Residential Natural Gas Prices: What Consumers Should Know

Introduction

Typically, residential natural gas consumers have some basic questions as the winter approaches: How much will natural gas cost and will enough be available this winter heating season? The answers to these questions ultimately depend on ever-changing conditions in national and local markets for natural gas. Since 1999, market conditions generally have fostered an upward trend in natural gas prices. The Energy Information Administration (EIA) expects that generally higher prices will continue through this winter.

According to its *Short-Term Energy Outlook* (November 2007), assuming normal winter weather (and no catastrophic disruptions of supply), EIA expects that supplies of natural gas should be sufficient to satisfy all residential consumers' needs (although there is always the possibility of isolated shortages caused by unusual regional or local conditions). EIA estimates that the average residential price of natural gas in the Midwest will be about 11 percent higher than last winter, while consumption is projected to be about 1 percent higher this winter. As a result, EIA expects that the total amount spent for natural gas consumed by the Midwest residential customer during this winter (October 2007-March 2008) will increase by more than 12 percent from the level of last winter.

To understand the current high-price environment for natural gas, it is helpful to know some basics about the commodity itself and the marketplace.

Where Does Your Natural Gas Come From?

Most of the natural gas used in the United States comes from domestic production, mostly from the Gulf Coast and Rocky Mountains. The remainder comes from imports, primarily from Canada. Domestic natural gas production and imported gas are usually more than enough to satisfy customer needs during the summer, allowing some supplies to be placed into storage facilities for withdrawal in the winter, when the additional requirements for space heating cause total demand to exceed production and import capabilities.

Natural gas is injected into pipelines every day and transported to millions of consumers all over the country. Much of it travels long distances from production areas to population centers through interstate pipelines owned and operated by pipeline companies. Natural gas is generally delivered to residential customers and other end-use consumers through the complex network of pipes owned and operated by local distribution companies (LDCs).

What Are Residential Customers Paying For in Their Natural Gas Bills?

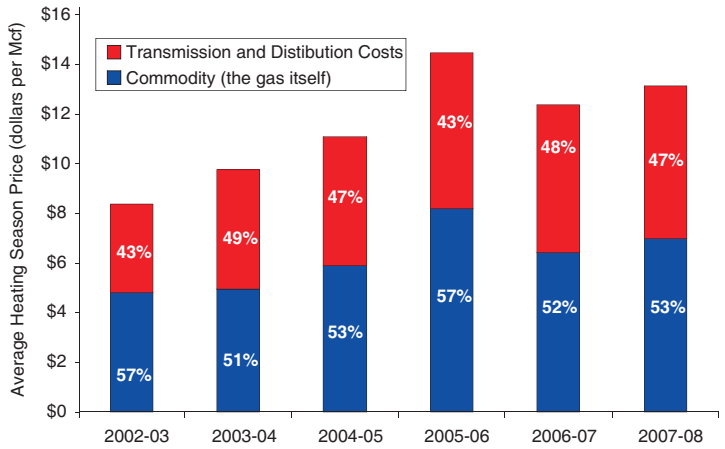
The price of natural gas has two main parts (all cost estimates include a number of taxes):

Transmission and distribution costs - to move the natural gas by pipeline from where it is produced to the customer's local gas company, and to bring the natural gas from the local gas company to your house.

Commodity costs - the cost of the natural gas itself.

In the past five winters (2002-2003 through last winter) the cost of natural gas at the wellhead (commodity cost) has constituted more than 50 percent of the residential price, and this trend is expected to continue through the next winter (Figure 1). This relative cost pattern differs from earlier years in which the commodity cost was consistently below 50 percent. The large commodity cost share has resulted from unusually high prices for natural gas during these winters. The high prices were driven by market conditions that included weak natural gas production despite increased drilling levels, colder-than-normal weather for long periods during some heating seasons, production disruptions from hurricane activity in the Gulf of Mexico, fluctuating net import levels, and record high crude oil prices.

Figure 1. Breakdown of Natural Gas Price Paid by Residential Consumers During the Heating Season, 2002-2008



Mcf = Thousand cubic feet.
Source: History: Energy Information Administration, *Natural Gas Monthly,* September 2007.
Projections: Energy Information Administration, *Short Term Energy Outlook* (November 2007).

Factors That Affect Current Natural Gas Prices

Several underlying factors have affected prices for most of 2007. Depending on the factor, each has applied either upward (⬆) or downward (⬇) pressure on prices. These factors include:

⬇ **Improving Production** – Natural gas production increased by 2.3 percent from 2005 to 2006. Some of this increase reflects the recovery from Hurricanes Katrina and Rita in 2005. Production in onshore regions expanded as drilling increased. The industry in 2006 drilled a record number of natural gas wells for a single year and drilling activity in 2007 indicates another record is likely. As of September 2007, the number of exploratory and developmental wells drilled surpassed the year-to-date totals for 2006 by about 5.8 percent. Production is expected to increase by about 1.4 percent in 2007 and by 1.3 percent in 2008. The expected expansion in 2008 reflects the impact of new deepwater facilities in the Gulf of Mexico that began producing during 2007. The number of producing natural gas wells increased each year from 2000 to 2006, reaching a record level of almost 449,000 wells in 2006.

