

10 Myths and Realities of Natural Gas and Electricity Purchasing

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ABSTRACT

In deregulated natural gas and electricity markets, many traditional purchasing practices brought from other businesses or even taken from energy's past may not serve end-users well. While there is no one right way to manage purchases in these deregulated markets, there are many important facts and trends that can be helpful in guiding decision-making.

This article uses the framework of "myths and realities" to describe 10 key issues in energy purchasing. It relies heavily on market price data and, in some cases, confronts conventional wisdom about recent developments in the energy markets facing end-users. Readers should note that most of this material is applicable to deregulated, as opposed to regulated, markets.

MYTH OR REALITY #1: COMMODITY COSTS MATTER MOST?

This is a reality. The "commodity" charge is usually, by far, the largest and most volatile part of a natural gas or electricity bill.

As Figure 1 (for natural gas) and Figure 2 (for electricity) show, over 60% of an end-user's total gas or electricity costs are typically comprised of commodity charges. Also, these components have the most price volatility, or movement. For example, commodity costs make average movements of 1% to 3% *per day*. That means that the biggest part of an end-user's energy costs can easily move by 5% or more within a week.

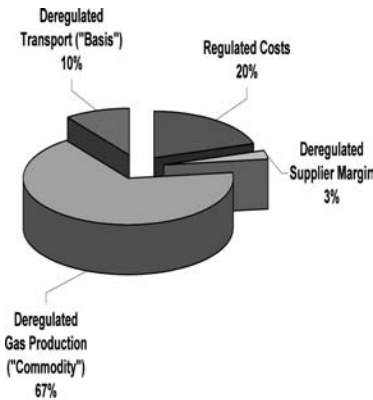


Figure 1. General breakdown of large end-user natural gas bill (before taxes).

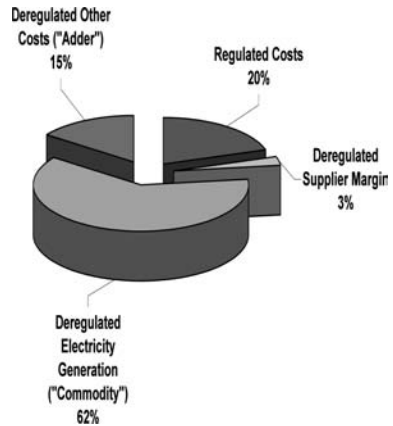


Figure 2. General breakdown of large end-user electricity bill (before taxes).

The commodity cost of natural gas is defined here as the cost of getting gas out of the ground and to the central U.S. hub for gas pricing at Henry Hub, Louisiana. This is where the New York Mercantile Exchange (NYMEX) futures contracts are priced. For electricity, the commodity cost is the charge for generating electricity at the standard pricing point in a given region.

There are many other, non-commodity charges on a natural gas or electricity bill—for elements like transmission, transportation, utility distribution, storage, electricity capacity and ancillary grid services, operational balancing, and taxes. However, these elements tend to be much smaller and more stable than commodity costs.

For this reason, it benefits end-users to keep their eyes on the prize, to focus first on the commodity portions of their bills and have a sound plan for managing commodity costs.

MYTH OR REALITY #2: THE NATURAL GAS AND ELECTRICITY MARKETS HAVE BECOME MORE CLOSELY CONNECTED?

This is also a reality. Over the past several years, the great majority of new power plants in the U.S. have been fueled by natural gas. For example, in 2006, 73% of net electricity capacity additions were gas-fired.¹ Natural gas has increasingly become the marginal fuel for

electricity generation in this country, with gas-fired plants often establishing the market-clearing price of power generation.

This phenomenon has several effects on the energy markets. First, it has meant that power plants have, other factors being equal, greatly increased the demand for natural gas. Between 2003 and 2007, natural gas use by power plants in the U.S. rose by 33%, while total natural gas consumption by all end-users (industrial, commercial, residential, and vehicle) declined by 7%.ⁱⁱ

Second, peak periods of electricity use in the summer (the warmest weeks) tend to draw down natural gas storage inventories that could otherwise be used as a buffer against cold winter heating seasons.

