OF PAUL WILKINSON, VICE PRESIDENT, POLICY ANALYSIS, AMERICAN GAS ASSOCIATION

Mr. WILKINSON. Good afternoon. I am Paul Wilkinson, Vice President of Policy Analysis at the American Gas Association.

Natural gas is a safe, reliable, clean energy source, and it remains the most economical form of residential home heating. AGA members want what our customers want: adequate supplies at reasonable prices.

Gas utilities do not profit from higher gas prices. They offer a delivery service, like UPS or FedEx. Higher prices only serve to reduce the demand for their service and also to increase their uncollectible accounts.

In terms of our outlook for the impending winter, we feel a bit better about the supply situation this year, but only marginally so. Well completions were up 23 percent in the first 8 months of this year, but production remains flat. The volume of gas in storage, which accounts for about 15 to 20 percent of our winter-season supply, is very strong. As of September 24, storage fields were already 90 percent full. We expect an increase in LNG imports this year of about 20 percent over 2003, but LNG still only provides 3 percent of our total supply.

The supply situation in Canada, from where we get about 13 percent of our gas, is similar to that in the U.S. Drilling activity is strong, although production is relatively flat, and storage levels are

well ahead of normal. Our imports of gas from Canada were down 2.6 percent for the first 6 months of 2004, but we expect them to be up slightly this winter, relative to last.

When you add all of these factors together, we think the gas supply situation is improving, but very slowly. In most of the 1980s and 1990s, we were in a situation of surplus deliverability; however, demand continues to increase more rapidly than supply, and there was no longer that flexibility in the market. Unfortunately, gas demand has the ability to move dramatically and quickly on the basis of weather and economic conditions. Because demand can change more rapidly than supply in the short run, we have seen a higher level of price volatility since 2000.

The early winter of 2000/2001 was the coldest on record, and gas prices spiked to over $10 per million Btu. But the 2000/2001 winter was not an anomaly. We have now seen significant price spikes in three of the past four winters.

In addition to this volatility, price levels have been significantly higher than they were historically. For example, well-head gas prices have been in the five to six dollar range for most of this year, in contrast to the two dollar equilibrium of the 1980s and 1990s. We believe prices will remain higher and more volatile until there is significant action on the supply side to improve the overall supply/demand balance.

Efforts to improve our gas supply must begin with a focus on production in the lower 48 states. Lower 48 production provides 84 percent of our gas today, and it will provide the lion's share of our gas for years to come. Unfortunately, lower 48 production continues to struggle. Many traditional producing areas are on the decline, and a migration to new areas is essential. Since gas demand is likely to increase by 40 percent by 2020, it is most disturbing that gas exploration and production is prohibited off the East Coast, off the West Coast of the U.S., in the eastern Gulf of Mexico, and throughout much of the inter-mountain West. We cannot continue to drill the same areas over and over again and expect increasing returns. Gas production technology and practices have changed dramatically over time, and gas production can be compatible with environmental protection.

Going beyond the lower 48, it is imperative that the vast resources of Alaskan gas, estimated at 250 trillion cubic feet, be made available to the market. Unfortunately, the magnitude and financial risk of the pipeline required has delayed it for many years. We strongly believe that Federal action to reduce the financial risk of this project is in the public interest.

Looking beyond our national borders, increased LNG imports are critical to the well-being of the gas industry and to gas customers. LNG is a proven, safe, and reliable form of gas supply, and it gives us access to 93 percent of the world's gas reserves that lie outside of North America. LNG can now be landed in the U.S. at a price well below current market levels, but no new receiving terminals have been built in the U.S. for many years. Thirty or forty new terminals have been discussed, a number have fallen to NIMBY concerns, a few are moving through the regulatory process, but no ground has yet been broken for a new terminal. It is likely that a

true easing of tight market conditions will not be accomplished until there are new LNG terminals operational.

I have spoken mostly about the supply side of the equation, but energy efficiency certainly has a role to play, as well. Our members firmly support and promote energy efficiency. But this is not new. Gas customers have become more and more efficiency-conscious over time. In fact, the average residential gas consumer consumed 22 percent less gas in 2001 than in 1980. This pattern of declining use per customer, attributable primarily to tighter homes and better appliances, has been very steady and very significant. It is not, however, the entire answer. In addition to their support of energy efficiency measures, natural gas utilities attempt to ease the burden of volatile prices on their customers through a variety of physical and financial mechanisms, such as gas storage, hedging, levelized billing, and long-term fixed-price contracts. But these measures are, at best, partial solutions. True relief will require substantive action on the supply side.

Finally, in light of our expectation of continued higher and more volatile prices, we stress the need for increased LIHEAP funding. Only about 15 percent of eligible recipients are receiving LIHEAP assistance, and we urge an increase in appropriations to $3.4 billion. We know the need for assistance is greater than ever, and we must respond to that need.

The winter heating season starts in less than 4 weeks. Gas utilities and their customers have had to deal with a very difficult market for 4 years now. We, at AGA, appreciate the opportunity to come here once again to stress the vital importance of congressional action on a long-term energy plan that emphasizes the benefits—to the consumer, the economy, and the environment—of increased natural gas supplies.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Wilkinson follows:]

PREPARED STATEMENT OF PAUL WILKINSON, VICE PRESIDENT, POLICY ANALYSIS, AMERICAN GAS ASSOCIATION

EXAMINING NATURAL GAS MARKETS—October 2004

Executive Summary

The American Gas Association represents 192 local energy utility companies that deliver natural gas to more than 53 million homes, businesses and industries throughout the United States. Natural gas meets one-fourth of the United States' energy needs and it is the fastest growing major energy source. As a result, adequate supplies of competitively priced natural gas are of critical importance to AGA and its member companies. Similarly, ample supplies of reasonably priced natural gas are of critical importance to the millions of consumers that AGA members serve. AGA speaks for those consumers as well as its member companies.

The key points of our testimony can be summarized as follows:

- Natural gas demand has been increasing more rapidly than supply and the resultant tight market has exhibited higher and more volatile gas prices.
- The short-term gas supply situation is better this year than last, but only marginally.
- Without aggressive action by government and private industry, this unstable situation will persist.
- Increasing our national gas supply is necessary for economic growth and consumer well-being, and it can be compatible with environmental protection.
- The Lower-48 has provided about 85 percent of the total U.S. gas supply in recent years. This percentage likely will decline over time, but it will continue to

provide the majority of our gas for the foreseeable future. Increasing or even maintaining current Lower-48 production levels without increased access is problematic.

