

## Natural Gas Prices

### Summary

The price of natural gas has risen dramatically since the 2000/2001 heating season. Following is this year's annual Board review of natural gas prices and the impact they may have on consumers in Iowa. The Henry Hub spot price for natural gas averaged \$7.17 per Mcf in 2007 and is expected to average \$9.71 per Mcf in 2008 and \$8.55 per Mcf in 2009.<sup>1</sup>

The investor owned utilities in Iowa have issued press releases advising consumers that natural gas prices are expected to be high during the upcoming winter heating season (November-March). They estimate consumers will see a 20 to 30 percent increase in their natural gas bills during the 2008/2009 heating season. The Board believes Iowans should plan accordingly and cautions that if the weather during the winter heating season is unseasonably cold or if there are any hurricane-related supply constraints, a larger increase in natural gas bills during the upcoming heating season should be expected.

### Introduction

Natural gas is, for the most part, a domestically produced commodity. The Gulf region, Southwestern states, the Rocky Mountain area, and portions of the Appalachian Mountain area have traditionally been the main production areas within the United States. Once natural gas is released from production wells, it goes into a pipeline system that delivers it to customers throughout the country. Because production and transportation of natural gas are fairly constant, the short-term fluctuations in demand are dealt with by injections into and removals from storage. The storage "fields" are usually constructed from old natural gas production formations, salt caverns, or large aquifers located near distribution areas. Finding new sources of natural gas, adding more production capacity, and if necessary, building more pipelines are several ways to increase the supply of natural gas.

### Market Forces that Impact Natural Gas Prices

The supply of and the demand for any freely traded good or service can influence the price of that good or service. Natural gas is no different. Following is a discussion of the supply and demand factors that have influenced or may potentially impact the price of natural gas.

#### Supply Factors

##### Storage

Since the production of natural gas tends to be relatively constant, excess gas can be stored for future use. Storage fields are normally filled during the months of April through October when demand has traditionally been less and then

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<sup>1</sup> Energy Information Administration Short-Term Energy Outlook, September 9, 2008 release.

withdrawn as needed during the heating season to cover demand. Storage has previously served as a hedge against price volatility in addition to its role in assuring operational integrity/deliverability of natural gas to customers.

The amount of gas put into storage can fluctuate dramatically depending on the price of natural gas and the weather during the storage season. In past years, the price of gas would normally drop during the storage season since demand was less. However, with the increased amount of natural gas being used for electric generation, the price has not fallen as much, if at all, during the last several storage seasons.

Another factor that affects the storage levels is the weather. If the weather is warmer than normal, more natural gas is used for electric generation and less injected into storage. Additionally, the Gulf Coast region, a major production area for natural gas, is susceptible to hurricanes. Hurricanes in this region can disrupt the flow of natural gas causing short or long-term interruptions depending on the strength of the hurricane and damage sustained by the facilities.

#### “Unconventional” Drilling

Breaking historical trends of stagnated production growth, the natural gas industry had a 9 percent increase in production between first-quarter 2007 and first-quarter 2008.<sup>2</sup> Much of the growth can be attributed to “unconventional” drilling where gas is more difficult to produce. As the price of natural gas has increased and technology has improved, it has become more economical to use “unconventional” methods to drill for natural gas. One of the most successful to date is to drill horizontally rather than vertically. This has been very effective in shale fields like the Barnett Shale field, much of which lies beneath the city of Fort Worth, TX. Horizontal drilling reduces the footprint of the drilling operation and allows production from areas without disrupting the surface activity.

Another “unconventional” method is deep water drilling in which wells are drilled in more than 9,000 feet of water. Deep water drilling has aided in increasing the production of natural gas in the Gulf of Mexico by 2 percent from the first quarter of 2007 to the first quarter of 2008.

#### Liquefied Natural Gas (LNG)

It was anticipated that imported LNG would provide additional supplies to supplement the North American natural gas production. However, LNG has become a global commodity, which is usually delivered to the country willing to pay the highest price. In 2008, U.S. imports of LNG have been low with most shipments going to Asia-Pacific and Europe.

#### Natural Gas Pipelines

Natural gas is transported from the production areas to the distribution points via pipelines. The Midwest has historically relied on pipelines from the Gulf Coast

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<sup>2</sup> Energy in Brief, “What Everyone Should Know about Energy,” June 11, 2008.

producing region leaving it vulnerable to price spikes and supply shortages in the event of a hurricane. A new pipeline is being constructed from the Rocky Mountain region to the Eastern US. This pipeline, Rockies Express (REX), allows producers in the Rocky Mountain region to deliver natural gas to the Midwest and eastern parts of the country and provides utilities with new supply options.

