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**EXCESSIVE SPECULATION  
IN THE NATURAL GAS MARKETS**

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# EXCESSIVE SPECULATION IN THE NATURAL GAS MARKET

JUNE 25, 2007

## I. EXECUTIVE SUMMARY

Since 2001, the U.S. Senate Permanent Subcommittee on Investigations (“the Subcommittee”) has been examining the structure and operation of U.S. energy markets. In June 2006, the Subcommittee issued a bipartisan staff report, *The Role of Market Speculation in Rising Oil and Gas Prices: A Need to Put the Cop Back on the Beat*,<sup>1</sup> analyzing the extent to which the increasing amount of financial speculation in energy markets has contributed to the steep rise in energy prices over the past few years. The report concluded: “Speculation has contributed to rising U.S. energy prices,” but also that “gaps in available market data” made quantification of the speculative component problematic.<sup>2</sup> The report endorsed the estimate of various analysts that the influx of speculative investments into crude oil futures accounted for approximately \$20 of the then-prevailing crude oil price of approximately \$70 per barrel. The report’s analysis was based entirely on publicly available data about the overall level of financial investments in energy markets and publicly available data on energy prices and supplies.

The Subcommittee’s staff report recommended that the Commodity Futures Trading Commission (“CFTC”) be provided with the same authority to regulate and monitor electronic energy exchanges, such as the Intercontinental Exchange (“ICE”), as it has with respect to the fully regulated futures markets, such as the New York Mercantile Exchange (“NYMEX”), to ensure that excessive speculation did not adversely affect the availability and affordability of vital energy commodities through unwarranted price increases. Congress has not taken any action since then to authorize CFTC oversight of unregulated energy markets like ICE.

Shortly after the Subcommittee issued the report in 2006, the natural gas market entered a period of extreme price volatility punctuated by the collapse in September 2006 of Amaranth Advisors LLC (“Amaranth”), one of the largest hedge funds in the natural gas market. From the last week in August until the middle of September 2006, Amaranth’s natural gas positions lost over \$2 billion in value, precipitating the liquidation of the entire portfolio of the \$8 billion fund.

In late summer, natural gas prices began falling. For example, the price of the NYMEX futures contract to deliver natural gas in October 2006 fell from a high of \$8.45 per MMBtu in late July to just under \$4.80 per MMBtu in September, the lowest level for that contract in two and one-half years. The difference in price between the NYMEX natural gas futures contract for March 2007 and for April 2007 – called the price spread – fell from a high of nearly \$2.50 per MMBtu in July to less than 60 cents in September, a drop of 75%. The price for the immediate delivery of natural gas, called the spot price, fell from \$7.49 per MMBtu in late August to \$3.66

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<sup>1</sup> S. Prt. No. 109-65, 109<sup>th</sup> Congress, 2<sup>nd</sup> Sess (June 27, 2006).

<sup>2</sup> *Id.*, at p. 6.

per MMBtu in early October, the lowest level in four years.<sup>3</sup> The Electric Power Research Institute described this price collapse as “stunning . . . one of the steepest declines ever.”<sup>4</sup>

Throughout this period, the market fundamentals of supply and demand were largely unchanged. Natural gas supplies were plentiful, and the amount of natural gas in storage remained higher than average throughout the summer and into the early fall. The large price variations in the face of steady supply and demand trends raises several questions: If the underlying supply and demand factors were unchanged, what was causing the large price swings? To what extent was the collapse of Amaranth related to the fall in prices? If Amaranth’s collapse either caused or accelerated the price drops, then were Amaranth’s positions responsible for the higher prices and large spreads that prevailed throughout the summer? Was there adequate market oversight to ensure that large hedge funds were not distorting natural gas prices?

In October 2006, the Subcommittee began its investigation into the behavior of natural gas prices earlier in the year. The Subcommittee analyzed millions of natural gas transactions from trading records obtained from NYMEX and ICE, the two principal exchanges for energy commodities, and from Amaranth and other traders. In addition, the Subcommittee conducted numerous interviews of natural gas market participants, including natural gas traders, producers, suppliers, and hedge fund managers, as well as exchange officials, regulators, and energy market experts. NYMEX, ICE, Amaranth, and many traders cooperated with detailed inquiries. The Subcommittee also reviewed commodity market statutes and regulations, and researched a variety of legal issues.

