

# 2015-2016 Winter Outlook for Natural Gas

## Markets Matter

### Executive Summary

The Natural Gas Supply Association's (NGSA) *2015 Winter Outlook for Natural Gas* summarizes the association's view of existing natural gas market conditions and fundamentals. The analysis covers the key points that can affect supply and demand dynamics, which ultimately impact all consumers of natural gas.

NGSA forecasts whether natural gas prices will be subject to upward, downward or level pressure for the upcoming winter of 2015-2016 compared to the winter of 2014-2015, but the association does not forecast actual prices.

**Based on an analysis of the weather, economy, consumer demand, production and storage, NGSA expects **neutral** price pressure on the natural gas market in winter 2015-2016 compared to last winter.**

Our expectation for neutral price pressure is based on a forecast for demand and production to be similar to the levels of last winter. A projection for a 7-percent warmer winter is expected to slightly diminish overall customer demand, but growth in the electric sector due to both a short-term temporary shift to gas-fired power generation for economic reasons, and a long-term structural shift to new gas-fired power plants for environmental reasons, will offset much of the weather's effect.

**A glance at the natural gas market's major pressure points for winter 2015-2016 reveals:**

- **WEATHER:** The National Oceanic and Atmospheric Administration (NOAA) predicts that the continental United States will on average experience a winter that will be 7 percent warmer than last winter and 3 percent warmer than the 30-year average. Comparing winter-over-winter, total heating degree days (HDDs) are estimated to be lower this winter than the previous winter, leading to a projection that milder weather will place **downward pressure** on demand and prices.
- **ECONOMY:** Public data anticipates the economy will continue to grow, but forecasted GDP growth of a rate of 2.5 percent is so similar to last winter's 2.7 percent growth that it translates to **neutral pressure** on natural gas prices compared to last winter.
- **DEMAND:** NGSA expects a 1.4 percent decrease in total demand to take place in the winter of 2015-2016, with warmer weather dampening demand from the residential and commercial sectors by 2.5 Bcf/day, however the lower demand from this sector is forecasted to be partially offset by demand growth from the electric sector of 1.1 Bcf/day and 0.2 Bcf/day from the industrial sector. In the electric sector, the combination of temporary coal-to-gas switching and long-term structural shift to new gas-fired power plants is forecasted to spark a 5 percent increase in demand for natural gas compared to last winter, even though the weather is expected to be warmer. However growth in the industrial sector is slowing, with industrial demand projected to be only 0.2 Bcf/day greater than last winter. Increased industrial demand is primarily linked to the construction of major gas-intensive facilities and capacity expansions in the petrochemical, fertilizer and steel industries. When all sectors are combined, **overall demand** is projected to be 1.3 Bcf/day less than the winter of 2014-2015, but so similar to last year's number that **pressure** on natural gas prices is forecasted to be **neutral**.
- **STORAGE:** The natural gas industry is on track to reach a record amount of inventory in storage of 3,950 Bcf by late October or early November. Storage is forecasted to place **downward pressure** on prices.
- **PRODUCTION:** Production is projected to slightly exceed last winter's robust levels, reaching a new record even though well completions and rig counts have decreased. The increased production is the result of continued advances in drilling efficiency and new infrastructure. A forecasted winter-over-winter increase of 1.4 Bcf/day in production is likely to result in **neutral pressure** on natural gas prices.

All of these projected pressure points are interrelated and a deviation in one affects the other assumptions in this equation. *Similar winter-over-winter forecasts for production and overall demand are the most significant factors impacting this winter's forecast.*

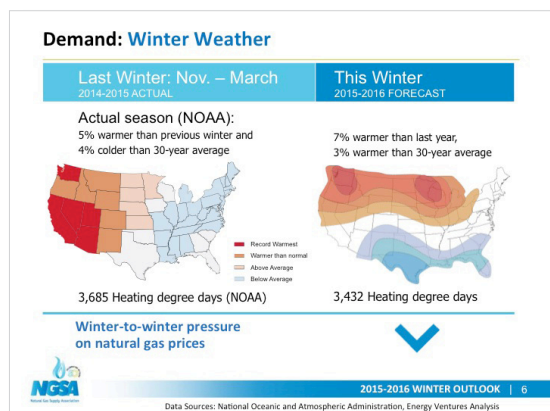
The following pages provide more detailed information about each of the five factors analyzed in NGSA's *2015-2016 Winter Outlook*, as well as a look at possible "wild card" factors and a discussion of natural gas industry trends that transcend this winter.