## **Demand Factors**

### Weather

Weather is a major factor influencing the price of natural gas and the volatility of the market. Cold weather during the heating season increases the demand for natural gas while warm weather in the winter months decreases that demand. Summer weather also impacts the demand for natural gas as more and more utilities rely on intermediate or peaking units fueled by natural gas to meet the increased demand for electricity when the temperature is above normal during the summer months.

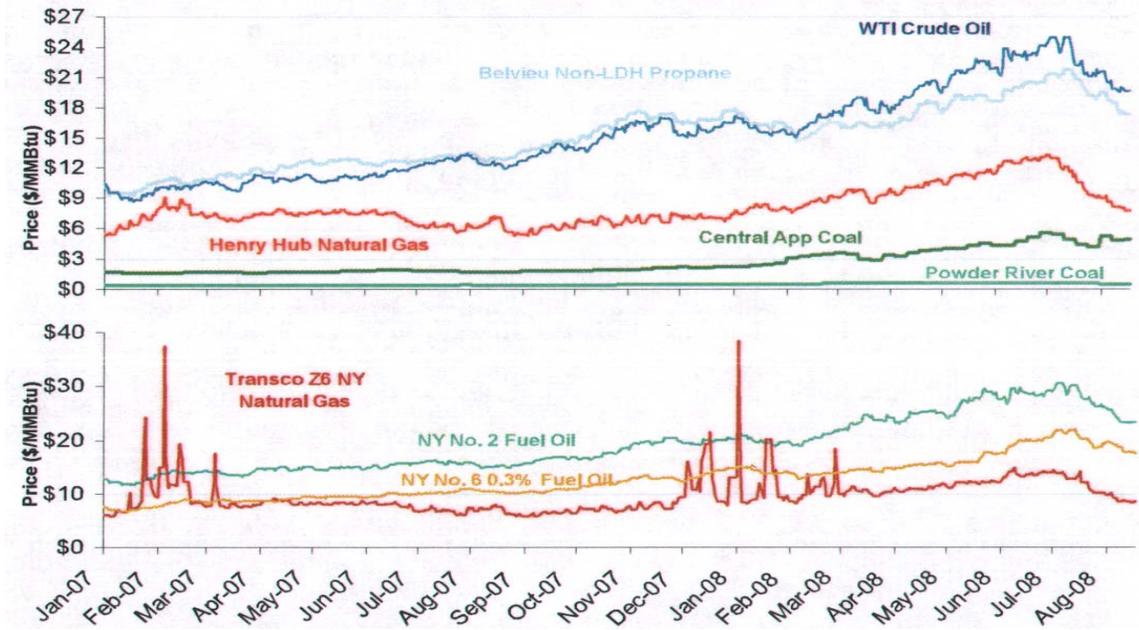
### Price of Alternative Fuels

Another factor impacting the demand for natural gas is the price of alternative or competing fuels. Many industrial processes allow the manufacturer to burn either natural gas or heating oil. This year there have again been record prices for crude oil, over \$140 per barrel, which is up substantially from \$40 per barrel in 2004. The price for crude oil has dropped in recent months, but is still around \$100 per barrel, which may have more manufacturers using natural gas during the upcoming heating season.

For electric generation, if the price of fuel oil is high enough, generation that burns natural gas becomes more economical and will displace units that burn fuel oil. Additionally, the price of coal has also risen. U.S. coal supplies are now traded globally creating more competition for American utilities purchasing coal for their coal-fired generation plants. Coal-fired plants generate over 75 percent of the electricity used in the state of Iowa. As the price for coal increases, it is possible that in some instances, burning natural gas as a substitute for coal may become more economical, increasing the demand for natural gas.

The chart below shows the trend for the prices of coal, natural gas and crude over the past year.

## Oil, Coal and Natural Gas Daily Spot Prices



Source: Derived from ICE and Bloomberg data.

Note: Coal prices are quoted in \$/ton. Conversion factors to \$/MMBtu are based on contract specifications of 12,000 btus/pound for Central Appalachian coal and 8800 btus/pound for Powder River Basin coal.

