

**STATEMENT OF  
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BEFORE THE  
COMMITTEE ON ENERGY AND NATURAL RESOURCES  
U.S. SENATE  
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Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the views of the Energy Information Administration (EIA) on natural gas supply and demand.

EIA is an 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 use of the Energy Department, other agencies, the 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 decide energy policy. Because we have an element of statutory independence with respect to the analyses that we publish, our views are strictly those of EIA. We do not speak for the Department, nor for any particular point of view with respect to energy policy, and our views should not be construed as representing those of the Department or the Administration.

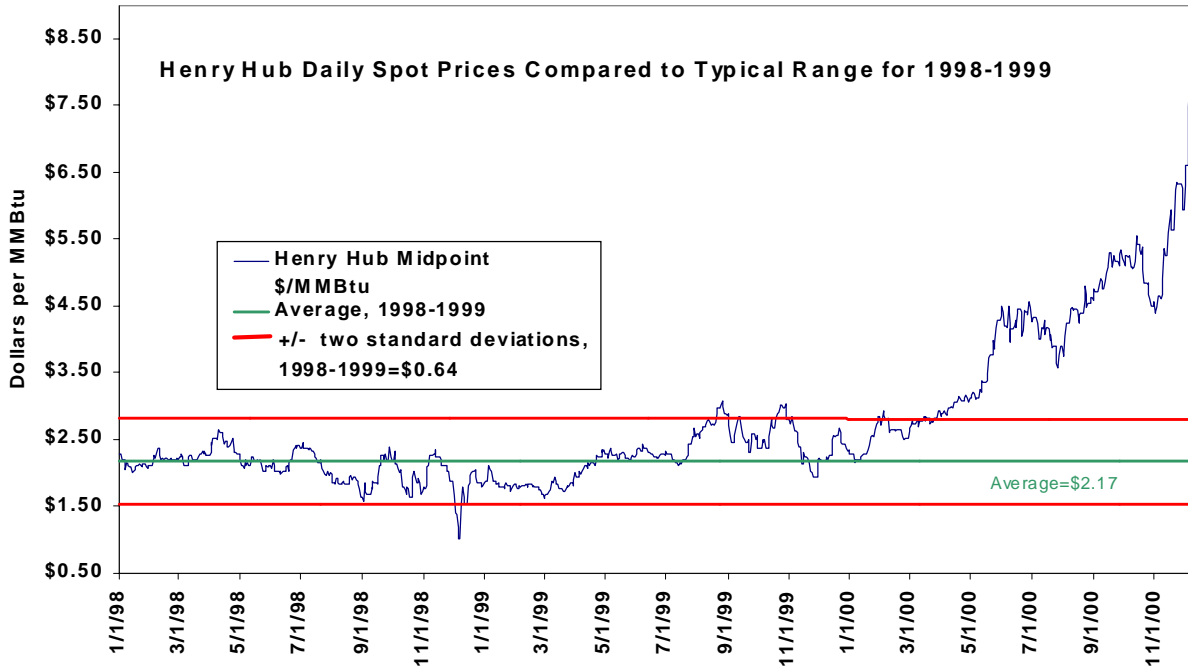
Today, we will focus on the recent surge in natural gas prices, discussing some of the potential reasons for this rapid price movement. We also will consider what this price increase means for American consumers of natural gas and how we expect markets to respond to this runup in prices.

Since late May 2000, spot wellhead prices generally have been above \$4 per MMBtu (million Btu) at the Henry Hub. For most of September through early December, these prices have been above \$5 per MMBtu, more than double the price of one year ago, and recently spot prices approached \$9 per MMBtu. Spot gas prices for the past 8 months therefore have consistently exceeded the normal range exhibited in 1998 and 1999, which generally was below \$3 per MMBtu (Figure 1).

In late November, gas spot prices surged past \$6 per MMBtu, reaching \$8.86 per MMBtu on December 6, 2000. Although spot prices at certain cash markets have been at comparable levels in the past, the present experience is unusual in that gas prices previously had not remained this high for a sustained period of time.