The trading records examined by the Subcommittee disclosed that from early 2006 until its September collapse, Amaranth dominated trading in the U.S. natural gas financial markets. Amaranth bought and sold thousands of natural gas contracts on a daily basis, and tens of thousands of contracts on certain days. It accumulated tens of thousands of natural gas holdings, or “positions,” on both NYMEX and ICE. The CFTC defines a “large trader” for reporting purposes in the natural gas market as a trader who holds at least 200 contracts; NYMEX examines a trader’s position if it exceeds 12,000 natural gas contracts in any one month. Amaranth held as many as 100,000 natural gas contracts in a single month, representing 1 trillion cubic feet of natural gas, or 5% of the natural gas used in the entire United States in a year. At times Amaranth controlled 40% of all of the outstanding contracts on NYMEX for natural gas in the winter season (October 2006 through March 2007), including as much as 75% of the outstanding contracts to deliver natural gas in November 2006.

Amaranth’s large positions and trades caused significant price movements in key natural gas futures prices and price relationships. For example, Amaranth’s purchases of contracts to deliver natural gas in the winter months, in conjunction with Amaranth’s sales of natural gas contracts for delivery in the summer months, drove winter prices far above summer prices. These differences between winter and summer prices, called “price spreads,” were far higher in

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<sup>3</sup> Federal Energy Regulatory Commission (FERC), Winter 2006-07 Energy Market Assessment, Item No.: A-3, October 19, 2006, at p. 2.

<sup>4</sup> Electric Power Research Institute, Natural Gas Issues: Turnaround Prospects, Energy Markets and Generation Response, October 2006, at p. 1.

2006 than in previous years—until the collapse of Amaranth, when the price spreads returned to more normal levels. On several specific dates, Amaranth’s massive trades were responsible for large jumps in the price differences between the futures contracts for March and April 2007. Traders interviewed by the Subcommittee said that during the spring and summer of 2006 the differences between winter and summer prices were “clearly out-of-whack,” at “ridiculous” levels, and unjustified by supply or demand.

Purchasers of natural gas during the summer of 2006 for delivery in the following winter months paid inflated prices due to Amaranth’s large-scale speculative trading. Businesses such as utilities had to either absorb this added expense or pass the higher costs onto the ultimate consumer, such as residential users who paid higher home heating bills.

The current regulatory system was unable to prevent Amaranth’s excessive speculation in the 2006 natural gas market. Under current law, NYMEX is required to monitor the positions of its traders to determine whether a trader’s positions are too large. If a trader’s position exceeds pre-set “accountability levels,” the exchange may require a trader to reduce its positions. The Amaranth case history demonstrates two critical flaws. First, NYMEX has no routine access to information about a trader’s positions on ICE in determining whether a trader’s positions are too large. It is therefore impossible under the current system for NYMEX to have a complete and accurate view of a trader’s position in determining whether it is too large.

Second, even if NYMEX orders a trader to reduce its positions on NYMEX, the trader can simply shift its positions to ICE where no limits apply. This is precisely what Amaranth did after NYMEX finally told Amaranth, in August 2006, to reduce its positions in two contracts nearing expiration, contracts to deliver gas in September and October 2006. In response, Amaranth reduced its positions on NYMEX and increased them on ICE, maintaining the same overall positions in the market. Within a few days, Amaranth resumed increasing its positions, mostly on ICE. By the end of August, Amaranth held nearly 100,000 short positions in the September contract, mostly on ICE, and a total of nearly 90,000 short positions for the October contract on both ICE and NYMEX. These were huge positions—each variation of one cent in a position of 100,000 contracts changes a trader’s profit or loss by \$10 million. As a result, NYMEX’s instructions to Amaranth did nothing to reduce Amaranth’s size, but simply caused Amaranth’s trading to move from a regulated market to an unregulated one.

The data analyzed by the Subcommittee, together with trader interviews, show that NYMEX and ICE are functionally equivalent markets. Natural gas traders use both markets, employing coordinated trading strategies. In many instances the volumes on ICE are comparable to or greater than the volumes on NYMEX. Traders use the natural gas contract on NYMEX, called a futures contract, in the same way they use the natural gas contract on ICE, called a swap, for risk management and economic purposes. The data show that prices on one exchange affect the prices on the other. Given their equivalence, there is no sound basis for one exchange to be regulated and the other not.