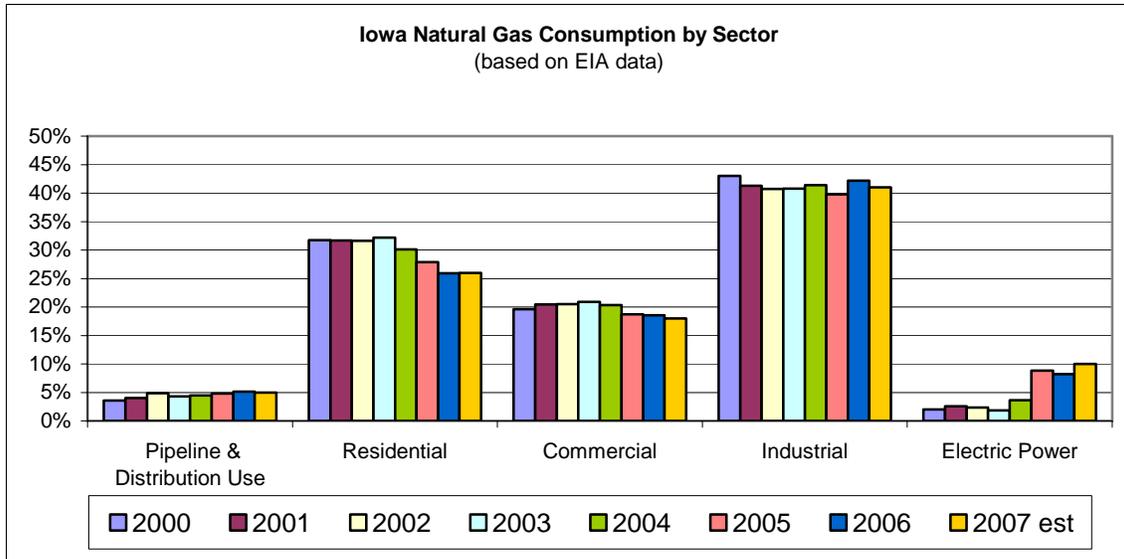
### U.S. Economy

Economic activity also influences the demand for natural gas. Normally, as economic activity increases so does the demand for natural gas. This is especially true for industrial activity relying on natural gas for fuel.

### Demand by Sector

Based on national forecasts demand for all sectors consumption is expected to increase in 2008 and 2009. It is anticipated that the electric power generation sector will generate the largest increase in demand, followed by the industrial sector. Total consumption is expected to increase by 3 percent in 2008 and 1.7 percent in 2009 while consumption in the electric power sector is expected to increase 3.4 percent and 3.1 percent respectively.

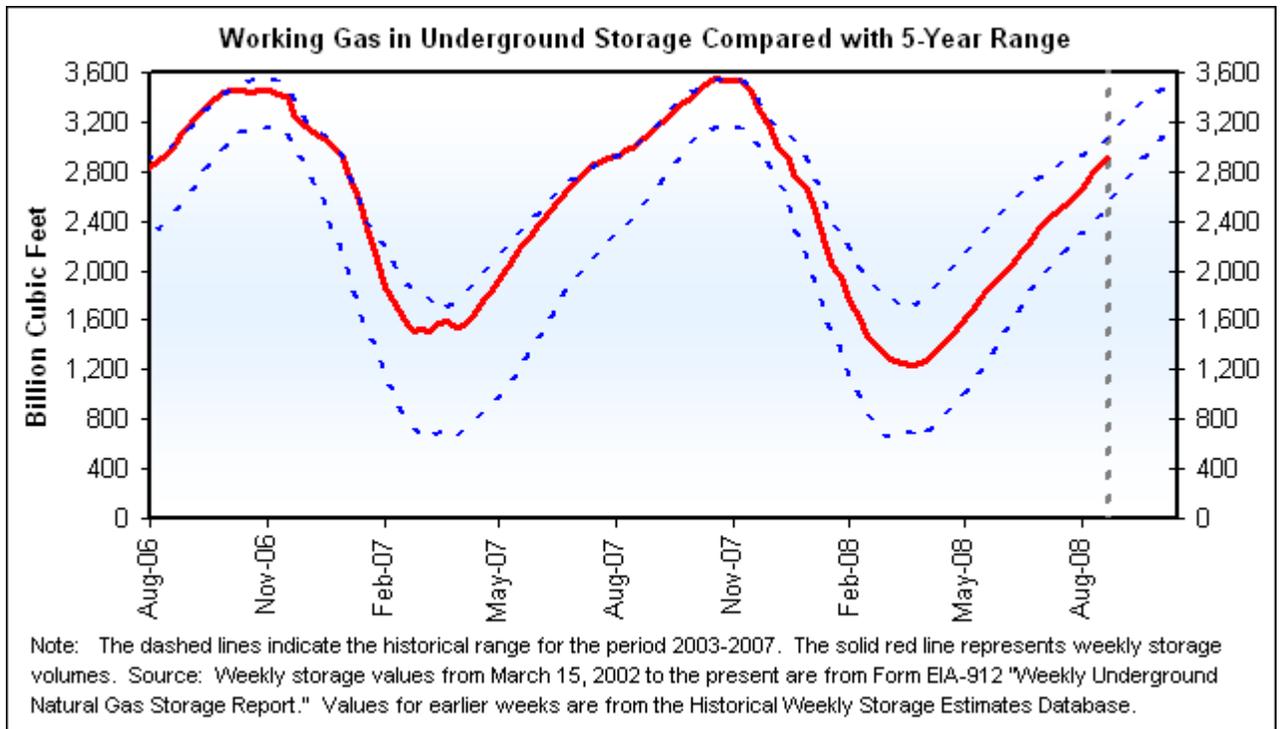
The chart below shows the trends in Iowa's consumption from 2000 to 2006 for the various sectors.



