

Natural Gas *Explained*



Factors Affecting Natural Gas Prices – Basics

Natural gas prices are a function of market supply and demand. Because of limited alternatives for natural gas consumption or production in the near term, even small changes in supply or demand over a short period can result in large price movements that bring supply and demand back into balance.

Three supply side factors affect prices:

- Variations in the amount of natural gas production
- The volumes of natural gas imports and exports
- The amount of gas in storage facilities (referred to as storage levels)

Increases in supply tend to result in lower prices, and decreases in supply tend to increase prices.

Three demand side factors that may affect prices:

- The level of economic growth
- Variations in winter and summer weather
- Prices of competing fuels

Increases in demand tend to lead to higher prices, while decreases in demand tend to lead to lower prices.

Domestic natural gas prices are driven primarily by supply

Most of the natural gas consumed in the United States comes from domestic production. U.S. dry natural gas production increased from 2006 to 2015, when production reached the highest recorded annual total. The increases in production during that period were mainly the result of more efficient, cost-effective drilling and completion techniques, notably in shale and other tight geologic formations (see the [May 5, 2016 *Today in Energy*](#) article). Increased natural gas supply tends to lower prices. For example, average wholesale (spot) prices for natural gas fell significantly throughout the United States in 2012 compared with 2011. A mild 2011–12 winter, high natural gas inventories, and rising natural gas production in the Marcellus and Eagle Ford regions contributed to lower spot prices.

Tropical Storm Katrina over the Bahamas and east of Florida, August 24, 2005



Source: NASA image courtesy Jeff Schmaltz, MODIS Land Rapid Response Team (public domain)

Severe weather can disrupt production

Hurricanes and other severe weather can affect the supply of natural gas. For example, in the summer of 2005, hurricanes along the U.S. Gulf Coast shut down about 4% of total U.S. natural gas production between August 2005 and June 2006.

Economic growth can affect natural gas demand and prices

The strength of the economy greatly influences natural gas markets. During periods of economic growth, the increased demand for goods and services from the commercial and industrial sectors generates an increase in natural gas demand. This increase in demand is particularly true in the industrial sector, which uses natural gas as both a fuel and as a feedstock for many products such as fertilizer and pharmaceuticals (see *Annual Energy Outlook 2014* Issues in Focus article [Effects of lower natural gas prices on projected industrial production](#)). Increased demand can lead to increased production and higher prices. Declining or weak economic growth tends to have the opposite effect.

Winter weather strongly influences residential and commercial demand

During cold months, residential and commercial end users consume natural gas for heating, which places upward pressure on prices as demand increases. If unexpected or severe weather occurs, the effect on prices intensifies because supply is often unable to react quickly to short-term increases in demand. The effects of weather on natural gas prices may be exacerbated if the natural gas transportation system is already operating at full capacity. Under these conditions, prices tend to increase, which reduces overall demand for natural gas. Natural gas supplies that were placed in storage during periods of lesser demand may be used to cushion the impact of high demand during inclement weather.

Hot summer weather can increase power plant demand for natural gas

Temperatures can also have an effect on prices during the cooling season. About 33% of U.S. electricity was generated with natural gas in 2015. Warmer than normal temperatures can increase the demand for air conditioning, which increases the power sector's demand for natural gas and can lead to increased prices.

Natural gas supplies held in storage play a key role in meeting peak demand

The overall supply picture is also influenced by the level of natural gas held in underground storage fields. Storage helps to meet seasonal and sudden increases in demand, which otherwise may not be met by domestic production and imports. When demand is lower, storage absorbs excess domestic production and possibly lower-cost imports. Storage also supports pipeline operations and hub services. Levels of natural gas in storage typically increase April through October, when demand for natural gas is lower, and decrease November through March, when demand for natural gas for heating is generally high.

Competition with other fuels can influence natural gas prices

Some large-volume fuel consumers such as electricity generators and iron, steel, and paper mills can switch between natural gas, coal, and petroleum, depending on the cost of each fuel. When the cost of the other fuels fall, demand for natural gas may decrease, which may lead to lower prices for natural gas. When the cost of competing fuels rise relative to the cost of natural gas, switching from those fuels to natural gas may increase natural gas demand and prices.

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- [Natural Gas Weekly Update](http://www.eia.gov/naturalgas/weekly/) — <http://www.eia.gov/naturalgas/weekly/>
- [Natural gas \(monthly and annual data\)](http://www.eia.gov/totalenergy/data/monthly/index.cfm#naturalgas) — <http://www.eia.gov/totalenergy/data/monthly/index.cfm#naturalgas>
- [Natural gas prices](http://www.eia.gov/naturalgas/data.cfm#prices) — <http://www.eia.gov/naturalgas/data.cfm#prices>
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