In addition to higher prices nationally, California has been experiencing particularly high natural gas spot prices (more than four times as high as recent national averages). High demand for gas-fired

**Figure 1. Current Natural Gas Prices: Well Above the Recent Price Range**

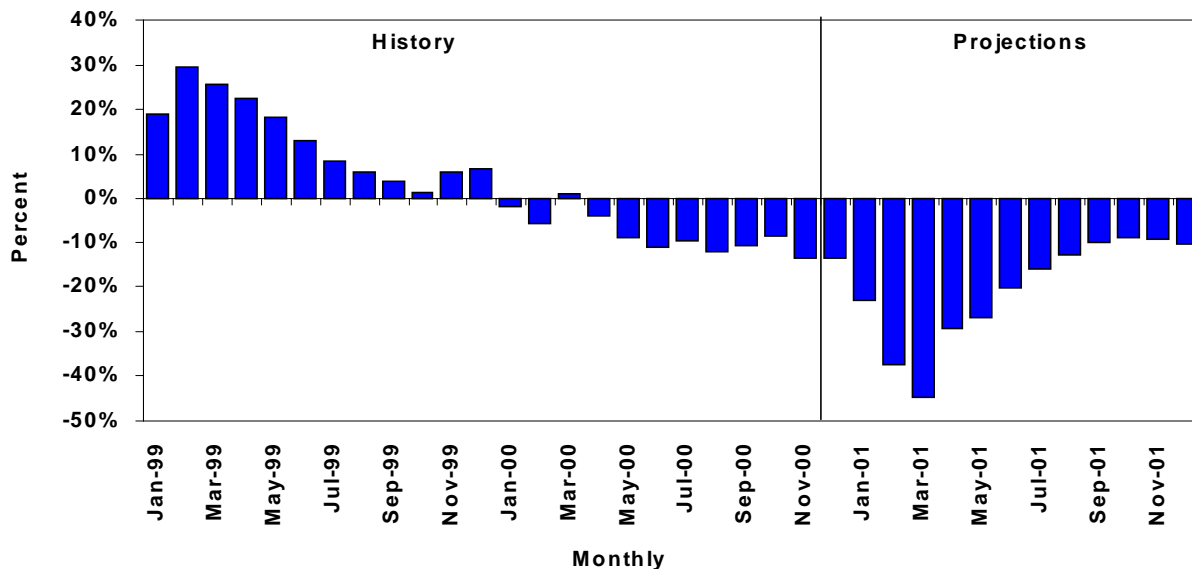


Source: *Gas Daily*

electricity generation and for heating, coupled with low storage levels and low hydro and nuclear generation output, have severely strained the system in that State. Available supplies of gas from outside the State to meet strong gas demand are limited due to lingering operational difficulties along the El Paso system entering southern California, and the lack of available capacity along pipeline routes from the Canadian border in the State of Washington and from the Rocky Mountain producing areas. The El Paso system is constrained below normal flow levels while it is recovering from the pipeline rupture in August. The limited spare capacity into California elsewhere is because these systems typically have run at high rates of utilization.

Recent surges in natural gas demand underscore the importance of gas in storage as part of the U.S. supply picture. The American Gas Association (AGA) estimated net withdrawals at 73 Bcf for the week ended Friday, December 1. Based on these withdrawals, nationwide natural gas inventories are at an EIA-estimated 2,414 Bcf, which is 394 bcf or 14 percent below EIA's average of 2,808 Bcf for this point during the previous 5 years (1995-1999) (Figure 2). While this withdrawal estimate

**Figure 2. U.S. Working Gas in Storage  
(Percent Difference from Previous 5-year Average)**



Sources: History: EIA; Projections: *Short-Term Energy Outlook*, December 2000.



is half the amount from the previous week, it is nonetheless relatively large for this point in the year. It was driven largely by the heavy gas-consuming East region, where estimated withdrawals were 57 Bcf—the second largest draw for that region in this particular week of the heating season over the past 5 years. As of December 1, East region stocks were 7.3 percent below the 5-year average (1,714 Bcf), while the 254 and 571 Bcf in the West region and the producing region stocks are 31 and 21 percent below normal.