⬇ **Increasing net imports** – Gross imports in 2007 are expected to increase by 6.5 percent over 2006 levels while exports are expected to decrease by 4.0 percent. Net imports are expected to increase by about 8.6 percent in 2007, followed by a 1.4 percent decrease in 2008. Most of the expected growth in U.S. imports is as LNG. In the first 8 months of 2007, pipeline imports increased by 86 Bcf over 2006 while LNG imports increased by 241 Bcf, although monthly LNG imports likely have declined since then according to trade press reports.

⬆ **Increasing Demand** – Natural gas consumption decreased by 2.3 percent in 2006 compared with 2005, but is projected to recover with an increase of 4.5 percent in 2007, because of the return to near-normal weather. Based on data for the first 8 months of 2006 and 2007, total natural gas consumption rose by about 5.0 percent, driven greatly by residential consumption, which increased by 11.8 percent.

⬆ **High Oil Prices** – Some large-volume customers (primarily industrial consumers and electricity generators) can switch between natural gas and other fuels, such as petroleum products, depending on the prices. As a result of this interrelation between fuel markets, when oil prices rise, the competitive pressure to maintain low natural gas prices diminishes, and the shift in demand to natural gas drives prices upward. Crude oil prices increased to a record-high $93 per barrel in October. Geopolitical concerns and uncertainty in financial markets have contributed to rising oil prices over most of the year. Tight global oil market conditions are expected to persist through 2008.

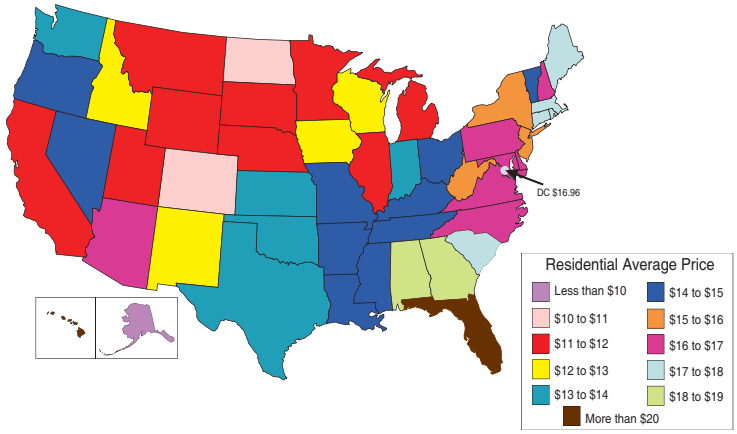
⬇ **Natural Gas Inventories** – Based on reports from underground storage facilities for November 2, natural gas in storage reached an all-time record of 3,545 Bcf. This is 8.9 percent above the 5-year (2002-2006) average of 3,254. The record storage level reflects the favorable economics that prevailed through most of 2007, and the impact of relatively mild weather in 2006 and 2007, which reduced the need for current consumption. Natural gas inventories are expected to track at above average levels through the rest of 2007 as long as weather conditions remain close to normal.

⬌ **Weather Effects** – As of October 2007 there has been only minor storm activity in the Gulf of Mexico, avoiding major supply disruptions, which eased the upward pressure on natural gas prices. However, a return to normal weather this winter is expected to increase residential demand by about 3.9 percent compared with the 2006-2007 season as temperatures would be somewhat colder than last year.

Average Natural Gas Prices in the United States

Since 1999, residential natural gas prices in the United States have generally increased. The 1999 national average residential price was $6.69 per thousand cubic feet (Mcf), while the 2006 average price was $13.75, which is more than double the 1999 price. The national average price of natural gas is only part of the story, as the prices in individual States can differ greatly. These differences are often related to a market's proximity to the producing areas, the number of pipelines in the State, and the transportation charges associated with them, as well as State regulations and degree of competition. For example, based on 2006 data, the residential consumers along the Atlantic Coast tend to pay the most, with prices ranging from $15 to more than $20 per Mcf (Figure 2). In contrast, States in the rest of the country benefit from either indigenous production or the presence of major trunk lines traversing the State. The availability of relatively abundant supplies results in prices between $10 and $15 per Mcf.

Figure 2. U.S. Residential Natural Gas Prices by State, 2006 (Dollars per Mcf)



Source: Energy Information Administration, *Natural Gas Monthly*, September 2007

How Much Will Natural Gas Cost This Winter?

Each year, EIA projects the average price, consumption, and total cost of natural gas during the upcoming winter for a household in the Midwest. (The Midwest is used because more than 75 percent of its 25.1 million households heat their homes with natural gas–the

highest concentration of any region.) For the heating season of 2007-2008, EIA estimates that Midwest homeowners will pay about $1.19 per therm (1 therm=100,000 Btu, which is the heat content of about 100 cubic feet of gas), or about $12.26 per Mcf, for natural gas this winter (Table 1).