## Weather/Demand

Based on NOAA's current projections for warmer-than-average winter temperatures, EVA forecasts that the winter months will be 7 percent warmer than the winter of 2014-2015 — which was a relatively cold winter — on a national average, and 3 percent warmer than the 30-year average.

On a regional basis, NOAA's forecast for a strong El Niño weather pattern cleanly divides the country into thirds. One large tier is projected to be warmer than average: this tier includes all of California, then stretches across the upper tier of the United States to Pennsylvania and points north. A second tier shows normal winter temperatures projected across the center of the country from the southwest to the Carolinas. And finally, a smaller southern tier is projected to be colder than normal, including Texas, Florida and a few bordering states.

As a nation, over the full five-month winter heating season (November 2015-March 2016), Energy Ventures Analysis, Inc. (EVA) is forecasting 3,432 heating degree days (HDDs) this winter, compared to 3,685 HDDs last winter. The number of heating degree days is defined as the difference between 65 degrees Fahrenheit and the average outside temperature for that day. Based on the difference in winter-over-winter heating degrees, the forecast is for **weather to put downward pressure** on natural gas prices.



## Economy/Demand

This winter, public forecasts anticipate an economy that will grow at a similar rate to last winter.

A key component of economic health is the Gross Domestic Product (GDP). According to IHS Economics (formerly IHS Global Insight), a nationally recognized economic forecasting firm, the GDP is expected to increase 2.5 percent compared to the winter of 2014-2015, when GDP expanded by 2.7 percent. The difference is not expected to be significant enough to exert pressure on prices.

**Demand: Economy**

Winter Season Period-to-period change	Last Winter 2014-2015 ACTUAL	This Winter 2015-2016 FORECAST
Economy	Solid growth	Weaker growth
GDP growth	2.7%	2.5%
Unemployment rate	5.6%	5.2%
Manufacturing	3.3%	0.7%
CPI	0.6%	0.8%
Consumer Sentiment Index	92.6	94.2

Winter-to-winter pressure on natural gas prices

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Data Source: IHS Economics

IHS Economics also predicts that manufacturing, an important influence on the GDP, will only grow 0.7 percent in winter 2015-2016, a significant drop from last winter's 3.3 percent growth. The decrease in manufacturing activity is attributed to global economic uncertainty and the relative strength of the dollar impacting international sales and creating an inventory overhang. Meanwhile, the latest Consumer Sentiment Index (CSI) shows that consumers feel very positive about the economy, with the CSI tracking at a strong 94.2 percent, reflecting general consumer optimism, probably the result of a strong labor market (5.2 percent unemployment), low inflation and decreased energy prices. The Consumer Sentiment Index is a gauge of consumer confidence in the economy conducted for more than 40 years by the University of Michigan. While these economic indicators generally reflect good news for consumers, the changes are too small to pressure prices. Therefore NGSA anticipates the economy will place **level winter-over-winter pressure** on natural gas prices.

## Overall Natural Gas Demand

An independent demand analysis performed by EVA notes that natural gas demand will slightly decrease compared to last winter. EVA forecasts overall winter 2015-2016 demand for natural gas at 90.2 billion cubic feet per day (Bcf/d) compared to 91.5 Bcf/d last winter. A sector-by-sector breakdown follows.

**Demand: Customer Demand**

Winter Season Period-to-period change	Last Winter 2014-2015 ACTUAL	This Winter 2015-2016 FORECAST
<b>Customer Gas Demand</b>	<b>91.5 Bcf/d</b>	<b>90.2 Bcf/d</b>
<ul style="list-style-type: none"> <li>Electric</li> <li>Industrial</li> <li>Residential/Commercial</li> </ul>	22.0 Bcf/d 22.6 Bcf/d 39.4 Bcf/d	23.1 Bcf/d 22.8 Bcf/d 36.9 Bcf/d
Growth sector	Electric	Electric + 5%