- New sources of gas supply, including Alaska and imported liquefied natural gas (LNG), must account for a larger share of our gas supply portfolio in the future. The longer these sources are delayed, the longer U.S. consumers will face market instability.
- There are market mechanisms, such as hedging and long-term fixed price contracts, that can reduce price volatility to some extent and they should be encouraged. However, these measures do not solve the fundamental market imbalance.
- In light of the expectation of continued difficult market conditions, low-income consumers must be provided greater relief in the form of increased LIHEAP funding. Only 15 percent of eligible recipients currently receive LIHEAP funds, and the appropriation level should be increased to $3.4 billion.

The natural gas industry is at a critical crossroads. Natural gas prices were relatively low and very stable for most of the 1980s and 1990s. Wholesale natural gas prices during this period tended to fluctuate around $2 per million Btus (MMBtu). But the balance between supply and demand has been extremely tight since then, and even small changes in weather, economic activity or world energy trends have resulted in significant wholesale natural gas price fluctuations. Market conditions have changed significantly since the winter of 2000–2001. Today our industry no longer enjoys prodigious supply; rather, it treads a supply tightrope, bringing with it unpleasant and undesirable economic and political consequences—most importantly high prices and higher price volatility. Both consequences strain natural gas customers—residential, commercial, industrial and electricity generators.

Since the beginning of 2003, the circumstances in which our industry finds itself have become plainly evident through significantly higher natural gas prices. Natural gas prices have consistently hovered in the range of $5–6 per thousand cubic feet in most wellhead markets. In some areas where pipeline transportation constraints exist, prices have skyrocketed for short periods of time to $70 per thousand cubic feet. Simply put, natural gas prices are high, and the marketplace is predicting that they will stay high. At this point there is no debate among analysts as to this state of affairs.

As this committee well knows, energy is the lifeblood of our economy. More than 60 million Americans rely upon natural gas to heat their homes, and high prices are a serious drain on their pocketbooks. High, volatile natural gas prices also put America at a competitive disadvantage, cause plant closings, and idle workers. Directly or indirectly, natural gas is critical to every American.

The consensus of forecasters is that natural gas demand will increase steadily over the next two decades. This growth will occur because natural gas is the most environmentally friendly fossil fuel and is an economic, reliable, and homegrown source of energy. It is in the national interest that natural gas be available to serve the demands of the market. The Federal government must address these issues and take prompt and appropriate steps to ensure that the Nation has adequate supplies of natural gas at reasonable prices.

Many of the fields from which natural gas currently is being produced are mature. Over the last two decades, technological advances have greatly enhanced the ability to find natural gas as well as to produce the maximum amount possible from a field. While technology will undoubtedly continue to progress, technology alone will not be sufficient to maintain or increase our domestic production.

As Federal Reserve Chairman Alan Greenspan noted before the House Energy and Commerce Committee in 2003, today's tight natural gas markets have been a long time in coming but there are still numerous unexploited sources of gas in the United States. We are not running out of natural gas; we are not running out of places to look for natural gas; we are running out of places where we are *allowed* to look for gas. The truth we must confront now is that, as a matter of policy, this country has chosen *not* to develop much of its natural gas resource base.

Today and for the coming winter heating season the supply picture is improving. Underground storage is strong. Inventories exceed the prior 5-year average by more than six percent. On the domestic natural gas production front, our current view is that gas production is stabilizing given the high levels of drilling experienced in the last 18–24 months. But the longer-term faces many challenges.

Without prudent elimination of some current restrictions on U.S. natural gas production, producers will struggle to increase, or even maintain current production levels in the lower 48 states. This likely would expose 63 million homes, businesses, industries and electric-power generation plants that use natural gas to unnecessary

levels of price volatility—thus harming the U.S. economy and threatening America's standard of living.

If America's needs for energy are to be met, there is no choice other than for exploration and production activity to migrate into new, undeveloped areas. There is no question that the Nation's natural gas resource base is rich and diverse. It is simply a matter of taking E&P activity to the many areas where we know natural gas exists. Regrettably, many of these areas—largely on Federal lands—are either totally closed to exploration and development or are subject to so many restrictions that timely and economic development is not possible. As we contemplate taking these steps, it is important that all understand that the E&P business is—again as a result of technological improvements—enormously more environmentally friendly today than it was 25 years ago. In short, restrictions on land access that have been in place for many years need to be reevaluated if we are to address the Nation's current and future energy needs.

This year, like last year, the most important next step the entire Congress can take to address these pressing issues is to enact a comprehensive energy bill with provisions ensuring that lands where natural gas is believed to exist are available for environmentally sound exploration and development. Additionally, it is appropriate to create incentives to seek and produce this natural gas. These steps are necessary to help consumers and the economy.

Recommendations

To promote meeting consumer needs, economic vitality, and sound environmental stewardship, the American Gas Association urges Congress as follows:

- Current restrictions on access to new sources of natural gas supply must be reevaluated in light of technological improvements that have made natural gas exploration and production more environmentally sensitive.
- Federal and state officials must take the lead in overcoming the pervasive "not in my backyard" attitude toward energy infrastructure development, including gas production.
- Interagency activity directed specifically toward expediting environmental review and permitting of natural gas pipelines and drilling programs is necessary, and agencies must be held responsible for not meeting time stipulations on leases, lease review, and permitting procedures.
- Federal lands must continue to be leased for multi-purpose use, including oil and gas extraction and infrastructure construction.
- Both private and public entities should act to educate the public regarding energy matters, including energy efficiency and conservation. Federal and state agencies, with private sector support and involvement, should strive to educate the public on the relationship between energy, the environment, and the economy. That is, energy growth is necessary to support economic growth, and responsible energy growth is compatible with environmental protection.
- Economic viability must be considered along with environmental and technology standards in an effort to develop a "least impact" approach to exploration and development but not a "zero impact."
- The geologic conditions for oil and gas discovery exist in the U.S. mid-Atlantic area, the Pacific Offshore area, and the eastern portion of the Gulf of Mexico.
  - Although some prospects have been previously tested, new evaluations of Atlantic oil and gas potential should be completed using today's technology—in contrast to that of 20 to 30 years ago.
  - The Federal Government should facilitate this activity by lifting or modifying the current moratoria regarding drilling and other activities in the Atlantic Offshore, in the Pacific Offshore, and in the Gulf of Mexico to ensure that adequate geological and geophysical evaluations can be made, and that exploratory drilling can proceed.
  - The Federal Government must work with the states to assist—not impede—the process of moving natural gas supplies to nearby markets should gas resources be discovered in commercial quantities. Federal agencies and states must work together to ensure the quality of the environment, but they must also ensure that infrastructure (such as landing an offshore pipeline) is permitted and not held up by multi-jurisdictional roadblocks.
- The Federal Government should continue to permit royalty relief where appropriate to change the risk profile for companies trying to manage the technical and regulatory risks of operations in deepwater.