Third, in many markets like New England, New Jersey, the Mid-Atlantic, and Texas, the sharp rise and fall in natural gas prices experienced in recent years has been accompanied by similarly large swings in deregulated electricity prices.

The tightening linkage between the natural gas and electricity markets in many parts of the country has broadened the impact of natural gas market volatility on electricity futures prices. More than ever, end-user purchasing or hedging strategies should be understood and coordinated across energy sources.

MYTH OR REALITY #3: DEREGULATED ENERGY SUPPLIERS LIKE HIGH COMMODITY COSTS?

This is a myth. Deregulated natural gas and electricity supply is generally a low-margin business, especially when serving medium-sized or large business accounts. Deregulated energy suppliers do not usually own the energy assets that may be jumping up in price, though separate corporate affiliates may. Deregulated energy suppliers usually buy their energy supplies on the wholesale market.

The supplier margin, or mark-up, must cover all of the supplier's operational, billing, and credit costs in obtaining the energy supplies and delivering them in the proper quantities to the end-user's local utilities. Deregulated energy suppliers typically price their mark-up as a fixed fee per unit of energy consumption within the contract price. So, when energy prices are higher, their profit may be eroded by (a) lower usage, (b) more billing inquiries, and (c) more costly implications for customer default or late payment.

The low-margin nature of the energy supply business, together with the importance of the volatile commodity component of natural gas and electricity prices, implies that end-users should not devote undue time to negotiating or bidding suppliers down on their margin if it distracts them from managing the much larger and more volatile commodity component of their bills. This is especially true for large end-users.

Also, due to the low margins among energy suppliers, it is important to understand the credit or balance sheet strength of a supplier. Low margins, together with high, volatile commodity prices, means that supplier default risks should be strongly considered.

MYTH OR REALITY #4: NATURAL GAS PRICES WENT THROUGH A FUNDAMENTAL SHIFT IN RECENT YEARS?

This is a reality. Between 1994 and 1999, the price for the next year’s worth of natural gas on the NYMEX (“the one-year futures strip”) never closed at a price above \$4/MMBtu. Between 2000 and 2002, the NYMEX one-year futures strip closed above \$4/MMBtu on 39% of trading days. Since the beginning of 2003, the NYMEX natural gas one-year futures strip has closed above \$4/MMBtu on every trading day. This pattern is shown in Table 1.

Table 1. Frequency of NYMEX natural gas commodity prices for 1-year futures strip closing daily above and below \$4/MMBtu.

Year	No. of Trading Days Above \$4/MMBtu	No. of Trading Days Below \$4/MMBtu
2009	252	0
2008	253	0
2007	248	0
2006	249	0
2005	251	0
2004	251	0
2003	252	0
2002	53	197
2001	117	130
2000	122	127
1999	0	250
1998	0	251
1997	0	252
1996	0	251
1995	0	250
1994	0	251

MYTH OR REALITY #5: NATURAL GAS AND ELECTRICITY PRICES ARE EXCEPTIONALLY VOLATILE?

This is also a reality. Natural gas and electricity prices for next-month’s delivery typically vary by 1% to 3% from the end of one trading day to the next. If *intra-day* price movement is considered, the volatility increases further. This is quite high. It means that prices can easily vary by 5% or more within one week. Compared to many end-users’ budgets for other costs that may vary by only 5% over an entire year, this is exceptional.

The volatility of natural gas and electricity prices is higher than other energy commodities like crude oil, heating oil, and several measures of the US stock market, as Table 2 shows.

To manage such volatile prices, end-users would do well to have a long-range energy purchasing plan that is consistent with their budgets, tolerance for price risk, knowledge of energy markets, and administrative resources. Purchasing practices adapted from other products may not work well for natural gas and electricity because so much of an end-user’s deregulated energy costs are driven by financial commodity markets.

MYTH OR REALITY #6: THE NATURAL GAS MARKET HAS BECOME MORE VOLATILE?