EIA expects that high and volatile gas prices will prevail until significantly more gas supplies enter the market, although the likelihood of that in the near future is not high. Natural gas consumption this winter (October 2000 through March 2001) is expected to be 5.9 percent greater than last winter's level, assuming normal temperatures in the remainder of the season. Normal weather implies an 11 percent rise in gas-weighted heating degree-days compared with last winter, which was much warmer than normal. Under normal weather assumptions, estimated residential and commercial sector consumption would be up by around 10 percent over the same period last year. Natural gas

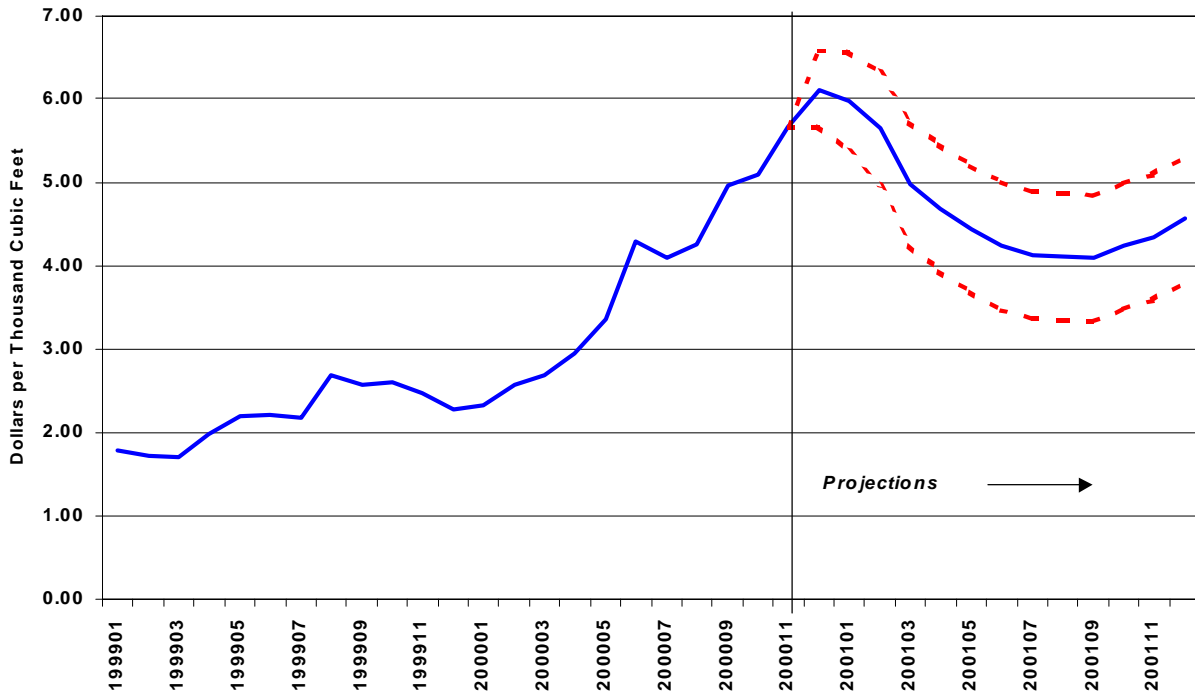
demand in the industrial sector is expected to increase by 7.4 percent in 2000, with gas-fired electricity generation by merchant plants and cogenerators combined expected to be up by 18.6 percent. Electric utility gas demand is expected to remain about level with consumption rates seen in 2000. This distinction is due in part to sales of electric generating plants by electric utilities to unregulated generating companies, fuel consumption that currently is recorded by EIA in the industrial sector.

During the winter months, net imports of natural gas are about 10 percent higher than during the rest of the year and usually increase to full pipeline capacity. While it is unlikely that export capacity will be fully utilized this winter, EIA expects net imports to rise by 7.3 percent over last winter's imports. The Alliance Pipeline began carrying gas from western Canada to the Midwest on December 1. Even if Alliance is near capacity at mid winter, it is highly likely that a substantial portion of the volumes contracted for delivery on the system will have been redirected from other systems, particularly the TransCanada Pipeline System. Thus, the Alliance pipeline may not add significantly to total gas supply from Canada this winter.