- Tax provisions such as percentage depletion, expensing geological and geophysical costs in the year incurred, Section 29 credits, and other credits encourage investment in drilling programs, and such provisions are often necessary, particularly in areas faced with increasing costs due to environmental and other stipulations.
- The Coastal Zone Management Act (CZMA) is being used in ways not originally intended to threaten or thwart offshore natural gas production and the pipeline infrastructure necessary to deliver natural gas to markets. Companies face this impediment even though leases to be developed may be 100 miles offshore. These impediments must be eliminated or at least managed within a context of making safe, secure delivery of natural gas to market a reality.
- The U.S. Government should work closely with Canadian and Mexican officials to address the challenges of supplying North America with competitively priced natural gas in an environmentally sound manner.
- Renewable forms of energy should play a greater role in meeting U.S. energy needs, but government officials and customers must realize that all forms of energy have environmental impacts.
- Construction of an Alaskan natural gas pipeline must begin as quickly as possible.
  - Construction of this pipeline is possible with acceptable levels of environmental impact.
  - The pipeline project would be the largest private sector investment in history, and it would pose a huge financial risk to project sponsors. Many believe the project may not be undertaken without some form of Federal support.
- The Federal Energy Regulatory Commission (FERC) announced in December of 2002 that it would not require LNG terminals to be "open access" (that is, common carriers) at the point where tankers offload LNG. This policy will spur LNG development because it reduces project uncertainty and risk.
  - Other Federal and state agencies should review any regulations that impede LNG projects and act similarly to reduce or eliminate these impediments.
  - The siting of LNG offloading terminals is generally the most time-consuming roadblock for new LNG projects. Federal agencies should take the lead in demonstrating the need for timely approval of proposed offloading terminals, and state officials must begin to view such projects as a means to satisfy supply and price concerns of residential, commercial and industrial customers.
  - Some new LNG facilities should be sited on Federal lands so that permitting processes can be expedited.
- Congress should increase LIHEAP funding. Low-income energy assistance is currently provided to roughly 4 million households, only 15 percent of those eligible. The financial burden on needy families certainly will increase this winter, and LIHEAP appropriations should be increased to $3.4 billion—up from $1.9 billion of total assistance in 2004.
- States should be encouraged to authorize local utilities to enter into fixed-price long-term contracts and/or natural gas hedging programs as a means of dampening the impact of natural gas price volatility upon consumers.

Written Statement

AGA is grateful for the opportunity to share its views on the critical importance to the Nation of ensuring ample natural gas supplies at competitive prices. Doing so is necessary for the nation—both to protect consumers and to address the energy and economic situations we currently face.

The American Gas Association represents 192 local energy utility companies that deliver natural gas to more than 53 million homes, businesses and industries throughout the United States. Natural gas meets one-fourth of the United States' energy needs and is the fastest growing major energy source.

AGA members are charged with the responsibility, under local law or regulation, of acquiring natural gas for the majority of their customers and delivering it in a safe and reliable manner. Having an ample supply of natural gas at reasonable prices is a critical issue for AGA and its members. AGA members and the natural gas consumers they serve share both an interest and a perspective on this subject.

It is important to understand that the bread-and-butter business of AGA members is acquiring and delivering natural gas to residential, commercial, and, in some cases, industrial and electric generation consumers across America. Our members remain economically viable by delivering natural gas to consumers at the lowest

reasonable price, which we do by operating our systems—over a million miles of distribution lines—as efficiently as possible. Exploring for and producing natural gas is the business of our energy-industry colleagues in oil and gas exploration companies, whether they are super-major, major, independent, or "Mom and Pop" operators. We do not speak for them, but their continued success in providing natural gas to America's consumers is of the utmost importance to us as well. AGA and its members stand in the shoes of consumers who want reasonable heating bills and good jobs.

AGA has three objectives in this statement: first, to explain briefly why natural gas prices have increased over the past several years; second, to describe the magnitude of the natural gas supply challenge facing this country over the next two decades; and third, to recommend a number of steps that Congress can take to help bring natural gas prices down in the long term.

AGA remains encouraged that Congress continues to address this critical issue. The House of Representatives and the Senate each passed a version of the Energy Policy Act of 2003. The House and Senate bills each contained a wide array of provisions designed to bring forth more of America's prodigious supply of natural gas to benefit consumers. Notwithstanding the inability of both houses to agree upon a comprehensive energy bill, AGA remains encouraged that Congress will address the issues surrounding the Nation's need for a secure supply of ample quantities of natural gas at reasonable prices.

Adequate natural gas supply is crucial to all of America for a number of reasons. It is imperative that the natural gas industry and the government work together to take significant action in the very near term to assure the continued economic growth, environmental protection, and national security of our Nation. The tumultuous events in energy markets over the last several years serve to underscore the importance of adequate and reliable supplies of reasonably priced natural gas to consumers, to the economy, and to national security.

There has been a crescendo of public policy discussion with regard to natural gas supply since the "Perfect Storm" winter of 2000–2001, when tight supplies of natural gas collided with record-cold weather to yield record natural gas home-heating bills. Nevertheless, over the course of the last year the volume and the tenor of this discussion have increased dramatically. Simply put, this issue continues to become more critical with every passing day.

For the past two years, natural gas has been trading in wellhead markets throughout the Nation at prices often floating between $5 and $6 per thousand cubic feet. This has not been a "price spike" of the sort that has occurred in times past, lasting several days or weeks. Rather, it has been sustained for nearly two years. Moreover, there is no sign that it will abate in the near future. Indeed, quotes for futures prices on NYMEX over the next several years have been consistent with these levels.

