

Northeast Natural Gas Winter Outlook

October 2017

KEY POINTS

- *The natural gas supply situation is strong, nationally and in the Northeast. A secure supply balance and storage levels are resulting in stable commodity prices, which should contribute to relatively stable heating bills this winter. The key variable is weather. NOAA is projecting closer to average winter temperatures for the region this winter which would boost heating demand and energy expenditures over last year.*
- *Natural gas has consistent benefits in terms of deliverability, reliability, cost-effectiveness and environmental advantages.*
- *Natural gas utilities have programs in place to advise their customers on ways to help prepare for, and manage, their heating bills this winter. These include budget billing, efficiency and conservations tips, and advice on eligibility for energy assistance funds for low-income customers and others.*
- *A challenge remains this winter in New England for the “non-firm” capacity sector of the market, principally the power generation sector.*

Strong Supply Situation Leading to Stable Winter Outlook for Natural Gas Utility Customers

The natural gas supply situation for the U.S. and the Northeast is stable. U.S. production output remains strong, and storage refills remain on-track.

The commodity price for natural gas has been relatively low and stable throughout 2017. Last winter was notably mild in the U.S. and the Northeast, resulting in lower bills for all fuels. This year, with more normal weather anticipated, the expectation is that consumption and prices for all fuels will be higher than last winter.

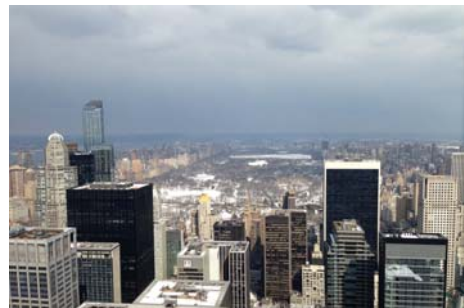
This paper by the Northeast Gas Association (NGA) outlines the recent market developments shaping natural gas costs, discusses what local natural gas utilities in the Northeast U.S. are doing to assist customers, and identifies some steps that customers can take to manage home heating bills. [Note: NGA’s analysis is based on publicly

reported data; NGA does not project actual figures for wholesale or retail markets.]

Natural Gas Wholesale Prices Have Been Relatively Moderate This Year

A stability in commodity prices has characterized the U.S. natural gas wholesale market in recent years. As of October 10, the daily average commodity price nationally was just under \$3.00 per million Btu (MMBtu).¹

The U.S. Energy Information Administration (EIA) is projecting that the average natural gas commodity price for all of 2017 will be in the range of \$3.10 per MMBtu.²



Colder Weather than Last Winter Expected to Lead to Higher Demand & Expenditures

EIA is projecting that "that average household expenditures for all major home heating fuels will rise this winter because of expected colder weather and higher energy costs. Average increases vary by fuel, with natural gas expenditures forecast to rise by 12%, home heating oil by 17%, electricity by 8%, and propane by 18%. Most of the increase reflects expected colder weather rather than higher energy costs. A warmer-than-forecast winter would see lower increases in expenditures, and a colder-than-forecast winter would see higher increases in expenditures."³

The local gas utilities work throughout the year to purchase a reliable, diverse and cost-effective supply of natural gas in advance of the winter heating season.

U.S.—and Northeast—Natural Gas Production Has Been Strong

In terms of U.S. natural gas supplies, the news remains positive. The Northeast U.S., long accustomed to being "at the end of the pipeline," now finds itself connected to one of the largest natural gas basins in the U.S.

Advances in drilling technology, such as horizontal drilling and hydraulic fracturing, have enabled natural gas producers to access the U.S. shale gas resource in a significant way. As a result, the U.S. has become the largest producer of natural

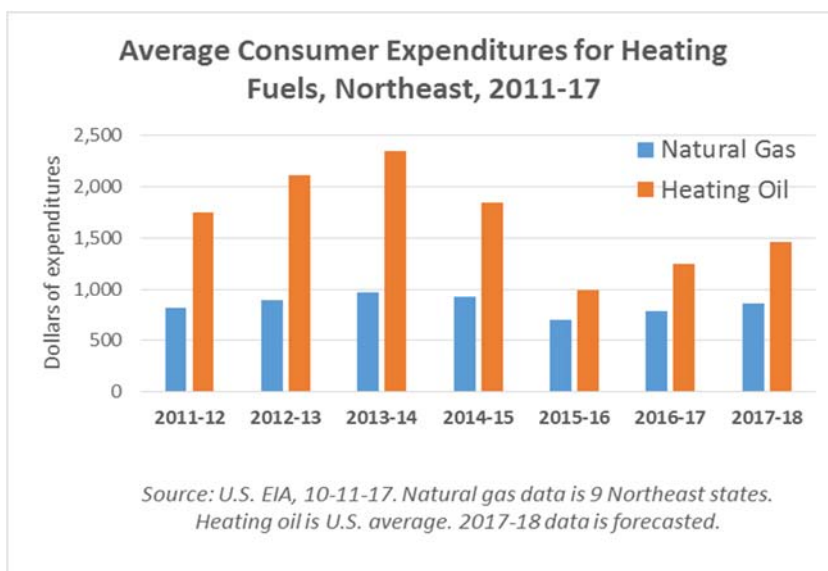
gas in the world. Production in the Marcellus region of Pennsylvania and West Virginia continues to grow.