Winter-to-winter pressure on natural gas prices

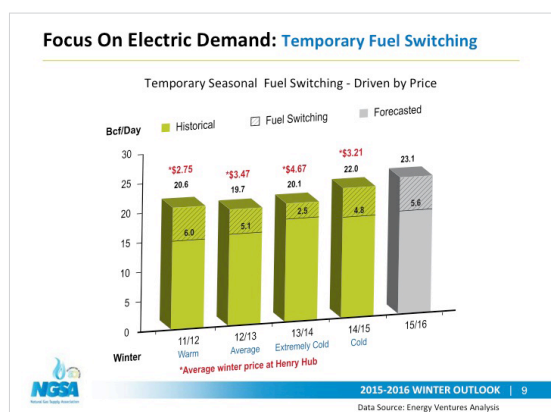
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Data Source: Energy Information Administration

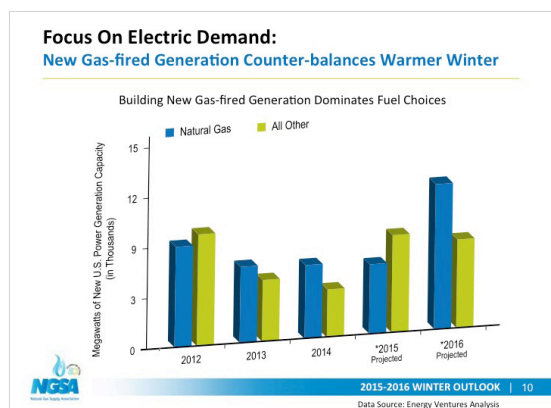
When analyzing the **electric sector's** projected demand for natural gas this winter, EVA predicts a solid increase of 1.1 Bcf/day, despite the forecast for milder, warmer winter

temperatures. The major cause of the increased demand from the electric sector can be attributed to a significant increase in coal-to-gas switching compared to the previous winter. Coal-to-gas switching, also known as fuel switching, occurs when electric utilities choose to run natural gas-fired power plants rather than coal plants to generate electricity. Switching is a short-term, temporary decision that is purely an economic choice based on the price of the competing fuels. The projected increase in fuel switching this winter is the result of the competitive price of natural gas.

EVA's prediction for fuel switching to grow to a sizeable 5.8 Bcf/day of natural gas demand this winter — approaching the all-time record of 6 Bcf/day set in the winter of 2011-2012 — is all the more remarkable in light of the fact that, prior to the shale revolution, coal-to-gas switching had never lasted longer than a few days at a time. In contrast, switching has persisted for seven consecutive years since 2008.



A more long-term, structural shift in the electric sector accounts for the other source of increased demand for gas-fired generation this winter. As of April 2015, the electric industry must comply with EPA's Mercury Air Toxics Standards (MATS) rule to reduce mercury emissions. As a result, EVA anticipates the retirement of 20 gigawatts (GW) of coal fired electricity to take place in 2015, to be replaced by natural gas-fired generation. This is the first wave: an additional 24 GWs of coal plant retirements have been announced for the 2016-2020 time frame.



Despite the projection for a significant decrease in manufacturing output, the **industrial sector** is expected to slightly increase its winter consumption of natural gas by 0.2 Bcf/day to 22.8 Bcf/day. Growth continues in the key natural gas-intensive petrochemical, fertilizer and steel sectors, which are moving forward on numerous facilities in the 2015-2020 time frame. In line with the growth projected for this winter, EVA points out that an extended forward view of industrial demand shows 66 new and expanded major natural gas-intensive industrial projects occurring from 2015 to 2020, representing an investment of about \$117 billion to build and an increase of 3.9 Bcf/day by 2020.

The industrial growth projected over the next five years is primarily due to the petrochemical, fertilizer and steel industries expanding to take advantage of affordable, abundant natural gas in the U.S. Most of these major projects are slated for southern states, with the exception of some steel projects in Midwestern states.

- Roughly 75 percent of these manufacturing projects are brand new projects; and
- Approximately 25 percent are expansions.



According to Energy Ventures Analysis, winter-over-winter demand from the **residential and commercial sectors** is expected to be 6 percent less than last winter, due to the forecast for milder weather and fewer HDDs.