Over the last year or more, business consumers of natural gas have been raising a cry of concern over natural gas prices. This concern has touched businesses of all stripes. Since natural gas prices began rising in 2000, an estimated 78,000 jobs have been lost in the U.S. chemical industry, which is the Nation's largest industrial consumer of natural gas, both for generation of electricity at manufacturing plants and as a raw material for making medicine, plastics, fertilizer and other products used each day. Similarly, fertilizer plants, where natural gas can represent 80 percent of the cost structure, have closed one facility after another. Glass manufacturers, which also use large amounts of natural gas, have reported earnings falling by 50 percent 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.

Of course, when families pay hundreds of dollars more to heat their homes, they have hundreds of dollars less to spend on other things. Many families are forced to make difficult decisions between paying the gas bill, buying a new car, or saving for future college educations. There are, of course, state and Federal programs such as LIHEAP to assist the most needy. But LIHEAP only provides assistance to about 15 percent of those who are eligible, and it does not provide assistance to the average working family. These price increases have affected all families—those on fixed incomes, the working poor, lower-income groups, those living day to day, and those living comfortably.

America received its first wake-up call on natural gas supply in the winter of 2000–2001 when a confluence of events—a cold winter, a hot summer and a surging economy—created the so-called "perfect storm." This jump in demand sent natural gas prices soaring. Drilling boomed, supply grew (slightly), demand fell, and gas prices retreated—just what one would expect from a competitive, deregulated natural gas market. Falling natural gas prices predictably led to a slowdown in drilling. The industry drilled 30 percent fewer gas wells in 2002 than in 2001. This downturn

in drilling in 2002 set the stage for another run-up in prices in the 2002–2004 time frame.

Today and for the coming winter heating season the supply picture is improving. With higher wellhead prices, nearly 20,000 new gas wells were drilled in 2003 and will be drilled in 2004. Regarding domestic production, AGA's current view is that gas production is stabilizing given the high levels of drilling experienced in the last 18–24 months and may even increase slightly in 2004 over 2003. Many of the wells drilled have been in coal seams, tight sands and shales, adding to the contribution of unconventional sources of gas to the supply mix.

In addition, underground storage injections have been strong. By mid-September 2004, storage inventories were the second highest they have been in ten years even with the interruption of significant hurricane activity in the Gulf of Mexico. National storage volumes exceed the prior 5-year average by more than six percent, with the Producing Region over 11 percent greater than the five-year average.

However, the longer-term still faces many challenges. It is harmful to individual families and to the entire U.S. economy for natural gas price volatility to persist. Unless we make the proper public policy choices—and quickly—we will be facing many more difficult years with regard to natural gas prices. The natural gas industry is presently at a critical crossroads. The question before this body today is: What will that crossroads look like? Will it look like a brand new interstate highway? Or will it look like a 100-car collision on a Los Angeles freeway? It is important to remember that at the heart of this intersection are America's consumers.

For the past five years, natural gas production has operated full-tilt to meet consumer demand. The "surplus deliverability " or "gas bubble" of the late 1980s and 1990s is simply gone. No longer is demand met while unneeded production facilities sit idle. No longer can new demand be met by simply opening the valve a few turns. The valves have been, and presently are, wide open.

The supply tightrope has brought with it several inexorable and unpleasant consequences—prices in wholesale markets have risen dramatically, and that market has become much more volatile. During the 2000–2001 heating season, for example, gas prices moved from the $2 level to approximately $10 and back again to nearly $2. Such volatility hurts consumers, puts domestic industry at a competitive disadvantage, closes plants, and idles workers. The winter of 2000–2001 made it abundantly clear to natural gas utilities (and to legislators as well) that consumers dislike these price increases and the market volatility that has now become an everyday norm. Unless significant actions are taken on the supply side, gas markets will remain tumultuous, and 63 million gas customers will suffer the consequences. Today's recurrent $5 price levels appear to represent a regular, level of natural gas prices for the foreseeable future, although this prospect can be moderated somewhat with aggressive and enlightened public policy.

Gas utilities have in place a number of programs to insulate consumers, to some extent, from the full impact of wholesale price volatility. Nevertheless, consumers must ultimately pay the price that the market commands. There has been, and will be, considerable economic and political pushback from natural gas prices stabilizing at the current $5 level. That pushback can be expected to continue as the impacts of these price levels trickle through the economy. Energy prices are undoubtedly a factor in what some have called a "jobless" recovery from the last several years of economic malaise.

Some would suggest that current natural gas conditions are not the result of market fundamentals. Continued high and volatile natural gas prices have, for example, resulted in charges of market manipulation and calls for investigation. While AGA has not performed an independent evaluation regarding these assertions, others–including the CFTC, FERC and various analysts—have. These evaluations consistently identify supply and demand as the explanatory variables regarding natural gas prices. Certainly any substantiated market irregularities should be dealt with aggressively and with certainty. However, the burden of high and unpredictable natural gas prices on consumers will not be eased until we as a nation address the supply/demand imbalance in the natural gas market. It would be ill advised to embrace the notion that that aggressive investigation and law enforcement will remedy the underlying, fundamental imbalance in supply and demand.

The role of supply and demand in natural gas markets has been plainly evident over the last two years. Very cold weather in January and February of 2003 resulted in gas consumption that was 18 percent higher than the previous year. This strong demand resulted in aggressive natural gas storage withdrawals, and storage inventories were 50 percent below the five-year average at the end of the 2002–2003 winter. Despite concern that storage could not be refilled to adequate levels prior to the 2003–2004 winter, gas utilities injected gas at record levels in order to ensure winter reliability. In late December 2003, storage levels marginally exceeded the

five-year average, although much of this gas was purchased in periods of high prices and the need to refill storage contributed to market tightness. Natural gas prices fluctuated around $6 per thousand cubic feet for the first half of the year (with a spike over $9 during the February cold snap) declining to about $5 late in the year. For most of 2004, wellhead acquisition prices have remained above $5 dollars.

The primary reason for high and volatile natural gas prices is the tightness in the marketplace. While law enforcement agencies must continue to be alert for manipulative actions, Federal policy changes must lead the way in reducing this tightness. Not until we increase supply, reduce demand and streamline relevant energy regulations will 63 million gas consumers see more reasonably priced and more stable natural gas prices.

Moreover, the problem that we face today is not simply one of finding means to meet current demands in the market for natural gas. Rather, with a growing economy we are in a growing market, and the demand for natural gas in the U.S. is expected to increase steadily. Growth seems inevitable because natural gas is a clean, economic, and domestic source of available energy. It does not face the environmental hurdles of coal and nuclear energy, the economic and technological drawbacks of most renewable energy forms, or the national security problems associated with imported oil.