These new supplies are having a positive market impact, resulting in lower commodity prices and greater U.S. supply security. Moving the new production to market via pipelines is an industry priority and market need.

Converting to Natural Gas from Other Fuels Continues

While natural gas is the leading home heating fuel in the U.S. as a whole, it still has room to grow in the Northeast U.S. In New England for instance, natural gas heats about 39% of all homes in the six-state region—compared to the national average of about 47%. Prices of all fuels can vary and fluctuate over time, but the consistent benefits of natural gas are leading numerous homeowners and businesses to appreciate the value of natural gas systems. These benefits include reliability, ease of delivery, cleanliness, lower environmental impacts (over 30% less CO₂ emissions compared to oil), and cost-effectiveness. The spot commodity price of natural gas compared to that of oil shows a positive differential—even at a time of relatively low global oil prices.

Conversions and new installations continue onto the system. Natural gas prices have been consistently below heating oil in recent years, and the outlook for this winter is for gas to continue to be



This chart, based on data from the U.S. Energy Information Administration (EIA), compares the residential heating fuel expenditures of natural gas (blue) and heating oil (orange) in recent years. Natural gas has been well below oil in recent years, and is forecast to be lower again this winter. Source: EIA, October 11, 2017.

the lowest cost heating fuel option (see chart). States in the Northeast continue to explore ways to increase access to natural gas for citizens and businesses. Since the year 2008, the number of homes in the Northeast region heating with natural gas has increased by one million; the regional total is now slightly over twelve million heating customers.⁴

Multiple Factors Impact Natural Gas Prices

What are the factors that go into the price of natural gas?

The American Gas Association (AGA) has summarized it concisely: "The price paid for natural gas by consumers depends on the price of the gas commodity itself, and the cost of transporting that gas from production areas to customers."

There are many factors that can affect the market price of natural gas:

- Seasonal natural gas demand
- Weather
- Gas storage levels
- Alternative fuel prices
- Producer economics
- Market structure
- Pipeline capacity and costs
- Futures markets
- Market psychology.

The Weather Remains a Key Factor in Supply & Price Fluctuations

Perhaps the greatest factor in determining the ultimate supply and price dynamic remains the weather.

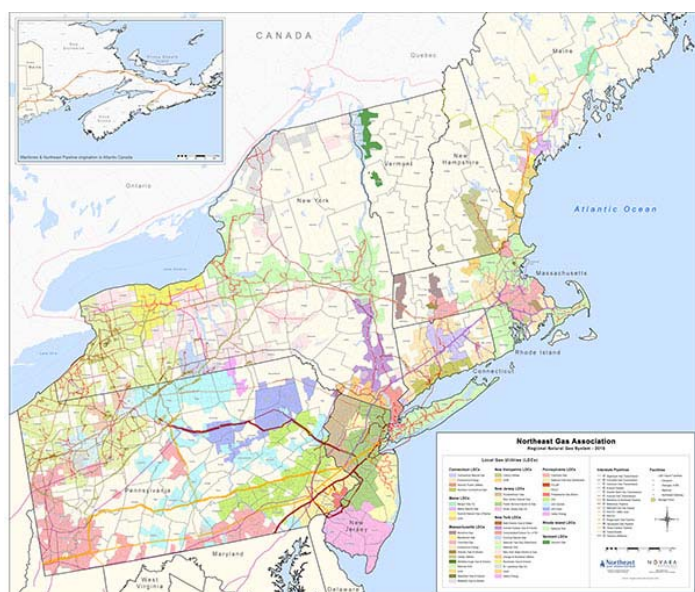
How cold the winter is determines to a great extent how volatile the price for the natural gas commodity might be over a period. As the U.S. FERC has observed: "As always, weather is one of the primary and least predictable drivers for natural gas and electricity markets."⁵

NOAA is forecasting U.S. heating degree days this winter to be 13% higher than last winter. In the Northeast, heating degree days are projected to be 6% higher this winter.⁶

Significance of Infrastructure Additions

In recent years, the Northeast region has made additions to its supply and delivery network. Infrastructure enhancements are under development in the region to transport Appalachian production to regional markets. More infrastructure would help reduce constraint points and system "bottlenecks," resulting in lower costs and greater reliability.