The disparity in regulation between NYMEX and ICE results from the so-called “Enron loophole” in the Commodity Exchange Act. The Enron loophole, which was inserted into the law in 2000 at the request of Enron and others, exempts electronic energy exchanges such as ICE

from CFTC oversight and regulation. Unlike NYMEX, there are no limits on the trading on ICE, and no routine government oversight. The Amaranth case history demonstrates that the disparity in regulation of the two markets prevents the CFTC and the exchanges from fully analyzing market transactions, understanding trading patterns, and compiling accurate pictures of trader positions and market concentration; it requires them to make regulatory judgments on the basis of incomplete and inaccurate information; and it impedes their authority to detect, prevent, and punish market manipulation and excessive speculation.

Natural gas traders are well aware of the consequences of this limitation. For example, when Amaranth's lead energy trader predicted in an email that "boy I bet you see some CFTC inquiries" into a price spike that affected the final price of the September 2006 futures contract, another trader reminded him that most of the trades had taken place on ICE using swaps. The trader wrote: "Until they monitor swaps no big deal." His comment captures the problem – current law requires our regulators to oversee U.S. energy markets with incomplete information and inadequate authority.

To repair the broken regulatory system, Congress needs to require currently unregulated exchanges, such as ICE, to comply with the same statutory obligations as regulated markets, such as NYMEX, and operate under the same rules to prevent market manipulation and excessive speculation from affecting the price of vital energy commodities.

Some market observers contend that Amaranth's collapse proved the energy markets are functioning well, because an overly risky trader met its demise without harming other traders or the natural gas market as a whole. In fact, however, many other market participants were harmed by Amaranth's massive speculative trading. For example, utilities that provide gas-powered electricity or heating to homes, schools, and hospitals, and industries that use natural gas in manufacturing paid inflated prices. Many of their costs were passed onto consumers. Some companies told the Subcommittee that extreme price swings in the natural gas futures market make it more difficult and expensive to use the futures market for hedging. Still others told the Subcommittee that they have lost confidence in the natural gas market, viewing it not as a mechanism to set prices reflecting supply and demand, but as a market increasingly responsive to a few dominant traders with sufficient capital to affect prices.

If given authority to police all U.S. energy commodity markets, the CFTC should use this authority to monitor aggregate positions taken by traders on both NYMEX and ICE, and to analyze trading data from both exchanges. Regulators should also strengthen their monitoring and oversight to prevent excessive speculation for all of the months in which contracts are traded, not just contracts near expiration. The Amaranth experience demonstrates how excessive speculation can distort prices of futures contracts that are many months from expiration, with serious consequences for other market participants. To prevent excessive speculation from causing unwarranted price changes, commodity regulators need to conduct oversight over both a broader market and for a longer time horizon than the next few months.

A final major problem is the inadequate oversight capabilities of the CFTC. The CFTC suffers from antiquated technology systems, a shrinking staff, and flat budgets. In part, these budgetary woes have occurred because Congress has never authorized the CFTC, as it has



virtually every other federal financial regulator, to collect user fees from the markets it oversees. Congress needs to provide the CFTC with adequate resources to do its job, and authorize user fees to pay for the additional expense.

Energy is a critical factor in the future of the U.S. economy. How it is priced is of vital concern. The Amaranth case history is not just the story of a single hedge fund dominating the market, but of a broken regulatory system that has left our energy markets vulnerable to any trader with sufficient resources to alter energy prices for all market participants.

The remainder of this Report details the Amaranth case history. Section II presents the staff findings and recommendations from the Subcommittee's investigation. Section III provides general information on the importance of natural gas to the U.S. economy, its production, economic uses, and the fundamentals of natural gas supply and demand. Section IV provides general information on the cash and financial markets for natural gas, and an overview of the regulatory structure for the various types of energy exchanges. Section V describes the unusual and extreme behavior of natural gas prices in the spring and summer of 2006, and analyzes the role of Amaranth and other hedge funds in forming those prices. Section V also describes the impact of Amaranth's trading on other market participants. Sections VI and VII offer recommendations to restore the integrity of energy commodity markets in the United States and protect them against market manipulation and excessive speculation. Section VIII contains additional Minority Staff views on the Report.

## II. FINDINGS AND RECOMMENDATIONS

### A. FINDINGS

**(1) A single hedge fund, Amaranth Advisors LLC, dominated the U.S. natural gas market in 2006.**

- (a) Amaranth accumulated massive natural gas holdings on NYMEX and ICE spanning five years, from 2006-2010.
- (b) Amaranth accumulated such large positions and traded such large volumes of natural gas in 2006, on both NYMEX and ICE, that it had a direct effect on U.S. natural gas prices and increased price volatility in the natural gas market. The larger than usual differences between winter and summer futures prices that prevailed during the spring and summer of 2006 were largely the result of Amaranth's large-scale trades rather than the normal market interaction of many buyers and sellers.
- (c) Amaranth's 2006 positions in the natural gas market constituted excessive speculation.