The U.S. natural gas market may grow by nearly 2 percent per year over the next twenty years. Much of this growth in natural gas demand will occur as a result of power generation needs. In fact, the U.S. now has two hundred thousand megawatts of new gas-fired power plants on line that did not exist in the summer of 1999—the equivalent of several scores of Diablo Canyon nuclear power plants.

If the market was to grow by 2 percent per year, gas supply would need to increase, in terms of average daily supply, from about 60 billion cubic feet per day today to about 95 billion cubic feet per day in 2025—a 35 billion-cubic-foot-per-day increase in deliverability. (To place this potential increase in perspective, current production from the entire Gulf of Mexico is only about 14 billion cubic feet per day, and imports from Canada are about 10 billion cubic feet per day.)

The challenge for both government and industry is quite straightforward: to ensure that both the current and future needs for natural gas are met at reasonable and economic prices. There is no question that facilitating this result is sound public policy. Natural gas is abundant domestically and is the environmentally friendly fuel of choice. Ensuring adequate natural gas supply will lead to reasonable prices for consumers, will dampen the unacceptable volatility of wholesale natural gas markets, will help keep the economy growing, and will help protect the environment.

America has a large and diverse natural gas resource; producing it, however, can be a challenge. Providing the natural gas that the economy requires will necessitate: (1) providing incentives to bring the plentiful reserves of North American natural gas to production and, hence, to market; (2) making available for exploration and production the lands—particularly Federal lands—where natural gas is already known to exist so gas can be produced on an economic and timely basis; (3) ensuring that the new infrastructure that will be needed to serve the market is in place in a timely and economic fashion.

Natural gas—our cleanest fossil fuel—is found in abundance throughout both North America and the world. It currently meets one-fourth of the United States' energy needs. Unlike oil, about 99 percent of the natural gas supplied to U.S. consumers originates in the United States or Canada.

The estimated natural gas resource base in the U.S. has actually increased over the last several decades. In fact, we now believe that we have *more* natural gas resources in the U.S. than we estimated twenty years ago, notwithstanding the production of approximately 300 trillion cubic feet of gas in the interim. This is true, in part, because new sources of gas, such as coalbed methane, have become an important part of the resource base. Nonetheless, having the natural gas resource is not the same as making natural gas available to consumers. That requires natural gas production.

Natural gas production is sustained and grows only by drilling in currently productive areas or by exploring in new areas. Over the past two decades a number of technological revolutions have swept across the industry. We are able today to drill for gas with dramatically greater success and with a significantly reduced environmental impact than we were able to do twenty years ago. We are also much more efficient in producing the maximum amount of natural gas from a given area of land. A host of technological advances allows producers to identify and extract natural gas deeper, smarter, and more efficiently. For example, the drilling success rate for wells deeper than 15,000 feet has improved from 53 percent in 1988 to over 82

percent today. In addition, gas trapped in coal seams, tight sands, or shale is no longer out of reach, and today it provides a major source of supply.

While further improvements in this regard can be expected, they will not be sufficient to meet growing demand unless they are coupled with other measures. Regrettably, technology alone cannot indefinitely extend the production life of mature producing areas. New areas and sources of gas will be necessary.

Notwithstanding the dramatic impact of innovation upon the natural gas business, the inevitable fact today is that we have reached a point of rapidly diminishing returns with many existing natural gas fields. This is almost entirely a product of the laws of petroleum geology. The first ten wells in a field may ultimately produce 60 percent of the gas in that field; yet it may take forty more wells to produce the balance. In many of the natural gas fields in America today, we are long past those first ten wells and are well into those forty wells in the field. In other words, the low-hanging fruit have already been picked in the orchards that are open for business.

Drilling activity in the U.S. has moved over time, from onshore Kansas, Oklahoma and Arkansas to offshore Texas and Louisiana, and then to the Rocky Mountains. Historically, we have been quite dependent on fields in the Gulf of Mexico. But recent production declines in the shallow waters of the Gulf of Mexico have necessitated migration of activity to deeper waters to offset this decline. These newer, more expensive, deepwater fields tend to have short lives and significantly more rapid rates of decline in production than onshore wells.

The sobering reality is that America's producers are drilling more wells today than they were five years ago. Nevertheless, domestic supply is struggling to be sustained. U.S. gas producers are on an accelerating treadmill, running harder just trying to stay in place. For reasons that are partly due to technology, and partly due to the maturing of the *accessible* natural gas resource base, a typical well drilled today will decline at a faster rate than a typical well drilled a decade ago. Moreover, because up to half of this country's current natural gas supply is coming from wells that have been drilled in the past five years, this decline trend is likely to continue.

Before we can meet growing gas demand, we must first replace the perennial decline in production. The U.S. natural gas decline rate will be in the range of 26–28 percent this year. In practical terms, if all drilling stopped today, in twelve months U.S. natural gas production would be 26–28 percent lower than it is today. The accelerating decline rate helps explain why U.S. gas deliverability has been stuck in the 52–54 billion cubic feet per day range for the past eight years, notwithstanding an increase in gas-directed drilling.

In short, America's natural gas fields are mature—in fact many are well into their golden years. There is no new technology on the horizon that will permit us to pull a rabbit out of a hat in these fields. These simple, and incontrovertible, facts explain why we are today walking a supply tightrope. High and volatile natural gas prices have become the norm and will become increasingly accentuated as the economy returns to its full vigor. There is no question that high and volatile natural gas prices are putting a brake on the economy, once again causing lost output, idle productive capacity, and lost jobs.

If we are to continue to meet the energy demands of America and its citizens and if we are to meet the demands that will they make upon us in the next two decades, we must change course. It will not be enough to make a slight adjustment or to wait three or four more years to make necessary policy changes. Rather, we must change course entirely, and we must do it in the very near future. Lead times are long in our business, and meeting demand years down the road requires that we begin work today.

We have several reasonable and practical options. It is clear that continuing to do what we have been doing is simply not enough. In the longer term we have a number of options:

***First**, and most importantly, we must work to sustain and increase natural gas production by looking to new frontiers within the United States.* Further growth in production from this resource base is jeopardized by limitations currently placed on access to it. For example, most of the gas resource base off the East and West Coasts of the U.S. and the Eastern Gulf of Mexico is currently closed to any exploration and production activity. Moreover, access to large portions of the Rocky Mountains is severely restricted. The potential for increased production of natural gas is severely constrained so long as these restrictions remain in place.