The answer to this one depends. Nominally, the gas market has certainly become more volatile in recent years. Price movements of greater than \$.25/MMBtu per day are more common than in the past. However, percentage-wise, the natural gas futures market has

Table 2. Comparison of volatility (average absolute deviation) of daily closing prices of certain commodity and equity indices. Commodity futures prices are for prompt month (next delivery month).

Commodity or Financial Index	Average Absolute Deviationⁱⁱⁱ (for period 1/3/94 to 12/31/09)
NYMEX Natural Gas	2.7%
NYMEX Crude Oil	1.8%
NYMEX Heating Oil	1.8%
S&P 500 Stock Index	0.8%
Dow Jones Industrial Average Stock Index	0.8%

been fairly consistent over the past 16 years. As Table 3 shows, natural gas prices' daily movement as a percentage of their price level has not trended appreciably higher but, rather, has been somewhat stable (with periodically more volatile years like 2001 and 2009).

Maybe the best way to currently characterize the natural gas futures market is by saying that it has historically high prices, coupled with a near normal level of its price volatility. Similar levels of volatility are also present in electricity forward or futures markets where natural gas is the marginal fuel. Examples of such electricity markets are found in parts of New England, New Jersey, the Mid-Atlantic, Texas, and elsewhere.

The reason that end-users care so much about price volatility is that it affects their ability to budget and meet cash flow needs. There are a range of energy purchasing practices that end-users may wish to

Table 3. Volatility (average absolute deviation) of daily closing prices of NY-MEX natural gas commodity futures for prompt-month (next-month delivery).

<i>Year</i>	<i>Average Absolute Deviation of NYMEX Natural Gas Prompt Month Futures</i>
Entire Period (1/3/94 to 12/31/09)	2.7%
2009	3.5%
2008	2.3%
2007	2.3%
2006	3.2%
2005	2.2%
2004	2.5%
2003	2.9%
2002	2.8%
2001	3.6%
2000	2.7%
1999	2.4%
1998	2.7%
1997	2.7%
1996	3.5%
1995	2.2%
1994	2.3%

consider in trying to meet budget goals and maintain reasonable price stability, such as trigger or target pricing, high-side price protection, and flexibility in the starting and ending months of contracts (avoiding same-time-each-year annual procurements).

MYTH OR REALITY #7: HURRICANES CAUSE SIGNIFICANTLY HIGHER NATURAL GAS PRICES?

It is a reality for certain exceptional hurricanes; however, for most hurricanes this is a myth. Hurricanes are seen as major risks to natural gas prices because—if they take a certain path through the gas production region of the Gulf of Mexico—they may close or destroy offshore drilling platforms, as well as offshore and onshore processing and transportation infrastructure. In a market that generally has a fairly tight balance between supply and demand, the physical removal of supply can certainly increase prices.

In the case of the biggest, long-lasting hurricanes having taken a path that directly hit the major Gulf of Mexico drilling and infrastructure areas, the supply shortfall has had a meaningful impact on natural gas prices. Hurricane Ivan in 2004 and Hurricanes Katrina and Rita in 2005 fit this description. Hurricane Ivan caused cumulative shut-ins of 172 billion cubic feet (Bcf) of natural gas (equivalent to 1% of annual U.S. gas production at 2007 levels), and the shut-ins lasted 157 days. Hurricanes Katrina and Rita combined caused cumulative shut-ins of more than 804 Bcf (equivalent to >4% of annual U.S. gas production at 2007 levels), and the shut-ins lasted more than 300 days.^{iv,v}

Beyond Hurricanes Ivan, Katrina, and Rita, no other Gulf of Mexico hurricanes between 1995 and 2005 caused appreciable and long-lasting shut-ins.^{vi} In 2008, two hurricanes (Gustav and Ike) caused considerable, temporary natural gas shut-ins and permanent infrastructure damage, but the effect on natural gas prices was modest.^{vii} When thinking of hurricanes, it is also important to weigh the demand-side impact of hurricanes. Hurricanes tend to bring cooler, wetter weather when they move onshore, which in many cases reduces air-conditioning demand and thereby the demand for natural gas to run power plants—by more than the hurricanes reduce the supply of natural gas. This can dampen natural gas prices.