Table 1. Average Midwest Household Heating with Natural Gas

Heating Season (October-March)

	2004-2005	2005-2006	2006-2007	2007-2008 *
Volumes Consumed				
(Therms)	877.7	846.9	873.6	883.1
(Mcf)	85.3	82.3	84.9	85.9
Residential Price				
(Dollars per therm)	$0.98	$1.30	$1.07	$1.19
(Dollars per Mcf)	$10.04	$13.42	$11.05	$12.26
Total Cost per Household for the Heating Season	$857	$1,104	$938	$1,053

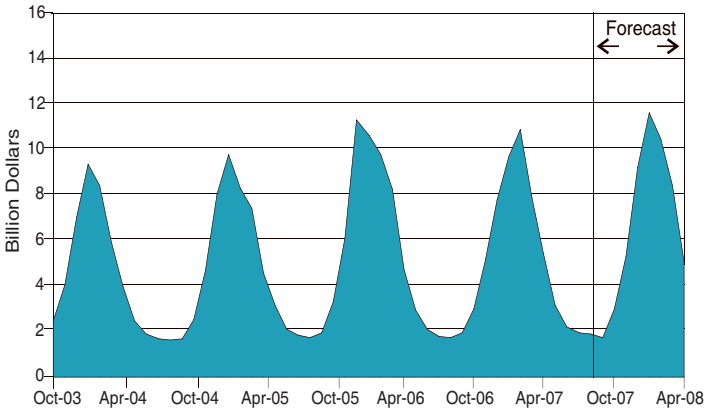
*=Projection

Mcf = Thousand cubic feet. 1 Mcf=10.28 therms. (Based on the national average gas heat content for gas consumed by other than electric utilities in 2006. Source: Energy Information Administration, *Natural Gas Annual 2006*, (October 2007), Table B2.).

Source: Data and projection: Energy Information Administration, *Short-Term Energy Outlook* (November 2007).

Assuming a return to normal temperatures, this winter will be colder than last winter. This should result in increased natural gas use by more than 1 percent for the representative Midwest residential natural gas customer. This increased gas use, coupled with the projected price increase of about 11 percent, would result in an increase of more than 12 percent in total expenditures for natural gas by the representative household (Figure 3).

Figure 3. Total U.S. Residential Natural Gas Expenditures



Source: Energy Information Administration, derived from data in the *Natural Gas Monthly,* September 2007.

Any forecast is uncertain, and changes to key factors could alter the forecast significantly. Key factors that may affect market prices and consumption regardless of region include:

A prolonged cold spell or even a brief episode of severe winter weather would increase per-household use of gas and total demand in the high-consumption winter months.

Disruptions of the pipeline or LNG delivery systems would affect deliverability of natural gas.

Problems in other energy supplies, such as a prolonged outage of a nuclear or coal-fired power plant, could increase use of gas-fired generators, thus increasing gas demand.

Although increased commodity prices are passed along to consumers, residential households enjoy some protection from sudden, severe price fluctuations. This is partially because residential bills do not reflect daily market prices but rather the overall cost of an LDC's supply of natural gas, which depends on the LDC's usually diverse portfolio of supply sources and prices. This translates to a price to the consumer that is much more stable than the often highly variable daily "spot" prices. Also, transmission and distribution services, which are much more stable between years, make up a large fraction of residential bills. Further, residential customers have a number of steps they can take to mitigate the impact of commodity price changes.

What Can Residential Customers Do?

To cope with or reduce their natural gas bills, residential customers can:

- Shop for lower-priced natural gas, if their State sanctions customer choice programs. (For information on the status of natural gas residential choice programs in each State, go to: http://www.eia.doe.gov/natural_gas/restructure/restructure.html).
- Participate in their local gas company's yearly budget plan to spread gas costs evenly throughout the year, thereby lessening the impact of higher prices.
- Check natural gas appliances and space-heating equipment for efficient operation.
- Obtain a home energy audit to identify ways to conserve energy.
- Reduce thermostat settings, especially when they are not at home.

In addition, both Federal and State energy assistance programs are available to natural gas customers who have a limited budget. For example, the Low Income Home Energy Assistance Program (LIHEAP) is a Federal program that distributes funds to States to help low-income households pay heating bills. Additional State energy assistance and fuel fund programs may be available to help households pay energy bills during a winter emergency. To find out if you qualify for assistance in your State, contact your State public utility commission or your local gas company.

For More Information . . .

For the latest update on natural gas demand, prices, and inventories, see our Natural Gas Weekly Update on the EIA web site at:
http://tonto.eia.doe.gov/oog/info/ngw/ngupdate.asp

and the Weekly Natural Gas Storage Report at:
http://www.eia.doe.gov/oil_gas/natural_gas/ngs/ngs.html

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