To be direct, 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. The truth that must be confronted now is that, as a matter of policy, this country has chosen *not* to develop much of its natural gas resource

base. We doubt that that many of the 63 million American households that depend on natural gas for heat are aware that this choice has been made on their behalf.

In this vein, the Rocky Mountain region is expected to be a growing supplier of natural gas, but only if access to key prospects is not unduly impeded by stipulations and restrictions. Two separate studies by the National Petroleum Council and the U.S. Department of the Interior reached a similar conclusion—that nearly 40 percent of the gas resource base in the Rockies is restricted from development, in some cases partially and in some cases totally. On this issue, the Department of the Interior noted that there are nearly 1,000 different stipulations that can impede resource development on Federal lands.

One of the most significant new gas discoveries in North America in the past ten years is located just north of the US/Canada border in eastern Canadian coastal waters on the Scotian shelf. Natural gas discoveries have been made at Sable Island and Deep Panuke. Gas production from Sable Island already serves Canada's Maritimes Provinces and New England through an offshore and land-based pipeline system. This has been done with positive economic benefits to the region and without environmental degradation. This experience provides an important example for the United States, where we believe that the offshore Atlantic area has a similar geology.

In some areas we appear to be marching backward. The buy-back of Federal leases where discoveries had already been made in the Destin Dome area (offshore Florida) of the eastern Gulf of Mexico was a serious step backward in terms of satisfying consumer gas demand. This action was contrary to what needs to be done to meet America's energy needs. With Destin Dome we did not come full about, as we need to do; rather, we ran from the storm.

Geographic expansion of gas exploration and drilling activity has for the entirety of the last century been essential to sustaining growth in natural gas production. Future migration, to new frontiers and to new fields, in both the U.S. and Canada, will also be critical. Without production from geographic areas that are currently subject to access restrictions, it is not at all likely that producers will be able to continue to provide increased amounts of natural gas from the lower-48 states to customers for longer than 10 or 15 years. We believe that the same is true in Canada as well.

Quite simply, we do not believe that there is any way, other than exploring for natural gas in new geographic areas, to meet America's anticipated demand for natural gas unless we turn increasingly to sources located outside North America.

In the middle of the 20th century, when the postwar economy had begun its half-century climb and when natural gas became the fuel of choice in America, our colleagues in the producing business opened one new natural gas field after another in the mid-continent. In this era, it was not that difficult to produce a triple or a home run virtually every inning. As those fields developed, producers continued to hit a regular pattern of singles and doubles, with the occasional triple or home run in new discovery areas. This same pattern in the mid-continent was repeated in the Gulf of Mexico. Today, however, it is extremely difficult to find the new, open areas where the producing community can continue to hit the ball. As things are today, America has confined them to a playing field where only bunts are permitted. The Yankees did not get to the World Series playing that kind of game.

AGA does not advance this thesis lightly. Over the past several years both the American Gas Association and the American Gas Foundation have studied this important issue vigorously. We have believed for several years that it is necessary for policy makers to embrace this thesis so that natural gas can continue to be—as it has been for nearly a century—a safe and reliable form of energy that is America's best energy value and its most environmentally benign fossil fuel. We think that events in gas market in 2003–2004 underscore that our concerns have been on the mark.

When the first energy shock transpired in the early 1970s, the Nation learned, quite painfully, the price of dependence upon foreign sources of crude oil. We also learned, through long gasoline lines and shuttered factories, that energy is the lifeblood of our economy. Nevertheless, thirty years later we are even more dependent upon foreign oil than we were in 1970. Regrettably, the Nation has since failed to make the policy choices that would have brought us freedom from undue dependence on foreign-source energy supplies. We hope that the Nation can reflect upon that thirty-year experience and today make the correct policy choices with regard to its future natural gas supply. We can blame some of the past energy problems on a lack of foresight, understanding, and experience. We will not be permitted to do so again.

Meeting our Nation's ever-increasing demand for energy has an impact on the environment, regardless of the energy source. The challenge, therefore, is to balance

these competing policy objectives realistically. Even with dramatic improvements in the efficient use of energy, U.S. energy demand has increased more than 25 percent since 1973, and significant continued growth is almost certain. Satisfying this energy demand will continue to affect air, land, and water. A great American success story is that, with but five percent of the world's population, we produce nearly one-third of the planet's economic output. Energy is an essential—indeed critical—input for that success story both to continue and to grow.

It is imperative that energy needs be balanced with environmental impacts and that this evaluation be complete and up-to-date. There is no doubt that growing usage of natural gas harmonizes both objectives. Finding and producing natural gas is accomplished today through sophisticated technologies and methodologies that are cleaner, more efficient, and much more environmentally sound than those used in the 1970s. It is unfortunate that many restrictions on natural gas production have simply not taken account of the important technological developments of the preceding thirty years. The result has been policies that deter and forestall increased usage of natural gas, which is, after all, the Nation's most environmentally benign and cost-effective energy source.

Natural gas consumers enjoyed stable prices from the mid-1980s to 2000, with prices that actually fell when adjusted for inflation. Today, however, the balance between supply and demand has become extremely tight, creating the tightrope effect. Even small changes in weather, economic activity, or world energy trends result in wholesale natural gas price fluctuations. We saw this most dramatically in the winters of 2000–2001, 2002–2003, and 2003–2004. Most analysts believe that we will continue to see it on a longer-term basis.

In the 1980s and 1990s, when the wholesale (wellhead) price of traditional natural gas sources was around $2 per million British thermal units, natural gas from deep waters and Alaska, as well as LNG, may not have been price competitive. However, most analysts suggest that these sources are competitive when gas is in a $3.00 to $4.00 price environment. Increased volumes of natural gas from a wider mix of sources will be vital to meeting consumer demand and to ensuring that natural gas remains affordable.

Increasing natural gas supplies will boost economic development and will promote environmental protection, while achieving the critical goal of ensuring more stable prices for natural gas customers. Most importantly, increasing natural gas supplies will give customers—ours and yours—what they seek: reasonable prices, greater price stability, and fuel for our vibrant economy. On the other hand, without policy changes with regard to natural gas supply, as well as expansion of production, pipeline and local delivery infrastructure for natural gas, the natural gas industry will have difficulty meeting the anticipated 40 percent increase in market demand. Price increases, price volatility, and a brake on the economy will be inevitable.