For end-users, this means that individual hurricanes can be thought to have little impact on natural gas prices in most years, but

to have an outsize impact occasionally. This bolsters the case for having a long-term energy purchase plan that can provide some price stability year after year and the flexibility to avoid the occasional updraft of prices during or shortly after hurricane seasons.

MYTH OR REALITY #8: THE MOST IMPORTANT DIFFERENCE BETWEEN NATURAL GAS AND ELECTRICITY SUPPLIERS IS PRICE?

The answer to this question depends. Even small differences in price between suppliers may be meaningful to certain end-users. Thus, some end-users focus the majority of their attention on small differences in the price quotes of suppliers bidding for their supply.

There are two main downsides to this approach. First, suppliers may structure their pricing in different ways, or have different sorts of pass-through or line-item costs. So, it is critical that end-users endeavor to make complete apples-to-apples comparisons of suppliers' pricing offers. Due to lack of time or familiarity with the details of energy pricing, some end-users may select the price that seems lowest—but is not lowest when the bills start arriving. Obtaining sample bills from all suppliers being evaluated, listing all pricing elements for the service being sought, is a good step to include.

The second weakness of focusing unduly on price is that factors beyond price are important to most end-users. In an environment of high, volatile commodity prices, the credit or balance sheet of a supplier is a key concern. A strong credit position will increase the likelihood that the supplier will be in business for the length of a transaction. The longer the contract, the more important this factor becomes. In addition, suppliers' pricing options, customer service, ability to meet billing or informational needs, and contracts (see below) can be key considerations.

End-users should not feel badly if they end up paying a little more, or paying the same and putting more time into supplier selection for service that more closely meets their needs.

MYTH OR REALITY #9: MOST DEREGULATED NATURAL GAS AND ELECTRICITY CONTRACTS ARE SIMILAR?

This is a myth. Though there are certain industry contract standards, there are wide variations among deregulated supplier energy

contracts. Some contracts are twice as long as others. Beyond sheer length, certain suppliers have contracts that may be fairly easily understood by a lay person, while others have extremely complicated language.

End-users should make sure that they are comfortable with and understand any energy contract they are considering signing and that they have completed any formal legal review that is warranted. Provisions that frequently come into play include those involving pricing at contract renewal and cash out pricing.

Regarding renewal pricing, some contracts have none at all—when the contract ends, a new one must be negotiated or the customer would return to standard utility service. Others auto-renew month-to-month at a floating, index rate. Still others auto-renew for a term of up to a year or more at the higher of the prior contract's fixed rate or a floating rate. Moreover, the floating rates can vary from having modest to extremely large supplier mark-ups, and they may or may not be tied to the price index that is most favorable to the end-user. Unless the customer is absolutely certain that it will terminate or renegotiate its supply contracts before they expire, the renewal provisions are very important to understand.

Likewise, unless the customer is on a pricing plan that provides the same fixed unit price regardless of the customer's consumption, the customer should be aware of the cash out provisions in energy contracts. Such provisions set forth the price at which over-consumption versus contract volumes will be billed and the price at which under-consumption versus contract volumes will be credited. There is wide variation in how cash outs are calculated. Some suppliers calculate them hourly (for electricity only), some do it daily, and some monthly. A range of indices may be used to determine the prices, some externally-published and some internally-calculated by suppliers. Some suppliers charge a premium above the index for over-consumption volumes and discount the price credited back to end-users for under-consumption. For multi-facility contracts, cash outs can be calculated by netting volumes across all facilities or done separately.

Due to the differences among supplier contracts and pricing provisions, it is worthwhile to invest adequate time understanding them and estimating how they will play out in actual bills over the life of the contract.

MYTH OR REALITY #10: THERE IS A SUPPLY OF GOOD, FREE DATA AVAILABLE ON THE NATURAL GAS AND ELECTRICITY MARKETS?

This is a reality. There is a great deal of information available on natural gas and electricity supply, demand, and pricing. Much of it is totally free. For end-users seeking more detail, there are services that provide just that for low fees. Several of these services are described in Table 4.