**(2) In August 2006, Amaranth traded natural gas contracts on ICE rather than on NYMEX so that it could trade without any restrictions on the size of its positions.**

- (a) When NYMEX directed Amaranth to reduce its positions in September 2006 and October 2006 natural gas futures contracts, Amaranth simply transferred those positions to ICE, an unregulated market, thereby maintaining its overall speculative position in the natural gas market.
- (b) NYMEX's attempt to limit speculative trading during the last day of trading on the September 2006 natural gas futures contract failed, because neither NYMEX nor the CFTC had any authority, mandate, or ability to limit trading on ICE that affected the pricing of the NYMEX futures contract.

**(3) Amaranth's actions in causing significant price movements in the natural gas market demonstrate that excessive speculation distorts prices, increases volatility, and increases costs and risks for natural gas consumers, such as utilities, who ultimately pass on inflated costs to their customers.**

- (a) Purchasers of natural gas during the summer of 2006 for delivery in the following winter months paid inflated prices due to Amaranth's speculative trading.
- (b) Many of these inflated costs were passed on to consumers, including residential users who paid higher home heating bills.

**(4) The two major U.S. exchanges that trade natural gas – NYMEX and ICE – affect each other's prices.**

- (a) Significant volumes of natural gas are traded on both NYMEX and ICE, and both markets play a key role in setting U.S. natural gas prices.

(b) The contracts used on NYMEX and ICE to trade natural gas, called futures contracts on NYMEX and swaps on ICE, are equivalent financial products that serve the same risk-management purposes.

(c) Traders routinely buy and sell natural gas contracts on both NYMEX and ICE, and hold positions in both markets.

(d) The price of NYMEX futures and ICE swaps are virtually identical up until the final half hour of the last trading day of the NYMEX contract, when NYMEX and ICE prices typically differ by a few cents at most.

**(5) Current restraints on speculative trading to prevent manipulation and price distortions are inadequate.**

(a) The CFTC lacks statutory authority to establish or enforce speculative position limits on the trading of natural gas on ICE or other Exempt Commercial Markets.

(b) When large traders choose to trade on ICE rather than NYMEX, it is difficult, if not impossible, for NYMEX to prevent price manipulation or excessive speculation from distorting NYMEX prices, because NYMEX does not have information regarding, or the jurisdiction to limit, trading on ICE even though ICE trades affect NYMEX futures prices.

(c) The CFTC's primary strategy to stop excessive speculation has been to prevent manipulation of the final price of a futures contract that is about to expire, rather than to generally review speculative trades affecting a range of futures contract prices.

**(6) The CFTC is unable to meet its statutory mandate to prevent market manipulation and excessive speculation from causing sudden, unreasonable, or unwarranted energy prices.**

(a) The CFTC lacks statutory authority to effectively oversee U.S. energy commodity markets, because the "Enron Loophole" prevents the CFTC from overseeing ICE.

(b) The CFTC lacks budgetary, staff, and technological resources to effectively monitor energy commodity markets.

(c) As a result of the lack of legal authority and budgetary resources, the CFTC was unable to prevent excessive speculation in the natural gas market in 2006.

(d) If the CFTC is not provided with additional legal authority and resources, the CFTC will remain unable to accomplish its statutory mission.

(e) The inability of the CFTC to accomplish its statutory mission with respect to the trading of energy commodities presents a threat to the energy and economic security of the United States.

## **B. RECOMMENDATIONS**

**(1) Congress should eliminate the “Enron Loophole” that exempts electronic energy exchanges from regulatory oversight.** Experience since passage of the Commodity Futures Modernization Act of 2000, demonstrates there is no sound rationale for exempting electronic energy exchanges from regulatory oversight. Excessive speculation that occurred on electronic exchanges in 2006 contributed to the overall distortion of energy prices in the natural gas market, to the detriment of American consumers, businesses, industry, and utilities. Exempt Commercial Markets, such as ICE, should be required to comply with the same statutory obligations as Designated Contract Markets, such as NYMEX, and should be regulated in the same manner by the CFTC to prevent market manipulation and excessive speculation. To ensure fair energy pricing, it is time to put the cop back on the beat in all U.S. energy commodity markets.