Second, *we need to increase our focus on non-traditional sources, such as liquefied natural gas (LNG).* Reliance upon LNG has been modest to date, but it is clear that increases will be necessary to meet growing market demand. Today, roughly 97 percent of U.S. gas supply comes from traditional land-based and offshore supply areas in North America. Despite this fact, during the next two decades, non-traditional supply sources such as LNG will likely account for a significantly larger share of the supply mix. LNG has become increasingly economic. It is a commonly used worldwide technology that allows natural gas produced in one part of the world to be liquefied through a chilling process, transported via tanker, and then re-gasified and injected into the pipeline system of the receiving country. Although LNG currently supplies less than 3 percent of the gas consumed in the U.S., it represents 100 percent of the gas consumed in Japan.

LNG has proven to be safe, economical and consistent with environmental quality. Due to constraints on other forms of gas supply and increasingly favorable LNG economics, LNG is likely to be a more significant contributor to U.S. gas markets in the future. It will certainly not be as large a contributor as imported oil (nearly 60 percent of U.S. oil consumption), but it could account for 15–20 percent of domestic gas consumption 15–20 years from now if pursued aggressively and if impediments are reduced.

It is unlikely that LNG can solve the entirety of our problem. A score of new LNG import terminals have been proposed, some with capacities in excess of 2.5 billion cubic feet per day. However, given the intense "not on our beach" opposition to siting new LNG terminals, a major supply impact from LNG may be a tall order indeed.

Third, *we must tap the huge potential of Alaska.* Alaska is estimated to contain more than 250 trillion cubic feet of natural gas—enough by itself to satisfy U.S. gas demand for more than a decade. Authorizations were granted twenty-five years ago to move gas from the North Slope to the Lower-48, yet no gas is flowing today nor

is any transportation system under construction. Indeed, every day the North Slope produces approximately 8 billion cubic feet of natural gas that is reinjected because it has no way to market. Alaskan gas has the potential to be the single largest source of price and price volatility relief for U.S. gas consumers. Deliveries from the North Slope would not only put downward pressure on gas prices, but they would also spur the development of other gas sources in the state as well as in northern Canada.

Fourth, *we can look to our neighbors to the north.* Canadian gas supply has grown dramatically over the last decade in terms of the portion of the U.S. market that it has captured. At present, Canada supplies approximately 14 percent of the United States' needs. We should continue to rely upon Canadian gas, but it may not be realistic to expect the U.S. market share for Canadian gas to continue to grow as it has in the past or to rely upon Canadian new frontier gas to meet the bulk of the increased demand that lies ahead for the United States.

The pipelines under consideration today from the Prudhoe Bay area of Alaska and the Mackenzie Delta area of Canada are at least 5–10 years from reality. They are certainly facilities that will be necessary to broaden our national gas supply portfolio. We must recognize, however, that together they might eventually deliver up to 8 billion cubic feet per day to the lower 48 States–less than 10 percent of the natural gas envisioned for the 2025 market.

There is much talk today of the need for LNG, Alaska gas, and Canadian gas. There is no question that we need to pursue those supplies to meet both our current and future needs. Nonetheless, it is equally clear that, in order to meet the needs of the continental United States, we will need to continue to look to the lower 48 States.

Senator LAUTENBERG. I have a question. Will the record be kept open for questions and——

Senator SMITH. We will keep it open, Senator.

Senator LAUTENBERG.—for written questions? I have to go.

Senator SMITH. OK, You've got to go.

Senator LAUTENBERG. Yes.

Senator SMITH. OK, you bet.

Mr. Wilkinson, for the audience and anyone who may be interested in this—LNG, liquid natural gas, that is produced just by cooling the natural gas to condense it.

Mr. WILKINSON. That's correct.

Senator SMITH. And it's warmed, and, therefore, turned back into a gas when utilized.

Mr. WILKINSON. That's correct.

Senator SMITH. Where is most of it produced now?

Mr. WILKINSON. There are natural gas fields all over the world. The Mideast and the former Soviet Union are the two largest——

Senator SMITH. But the LNG——

Mr. WILKINSON.—sources in reserve.

Senator SMITH.—condensing factories——

Mr. WILKINSON. Excuse me?

Senator SMITH. The LNG factories that condense——

Mr. WILKINSON. The facilities are in the Mid-East, are in Trinidad and Tobago. They're in Australia. They're even in Norway.

Senator SMITH. And that process and shipment here can be done at a price much lower than the current natural gas——

Mr. WILKINSON. Yes.

Senator SMITH.—that people have utilized through pipelines.

Mr. WILKINSON. Yes. That's a—the price spike that we've seen in three of the past 4 years—we've seen a $10 spike, a $9 spike, and about a seven-fifty spike in 3 of the past 4 years. Those were the peaks.

Senator SMITH. Now, the reason why——

Mr. WILKINSON. Natural gas can be delivered to this country, estimated at $3.50 to $4 per million Btu.

Senator SMITH. Now, the reason why we can't get it here, literally, is, there's no places to receive it. There are——

Mr. WILKINSON. That's right.

Senator SMITH.—lots of things on the drawing boards. What's the impediment to building the receiving areas? Is it regarded as incredibly dangerous or environmentally sensitive to the point where people are just opposed?

Mr. WILKINSON. I think the primary impediment is a lack of understanding. People fear what they don't understand. There are natural—liquified natural gas has been shipped worldwide for half a century. There have been almost no incidents of significance in that 50-year timeframe. Japan gets virtually 100 percent of its natural gas in the form of LNG. There's never been a significant action in Japan.

Senator SMITH. Why can't we produce—if it's produced in the Middle East, why can't we produce LNG from our natural gas here?

Mr. WILKINSON. LNG is no different than natural gas.

Senator SMITH. Right.

Mr. WILKINSON. We produce natural gas here. We could liquify it, but that wouldn't do us any good.

Senator SMITH. It wouldn't do us any good because we have the pipeline——

Mr. WILKINSON. Because we consume it——

Senator SMITH.—infrastructure.

Mr. WILKINSON.—here. Well, we need to consume—well, it—there's an additional cost to LNG. You don't——

Senator SMITH. Right.

Mr. WILKINSON.—you don't want to liquify it and then regasify it, and——

Senator SMITH. Exactly.

Mr. WILKINSON.—then put it in your pipeline system.

Senator SMITH. Exactly.

Mr. WILKINSON. That would just be an added cost.