Assuming normal weather for the remainder of the heating season, EIA is projecting that natural gas prices at the wellhead this winter (October-March) will average about \$5.60 per thousand cubic feet, more than double the price of last winter (Figure 3). Cold weather for prolonged periods this winter would strain supplies and could result in even higher spot prices. Given the recent variability in the natural gas spot market, spot prices of natural gas are likely to hit or breach the upper level of the uncertainty bands of the forecast (shown as dotted lines in Figure 3) if the cold weather in the gas consuming regions of the country turns out to be unexpectedly severe. On the other hand, the market experience in October shows that spot gas prices could still plunge sharply if the weather turns warm for any lengthy period of time in the gas consuming regions. In addition to expected supply and demand conditions this winter, continued increases in natural gas demand from new gas generating plants next year will probably prolong the much-above-normal price environment through 2001, even if further gains in U.S. and Canadian production materializes for 2001, which EIA anticipates.

In 2001, utility gas-fired electricity demand is expected to remain about flat, while industrial gas-fired electricity generation growth continues at 5.1 percent, down from the 7.4 percent expected to

**Figure 3. Natural Gas Spot Prices: Base Case and 95% Confidence Interval**



Sources: History: *Natural Gas Week*; Projections: *Short-Term Energy Outlook*, December 2000.



be realized in 2000. These reduced growth rates next year represent the net effect of increased growth in gas-fired capacity being offset by the reversal in prices of natural gas relative to oil and a slowing in the growth rate of electricity demand.

Gas supplies available to U.S. markets are expected to expand by 1.3 trillion cubic feet (Tcf) between 2000 and 2001. Domestic gas production for 2000 and 2001 is expected to increase as production begins to respond to the high rates of drilling experienced over the past year, during which the number of rigs drilling gas wells have hit record levels (running in excess of 800 rigs since the end of August 2000, versus a low of 362 in the third week of April 1999). Annual production is projected to rise by 0.7 percent in 2000 but by a significantly higher 3.9 percent rate in 2001. Net imports of natural gas are projected to rise by about 16 percent in 2001, from 3.5 to 4.0 Tcf.

For the entire year 2000, the average wellhead price for natural gas is projected to average \$3.60 per thousand cubic feet, an increase of 73 percent from the previous year. Higher end-use prices will

**Figure 4. Consumer Natural Gas Winter Heating Costs**

<i>Average Midwest Household Consumption, U.S. Prices</i>				
	<b>97-98</b>	<b>98-99</b>	<b>99-00</b>	<b>00-01</b>
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Base Fcst</b>
<i>Mcf</i>	<i>82.4</i>	<i>84.5</i>	<i>81.7</i>	<i>90.6</i>
<i>(\$/Mcf)</i>	<i>\$6.56</i>	<i>\$6.27</i>	<i>\$6.61</i>	<i>\$9.21</i>
<i>Cost (\$)</i>	<i>\$541</i>	<i>\$530</i>	<i>\$540</i>	<i>\$834</i>

Source: Energy Information Administration



result from higher projected wellhead prices. Given the EIA base case projections, residential prices for natural gas this winter would be about 40 percent higher than last year during that period. Expected average winter residential prices averaging about \$9.21 per thousand cubic feet, combined with temperature-driven higher consumption rates, would result in an increase in gas-heated household heating bills for the typical consumer of around 50 percent this winter (Figure 4).

Prices in the spring of next year should descend from their winter highs by about \$1 per thousand cubic feet as the weather-related demand recedes. EIA expects a continued price decline through the summer. Nevertheless, for the year 2001, assuming continued normal weather and slightly higher world oil prices, EIA does not expect gas wellhead prices to drop below \$4 per thousand cubic feet.

Increases in production and imports of natural gas needed to keep pace with the rapidly growing demand for natural gas will result, at least in the short-term, in more expensive supplies for gas because of rising production costs and capacity constraints on the pipelines.