### Status of Current Market Factors

The supply and demand factors discussed above give mixed signals with respect to what to expect from natural gas prices in the upcoming heating season. Both crude oil and natural gas prices have decreased the last several months, but that could easily change. Currently, we are in the midst of the peak hurricane season, which continues through October. Although the Gulf Coast has not had any major disruptions to date, future hurricane activity could still affect the supply of natural gas from the Gulf region.

The EIA storage data published September 11<sup>th</sup> for the week ending September 5, 2008 shows that storage levels are within the past 5-year range. Current stocks are 4.8 percent below last year's levels but 2.9 percent above the 5-year average. They estimate that with average injections through the remainder of the storage season (through the end of October), storage will exceed 3,350 Bcf.



Forecasters predict that at least two-thirds of the nation, including Iowa, can expect colder-than-average temperatures, which will increase the demand for natural gas this winter.

### Role of Speculative Trading

Speculative traders buy and sell natural gas (and other commodities) to make a profit. They have played an increasingly large and influential role in the natural gas market. According to a report released by Energy Solutions, Inc., on October 29, 2004, price moves caused by speculative buying or selling are referred to as "technical" moves. Technical moves cannot usually be sustained without underlying fundamentals to support them. There is some concern, however, that as speculative activity continues to increase, it is becoming more and more difficult to explain natural gas pricing behavior.

For example, on August 21, 2008, the Washington Post reported that the Commodity Futures Trading Commission found that a firm, which at one point in July held 11% of all the oil contracts on the regulated New York Mercantile Exchange, was in fact more of a speculator, holding oil contracts as a profit-making investment rather than a means of lining up the actual delivery of fuel. The discovery revealed how an individual financial player had gained enormous sway over the oil market without the knowledge of regulators. Some lawmakers have blamed those firms for the volatility of oil prices, including the tremendous run-up that peaked earlier in the summer.

The affect of speculative trading on the natural gas market is difficult to determine, but many believe it has caused natural gas prices to rise beyond what is explainable based on traditional supply and demand factors.

### **The Role of Gas Hedging**

Local distribution gas utilities (LDCs) purchase natural gas on behalf of their customers, generally on a short-term basis, at prevailing market prices and pass these charges through to customers at cost. In recent years, these short-term market prices have been significantly more volatile during the heating season, compounded by cold weather variability and its effect on gas usage. Natural gas hedging activities involve the use of financial instruments to stabilize the utility's gas purchase costs and include both price and volume hedging. Price hedging reduces the risk from price fluctuations, and volume hedging reduces risk related to weather, but hedging does not necessarily yield the lowest price of natural gas to the consumer. These activities augment the utility's traditional use of gas storage contracts for reducing price and weather risk.

### **Actions Taken by Iowa's Investor Owned Natural Gas Utilities**

The Board maintains close contact with natural gas LDCs on issues related to customer bill volatility and overall price levels. Each of the utilities has a plan, known as a hedging plan, to manage the risk of customer bill volatility. These plans are updated annually to include the effects of projected increases or decreases in demand and include gas storage efforts, and financial hedges. The hedging plans typically cover approximately 65 to 75 percent of the projected heating season demand. The remaining quantities are purchased in the open market. Board staff has had in-person hedging plan meetings and additional telephone conversations with each of those utilities. Each utility also has a Board-approved energy efficiency plan.

The Board is generally satisfied with utility risk management activities, as exercised through their hedging plans. However, it should be noted that hedging only deals with price volatility, not with broad, long-term trends in market supply and demand factors. Hedging plans have their place because they can help deal with unexpected short-term price changes. However, factors affecting prices that are beyond utilities' control are at work in the U.S. natural gas marketplace. Neither hedging plans nor other unilateral actions by utilities should be expected to deal completely with the prices customers may face in coming winters.

The Board will continue to monitor the factors that would affect the price of natural gas this winter. The Board believes many, and hopefully most, customers are aware of the potential for high natural gas bills during this winter heating season.