Senator SMITH. But it is interesting that it can be done in the Middle East and brought here for less than the cost of natural gas in our pipelines.

Mr. WILKINSON. That's correct.

Senator SMITH. That shows you how bizarre—to Mrs. Hauter's point—how high these prices have spiked.

Mr. WILKINSON. Well, I think it gets more to the point that—as I've pointed out, we have huge gas resources in this country, but you cannot drill for gas in many of the places that we have those resources. We have 250 trillion cubic feet in Alaska. We can't do any of that. We can't drill off the East or the West Coast. We can't drill in the Gulf of—Eastern Gulf of Mexico. We can't drill in much of the Rocky Mountains.

Senator SMITH. Would it make sense to do LNG in Alaska, as opposed to——

Mr. WILKINSON. That has been proposed. In fact, that was proposed 30 years ago, when the first pipeline discussions were seriously made 30 years ago. It was determined, at that time, that the

pipeline route was the more economical alternative. And I think most people feel that it is more economical to move that gas by pipe. It could be done by LNG, by shipping it. You could ship it by pipe, parallel to the oil pipeline down to Valdez, and then liquify it and send it probably to the West Coast of the U.S.

Senator SMITH. There are hundreds of small LNG storage facilities in this country that are receiving, but——

Mr. WILKINSON. That's correct.

Senator SMITH.—storing. And do they have a good safety record?

Mr. WILKINSON. They have an exemplary safety record.

Senator SMITH. Gary, the National Association of Manufacturers estimated how many U.S. manufacturing jobs have been lost due to high cost of natural gas? Do you have any kind of figure like that?

Mr. HUSS. I'm sorry, I don't. I don't have that number.

Senator SMITH. Where are your main foreign competitors located in your industry?

Mr. HUSS. It has been the Asian countries. It's—with China growing, you know, very much so. In today's markets, many manufacturers are going to China, not only to manufacture over there on behalf of China, but they're also doing it because of the lower cost. They are probably the largest concern of manufacturing right now.

Senator SMITH. And how are they getting their natural gas, to compete with you?

Mr. HUSS. Many of the furnaces over there run with electricity. And then natural gas has—I don't know if they—and you may be able to answer it better than I—I'm not sure if they have the pipeline infrastructure yet which is necessary for the natural gas.

As far as the heating industry, the heat-treating industry, it is not growing as greatly over in China as the manufacturing itself is. Heat treating is, kind of, a sidelight, like the plating industry or something like that, which is not—it's necessary, as far as the manufacturing process, but usually comes a little bit after-the-fact, after the manufacturers are there in the first place.

Senator SMITH. But you—I would assume, as a manufacturing—energy costs are probably at least a third of your costs. Would that be accurate?

Mr. HUSS. I would say closer to 20 to 25 percent.

Senator SMITH. Twenty to 25 percent. And how does that compare with your competitors in China? Do you have a sense of that?

Mr. HUSS. No. That, I don't know.

Senator SMITH. Wenonah, I was the lone Republican to join with Senator Feinstein in calling for many things you identified, in terms of the West Coast energy markets; specifically, getting FERC to step up to their authorities that I believe are existing. I'm a real free-marketer, but I felt like the California energy crisis had nothing to do with the free market. It was, at best, a broken market; at worst, a rigged market. And I fear more rigged and certainly broken.

But I wonder, does Public Citizen think that new supplies don't need to be developed in the coming decades or are you okay with developing more supplies? Because I think that—at least my perception was, part of it was a broken regulatory system in Cali-

fornia, but also was an increasing demand and a supply that had been choked off from expanding.

Ms. HAUTER. Well, I think that we believe, before we drastically seek new supplies, and so so in very delicate areas where there could be lasting environmental damage, that we need to explore all of the avenues for being more energy efficient, and that we just haven't done what needs to be done to make our homes more efficient, our office buildings more efficient; simple things like double-pane glasses and—for office buildings. And those things need to be approached very seriously.

Of course we will always need to find more supplies. But to simply say it's a supply problem, I think, is the easy way out. And I know that since the natural gas market has been deregulated, we were promised lower prices, fewer problems with supply. And, instead, we've seen increasing volatility. And when you look at a chart from between 1989 and today, prices have just continued to go up. So I think that we need to look below the surface at some of the underlying causes.

Senator SMITH. Just for my own recollection, I think the numbers I heard you state in your testimony had to do with the market that existed from the mid 1990s to the year 2000. But the California energy spikes were in 2001, were they not?

Ms. HAUTER. Right. The number that I used, the 245 percent, was between 1999 and 2001. If you look between 1999 and today, it's 155 percent increase in pricing.

Senator SMITH. OK. Did consumers benefit, Wenonah, from your—in your view, from the restructured natural gas market in the 1990s, when prices were stable?

Ms. HAUTER. Prices were stable for a while. But with the futures trading and the deregulation that occurred in the early 1990s, I think that the benefits that were gained have been lost.

Senator SMITH. Well, we have, clearly, a very real problem in our country. I think your testimony really does speak to it. On the one hand, we want to grow our economy, we want jobs. And those jobs are dependent upon energy first. If you don't have energy, you can't increase your employment, can you, Gary?

Mr. HUSS. No, it's very difficult.

Senator SMITH. And you've got to have competitive energy. And so if everybody's clammering for jobs, clearly we need to do more on both sides of the equation, conservation and production. You just have to—you have to produce more. The question is whether—Which one comes first? And that is really what we're debating, I suppose, in Congress, when we ought to have an energy bill this Congress; we don't, because there seems to be just a real gridlock of feelings as to which one should come first. One side wants all conservation, the other side wants all production, or at least a priority for those.

But that's why we have a democracy. And we've got an election coming up, and who knows how it'll turn out. But I come down on the side of: We need both, we've got to do both. And we can't be shy about it, because if we don't figure out how to conserve more, we're going to continue our dependence upon foreign sources too much, and that affects our national security, not just our energy security. But if we're so hamstrung here from utilizing our re-

sources in ways that are renewable, sensitive to the environment, then we will forever be dependent upon foreign places. And that is bad policy, too.

So that's the balance we're weighing, and you all have helped us understand more what we're facing. I thank you all.

Do any of you all have a closing comment you would like to make?

[No response.]

Senator SMITH. If not, we're grateful. We got this in before the vote started. I was worried about that, but we've done it. We thank you for your time, your testimony, and your participation.

We're adjourned.

[Whereupon, at 3:50 p.m., the hearing was adjourned.]

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