This is in no way a comprehensive list of good, inexpensive sources, nor is it an endorsement of these sites or a warranty about the actual information provided. The list is just a good starting point

Table 4. Partial List of Free or Inexpensive Natural Gas and Electricity Data Sources

<i>Provider</i>	<i>Web Address</i>	<i>Cost</i>	<i>Data Provided Include</i>
Energy Information Administration of U.S. Dept. of Energy	www.eia.doe.gov	\$0	Historical supply, demand, and prices; regional breakdowns; comprehensive price forecasts
National Oceanic and Atmospheric Administration	www.noaa.gov	\$0	Weather data at numerous locations (historical, current, and forecast)
CME/New York Mercantile Exchange	www.cmegroup.com	\$0	Futures price data for natural gas, electricity, & other energy commodities
Intercontinental Exchange	www.theice.com	\$0	Cash and futures prices for various natural gas and electricity points
Oilnergy	www.oilnergy.com	\$0	Several NYMEX gas and oil futures charts
TFC Commodity Charts	futures.tradingcharts.com	\$0	Several NYMEX gas and oil futures charts
Barchart	www.barchart.com	\$240+/yr	Detailed current & historical commodity futures prices

for end-users wanting to make more informed decisions in the energy markets. (Some of the free sites have added features requiring payment.)

Beyond the sources listed here, many natural gas and electricity suppliers create market analyses that they provide free to customers, potential customers, and/or the public at large.

CONCLUSION

Deregulated natural gas and electricity markets operate against a backdrop of volatile prices determined largely by financial commodity markets. Those conditions make purchasing natural gas and electricity different than purchasing other significant budget items like health care, capital equipment, and technology. Understanding the particulars of the energy commodity markets and the way that deregulated suppliers operate in those markets, as well as acting in a strategic manner, will give end-users the best chance to set reasonable budgets and to manage those budgets.

Although data in this article have been obtained from sources believed to be reliable, no warranties about the accuracy or adequacy of this information are made. This information contains only opinions and is neither intended as a forecast of future events nor a guarantee of future results. This information is not intended to constitute specific advice to an energy user, supplier, or advisor.

References

1. Energy Information Administration (EIA), U.S. Department of Energy, "Capacity Additions, Retirements and Changes by Energy Source, 2006, Table 2.6," *Electric Power Annual 2006*. http://www.eia.doe.gov/cneaf/electricity/epa/epaxlfile2_6.pdf [accessed August 8, 2008]. Calculation cited in text used Generator Nameplate Capacity data and subtracted Generator Retirements from Generator Additions.
2. EIA, "Summary Statistics for Natural Gas in the United States, 2003-2007, Table 1," *Natural Gas Annual 2007*. http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_annual/nga.html [accessed January 17, 2010].
3. Data on the duration and volume of natural gas shut-ins were obtained from the final reports on the storms published by Minerals Management Service (MMS), U.S. Department of Interior. Specific references are "Hurricane Ivan Evacuation and Production Shut-In Statistics" (as of February 14, 2005). <http://www.mms.gov/ooc/press/2005/press0214.htm> [accessed July 14, 2005]; and "Hurricane Katrina/Hurricane Rita Evacuation and Production Shut-In Statistics" (as of June 19, 2006). <http://www.mms.gov/ooc/press/2006/press0621.htm> [accessed August 7, 2008]. Shut-ins resulting from Hurricanes Katrina and Rita continued past MMS' final report, and MMS stopped shut-in reporting after June 19, 2006.

4. Data on total U.S. dry natural gas production were obtained from EIA, "Summary of Natural Gas Supply and Disposition in the United States, 2003-2008 Table," *Natural Gas Monthly*, July 2008. http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html [accessed August 7, 2008].
5. See EIA, *The Impact of Tropical Cyclones on Gulf of Mexico Crude Oil and Natural Gas Production, 2006*, page 8. <http://tonto.eia.doe.gov/FTPROOT/features/hurricanes.pdf> [accessed August 8, 2008].
6. See EIA, *Impact of the 2008 Hurricanes on the Natural Gas Industry, 2009*, http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2009/nghurricanes08/nghurricanes08.pdf [accessed January 17, 2010].

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