When customer demand from the electric, industrial and residential/commercial sectors are combined, overall demand is very slightly less than last winter, but not enough to place pressure on prices. **Overall customer demand is expected to place neutral pressure on prices this winter.**

## Storage/Supply

Traditionally, underground natural gas storage has allowed companies to purchase and physically stockpile natural gas supplies in the spring and summer for use during the winter when demand for natural gas space heating is at its peak.

Going into the winter heating season, it is projected that approximately 3,950 Bcf of natural gas will be in storage — approaching a record setting 4 Trillion cubic feet and significantly more than the approximately 3,600 Bcf in storage




at the same time last year. The difference is expected to place **downward pressure** on natural gas prices this winter.

## ***Production/Supply***

Turning to natural gas production, EIA expects domestic production to outperform last winter, despite a decrease in the number of drilling rigs and well completions compared to last winter. Domestic natural gas production this winter is forecasted to be 74.4 Bcf/day, slightly more than last winter's 73 Bcf/day.

Supply: Winter Production		
Winter Season Period-to-period change	Last Winter 2014-2015 ACTUAL	This Winter 2015-2016 FORECAST
Annual natural gas well completions (Lower 48)	7,253	4,870
Winter average production (Lower 48)	73.0 Bcf/d	74.4 Bcf/d
Canadian imports (net)	+ 5.7	+ 5.6
LNG imports (net)	+ 0.3	- 0.1
Mexican exports (net)	- 2.2	- 3.2
Winter-to-winter pressure on natural gas prices		

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Data Source: Energy Ventures Analysis

Among the reasons that winter production is expected to increase are: continued strong production from shale gas plays due to increased efficiencies in natural gas extraction techniques and improved takeaway capacity in the form of new pipelines and processing plants in areas such as the Marcellus.

The 2015-2016 Winter Outlook also predicts a moderately-sized, but important, contribution from Canadian imports of 5.6 Bcf/day, as well as some liquefied natural gas (LNG) imports. However these LNG imports will be offset by the first LNG exports beginning in late 2015 from the Sabine Pass terminal in Louisiana. Although more export facilities will follow over the next few years, the amount of LNG to be exported is projected to remain a small slice of overall demand.

Finally, EVA expects natural gas exports to Mexico in the range of 3.2 Bcf/day compared to 2.2 Bcf/day last winter, with the construction of new pipelines in Mexico and its growing economy. In summary, strong supply this winter will be similar to last winter's, placing **neutral pressure** on natural gas prices compared to the winter of 2014-2015.

## ***"Wild Card" Market Factors***

There are always a few "wild card" factors that can influence the market, in addition to the fundamentals addressed in this

Outlook. This winter's wild cards include:

- Unexpected cold — or warm- snaps could affect residential/commercial demand and electric demand;
- Global economy could impact industrial growth;
- And regional pipeline constraints could have short-term impact on areas with tight capacity.

**In conclusion, NGSa analysis of varying data indicates overall flat pressure on natural gas prices this winter compared with last winter.** A recap of the five major pressure points reveals:

- Production similar to last winter's record levels, fueled by shale gas and drilling efficiencies — **NEUTRAL PRESSURE**
- Overall demand — electric demand expected to grow 5 percent, but residential/commercial demand to decrease and industrial demand to hold steady. — **NEUTRAL PRESSURE**
- Warmer winter weather than last winter — **DOWNWARD PRESSURE**
- Strong fundamentals in economy, but slowing GDP — **NEUTRAL PRESSURE**
- Storage approaching record inventories — **DOWNWARD PRESSURE**

## ***OVERVIEW: Winter of Contrasts***

- Record winter supply
  - Efficiencies in drilling and production make wells more productive at lower cost;
  - Pipeline infrastructure expansions provide greater flexibility
- Electric demand grows — despite forecast for milder weather
  - Due to temporary fuel-switching and long-term structural shift to natural gas for power generation
  - Fuel switching continues for seventh straight winter — and approaches 2011-2012's record levels.
- Industrial demand buoyed by capacity expansions and new builds in petro-chemical, fertilizer and steel industries
- Storage inventory may set a new record.
- Overall, stable natural gas outlook for natural gas consumers.

**For more information, please visit [www.ngsa.org](http://www.ngsa.org) or contact us directly.**