In two of the last four winters, the Mid-Atlantic and New England areas experienced high spikes in the "spot" market for natural gas on numerous days, as cold weather led to high demand and constrained pipeline delivery. U.S. EIA observed in March 2017 that "Historically, both the Boston and New York natural gas markets have experienced winter price spikes because of pipeline



This map illustrates the interstate natural gas pipeline system in the Northeast along with the gas distribution service areas. The pipelines deliver gas supplies to the local gas utilities, who in turn service local customers, from homes to businesses. The pipelines deliver gas from multiple supply points: Gulf Coast, mid-continent, Appalachia, Canada and LNG. In the past few years, new supply enhancements in the region, principally from the Marcellus production area of Pennsylvania, have expanded and indeed transformed the region's supply portfolio.

Map prepared by Northeast Gas Association.



constraints during periods of peak demand. Natural gas pipeline expansion projects that were completed in recent years may have reduced, but did not eliminate, sharp price increases with anticipated cold weather."⁷

A further discussion of the New England market will be found below.

Utility Bill Components

The price of the natural gas commodity at the wellhead makes up generally the largest share of the total price a residential customer pays. Other costs include commodity costs of other supply sources, interstate pipeline capacity (or transportation) costs and charges for the LDCs' transportation service.

The gas utility, or LDC, passes on the actual commodity cost to customers; the LDC does not make any margin from the purchasing of the gas commodity and reselling it to retail customers. It is a direct pass-through, subject to regulatory oversight. The residential customer's bill is regulated by the state public utility/public service commission (PUC, PSC, DPU or BPU).

The American Gas Association (AGA) states: "Changes in the prices paid by utilities for gas, whether based on fuel prices, the spot market, or the comparative price of other fuels, do not have an immediate impact on residential gas customers because of the structure of regulation and the industry. This is true for several reasons":

- Utilities' gas supply portfolios are diversified among spot purchases, long-term contract gas, storage gas, peak-shaving gas and other sources;

- State regulation of gas cost recovery generally tends to spread out short-term increases or decreases over time.

The U.S. EIA has noted:

"Residential customers see less [price] variation because their bills reflect monthly average prices, which do not fluctuate as much as daily prices. Also, many residential customers stabilize their monthly bills by participating in yearly budget plans provided by their local gas distribution companies."

State Regulatory Oversight and Coordination Contributes to Customer Protection

State public service / public utility commissions have oversight over the distribution costs of natural gas utilities. Utilities submit cost of gas adjustments to the commissions during the year as appropriate, to reflect different seasonal costs of the gas commodity. If the cost of gas itself rises or falls over a given period, that variation is reflected in the cost of gas adjustment provision. State oversight provides an additional measure of consumer protection.

Steps for Customers on Ways to Prepare to Manage Winter Heating Bills

There are steps that customers can take to manage their energy bills.

Customers are encouraged to contact their local gas utility for suggestions on budget-billing and bill payment plans. A budget-billing option allows customers to equalize monthly payments. For example, a customer's annual bill can be estimat-

There are steps that customers can take today to help manage their energy bills. Contact your local gas utility for suggestions on:

- Budget billing;
- Efficiency and conservation tips;
- Eligibility for low-income assistance.

Look on NGA's web site for links to the gas utilities in the region:
www.northeastgas.org/ldc_members.php/



ed based on past energy use and then divided into equal monthly payments. The local utilities also offer tips and have programs in place to help customers reduce their bill through energy-efficiency and conservation measures.

Energy bills are a particular concern for lower-income citizens, who are the most vulnerable to energy costs. They are encouraged to contact their utility to find out how to apply for state and federal energy assistance programs. In addition, many social service agencies and charitable organizations accept energy assistance applications for the winter heating season. A list of providers can be obtained by contacting your local utility.

Importance of Low-Income Home Energy Assistance Program (LIHEAP)

The Low-Income Home Energy Assistance Program – or LIHEAP – has been particularly important to the Northeast region. LIHEAP remains essential even at a time of lower average commodity prices. The U.S. Congress continues to consider authorization levels for the upcoming winter.

Value of Energy Efficiency

Energy efficiency remains a cornerstone of energy policy in the region. Utilities have made considerable investments over the years in offering their customers more efficient equipment and technologies. And efficiency gains have been achieved. Over one-third (39%) of all natural gas efficiency investments in the U.S. come from the nine Northeast states.⁸ AGA notes that average natural gas use per residential customer has declined by about one-third since 1980.

Infrastructure Enhancements and Accelerated Replacement

Accelerated repair and/or replacement of older natural gas distribution system components is an issue of focus for local utilities and regulatory agencies. As the utilities strive to build their systems to meet growing market demand, they also are working to replace older system components to increase efficiency, safety and environmental integrity. It's a priority area for the LDCs.