The current short-term supply difficulties are expected to be resolved over the longer term, moving the market back toward an improved demand and supply balance, yielding wellhead prices closer to long-term historical trends. In EIA's *Annual Energy Outlook (AEO2001)* reference case, average natural gas wellhead prices are projected to return to the historical trend by 2004 and gradually increase thereafter, driven by natural gas demand growth, particularly in electric generation, and the natural progression of the discovery process from larger and more profitable fields to smaller, more costly ones. However, available natural gas resources in the United States combined with supplies from foreign sources are believed to be adequate to meet demand increases expected through 2020. In addition, continued improvements in exploration and production technologies to aid in the discovery and development in resources—particularly offshore deepwater and onshore unconventional gas (tight sands, coalbed methane, and gas shales) fields—are expected to help keep wellhead prices from rising rapidly. Wellhead prices for natural gas in the lower 48 States (in 1999 dollars) are projected to reach \$3.13 per thousand cubic feet in 2020 (1999 dollars) or \$5.03 in nominal dollars.

Domestic consumption is expected to increase at a faster rate than domestic production over the 20-year forecast period, with imports making up the difference. Natural gas consumption is projected to increase from 21.4 trillion cubic feet in 1999 to almost 35 trillion cubic feet by 2020 (a 62 percent increase) and production is projected to increase from 18.8 trillion cubic feet in 1999 to 29.1 trillion cubic feet in 2020 (an increase of 55 percent). Natural gas imports, particularly from Canada, have been rising significantly in recent years, and in percentage terms they are expected to outpace domestic production over the forecast period. Net natural gas imports are projected to grow from 3.4 trillion cubic feet in 1999 to 5.8 trillion cubic feet by 2020, an increase of more than 70 percent. Imports from Canada are projected to remain competitive with U.S. domestic supplies in the outlook because most Canadian gas producing regions are less mature than those in the United States, so they benefit from a better potential for additional low-cost production. Net imports from



Canada increase from 3.3 trillion cubic feet in 1999 to 5.5 trillion cubic feet in 2020 at an average annual rate of 2.4 percent.

Expected Alaskan natural gas production in the EIA long-term outlook does not include gas from the North Slope, which primarily is being reinjected to support oil production. Alaskan gas is not expected to be transported to the lower 48 States because the projected prices in the mid- to long-term forecast period are not believed to be high enough to support the required transport system. A sustained U.S./Canada border price of about \$4 per thousand cubic feet in 1999 dollars is assumed to be necessary to bring natural gas from the North Slope to the lower 48 States. Production from the North Slope could be substantial and, if transported by pipeline to the lower 48 States, would most likely displace future expected Canadian imports.

Resources in restricted areas (where drilling is presently constrained or prohibited) also are not included in the natural gas resource base underlying the *AEO2001* projections. An estimated 551 trillion cubic feet of the remaining untapped natural gas resource base in the United States underlies Federally-owned lands and approximately 215 trillion cubic feet of that gas is estimated to be unavailable for development due to moratoria and/or restrictions. The Rocky Mountain region has significant resources from unconventional sources that are currently restricted. An estimated 45 percent of the technically recoverable unconventional gas resource base in the Rocky Mountain region, or roughly 108 trillion cubic feet, is off limits due to environmental and access constraints. Increased access to these areas could provide new fields to replace older fields and serve to mitigate future natural price increases. However, the importance of these resources should not be overstated, as many of these technically recoverable resources are expected to be quite costly to develop.

### **Conclusion**

Natural gas spot prices have been sustained at extraordinarily high levels in November after a taste of winter weather arrived in major heating demand areas, and they have surged to even higher levels in December. Several factors have combined to push spot prices up since early this year, including:

- increased natural gas demand driven by new electric generation capacity and the expanding economy;

- relatively flat domestic gas production for the past several years;
- expectations for normal winter weather that would be colder than in recent years, resulting in greater winter demand for heating;
- below normal gas storage levels; and
- tight supply conditions in alternative fuel markets (e.g., distillate fuel oil).