A Word About Transportation Contract Arrangements and the Ongoing Power Sector Challenge in New England

In reviewing winter gas supply, it is important to remember the distinction between "firm" and "non-firm" gas supply transportation contract arrangements, especially as it relates to the power generation sector.

Natural gas is provided under contract terms between a supplier and a customer. The contract terms are considered "firm" or "non-firm"/"interruptible." **Service to residential customers, for example, is firm.**

Larger commercial or industrial customers, such as a power generator, on the other hand, have the option of contracting for either firm or interruptible transportation service, or buying gas delivered at their facility from a third-party that holds the transportation capacity.

Interruptible transportation service includes in its contract terms the possibility of interruption under certain operational and market conditions. Those customers who elect to take interruptible service in any form often have alternative fuel capability for their operation.

In New England, where about 50% of power generation is linked to natural gas, there has been concern for a long time over the mismatch between power generator demand and contracted pipeline delivery capacity. The rising demand for natural gas within the region's electric market has not been sufficiently matched by a commitment to securing adequate reliable natural gas supplies and firm pipeline capacity contractual obligations. The electric power sector has not participated sufficiently in terms of investments in securing natural gas supplies for their generating units.



Challenges may exist again this winter during cold weather periods for those gas-fired generators and other "non-firm" users that have not secured capacity. As temperatures fall, operational flexibility also declines for those not prudently prepared under sufficient contractual arrangements.

Natural gas has clearly become the preferred power generation fuel in New England and its role is only likely to grow in coming years, especially as several non-gas-fired units retire from the grid.

Safety

Safety is the industry priority. Be sure to have your heating systems maintained annually. Look for the "Gas Safety Public Awareness" link on the NGA web site for general safety information.

Important Safety Messages

If you smell gas in your home or building, please move to a safe location and call your local gas company.

More information can be found here:

http://www.northeastgas.org/leak_recognition.php#suspect

In case of a snowstorm, be sure to clear snow and ice from external natural gas equipment at your home or building.

More information can be found here:

http://www.northeastgas.org/snow_ice_removal.php



Finally, be aware of carbon monoxide risks.

More information can be found here:

<http://www.nfpa.org/safety-information/for-consumers/fire-and-safety-equipment/carbon-monoxide>

FURTHER INFORMATION ON EFFICIENCY TIPS & CUSTOMER ASSISTANCE PROGRAMS

For further information, contact the following organizations, or visit their web sites.

Local Distribution Companies:

Contact your local natural gas utility by linking through the NGA web site. From www.northeastgas.org, go to the "Member Companies" link, and select the hyperlink to your local natural gas utility. The utility sites have information on specific programs that the companies offer, as well as, in many cases, links to other energy assistance agencies in their service areas.

Northeast Gas Association

The Northeast Gas Association represents the local natural gas utilities that serve customers in the six New England states, New Jersey, New York and Pennsylvania. Visit www.northeastgas.org.

American Gas Association

The American Gas Association represents more than 200 local energy utility companies that deliver clean natural gas throughout the United States. Visit www.aga.org.

New York State Energy Research and Development Authority (NYSERDA)

The New York State Energy Research and Development Authority (NYSERDA) has extensive information on energy efficiency and "smart energy" tips. Visit www.nyserda.ny.gov

National Energy Assistance Directors' Association

The National Energy Assistance Directors' Association (NEADA) is the primary educational and policy organization for the state and tribal directors of the Low-Income Home Energy Assistance Program (LIHEAP). LIHEAP is a federal program providing formula grants to states to help low-income families pay their heating and cooling bills. Its site is: www.neada.org

U.S. Department of Energy (DOE)

The U.S. Department of Energy has a helpful web link providing energy-saving tips for homeowners and others. The information is located at: <http://energy.gov/energysaver/energy-saver>

U.S. Energy Information Administration (EIA)

The EIA is the statistical agency of the U.S. Department of Energy. Publications of particular interest include its "Short-Term Energy Outlook," updated monthly, and its weekly "Natural Gas Market Update." Its site is located at: www.eia.gov.

End-Notes:

1. U.S. Department of Energy, "Daily Energy Prices," October 11, 2017
2. U.S. Energy Information Administration (EIA), "Short-Term Energy Outlook," October 11, 2017
3. U.S. Energy Information Administration (EIA), "Winter Fuels Outlook," October 11, 2017
4. Ibid.
5. U.S. Federal Energy Regulatory Commission (FERC), "Winter 2015-16 Energy Market Assessment: Report to the Commission," October 2015
6. U.S. Energy Information Administration (EIA), "Winter Fuels Outlook," October 11, 2017
7. U.S. Energy Information Administration (EIA), "Natural Gas Weekly Update," March 16, 2017
8. ACEEE, "State Energy Efficiency Scorecard," September 28, 2017