**(2) If given additional legal authority, the CFTC should monitor aggregate positions on NYMEX and ICE. The CFTC and exchanges should strengthen their monitoring and oversight to prevent excessive speculation for all of the months in which contracts are traded, not just for contracts near expiration.**

**(3) Congress should increase the CFTC budget and authorize CFTC user fees to help pay for the additional cost.** The CFTC’s budget should be increased to provide the staff and technology needed to monitor, integrate, and analyze real-time transactional data from all U.S. commodity exchanges, including NYMEX and ICE. Needed funding should be obtained from user fees imposed on commodity markets.

### III. THE ROLE OF NATURAL GAS IN THE U.S. ECONOMY

*“Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.”*

John Maynard Keynes, 1936<sup>5</sup>

To understand the behavior of the natural gas market in 2006, and the significance of those events, it is useful to review how natural gas is produced and used, the fundamentals of natural gas supply and demand, and how the various natural gas futures and derivatives markets affect the price of natural gas paid by natural gas users, such as homeowners, businesses, manufacturers, and electric utilities.

#### A. Uses of Natural Gas

Natural gas is one of the main sources of energy for the United States, fueling nearly one-quarter of the nation’s energy consumption. (Figures 1a and 1b). Natural gas is the cleanest burning of the fossil fuels – for an equivalent amount of heat produced, the burning of natural gas emits fewer atmospheric pollutants and greenhouse gases than either coal or petroleum.<sup>6</sup>

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<sup>5</sup> The General Theory of Employment, Interest and Money (1936).

<sup>6</sup> NaturalGas.org, Natural Gas and the Environment, at <http://www.naturalgas.org/environment/naturalgas.asp>. Compared to the burning of either coal or oil, the burning of natural gas emits virtually no particulates, no sulfur dioxide, no mercury, and significantly reduced levels of nitrogen oxides. To generate a given amount of heat energy, the use of natural gas emits about 30% less carbon dioxide than petroleum and about 45% less carbon dioxide than coal. *Id.* However, methane, the principal component of natural gas, traps heat 21 times more effectively than carbon dioxide, and is therefore a more potent greenhouse gas. Nonetheless, the overall contribution to global warming from the use of natural gas as an energy source is much less than the contribution from the other fossil fuels. U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks, 1990-2004 (April 2006), USEPA #430-R-06-002, Executive Summary.

Figure 1a

### U.S. Energy Consumption

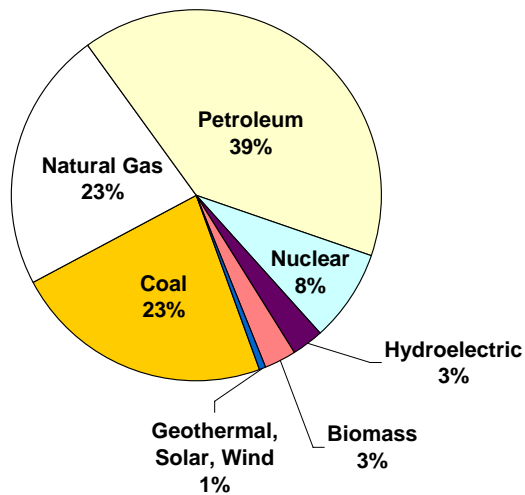


Fig. 1a. Natural gas supplies nearly one-quarter of the energy consumed in the United States. Data source: U.S. Department of Energy, Energy Information Administration ("EIA").

Figure 1b

### U.S. Energy Production

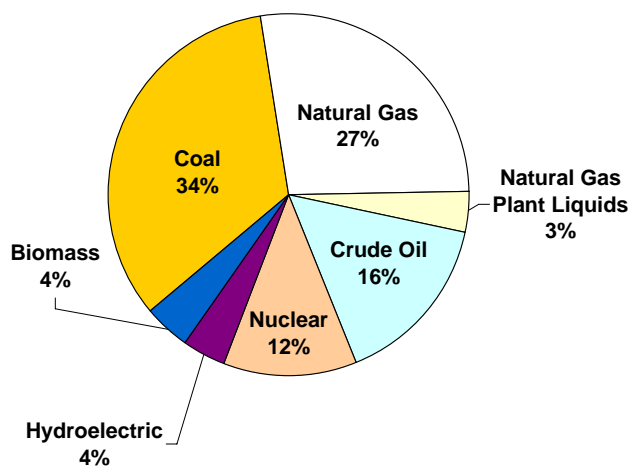
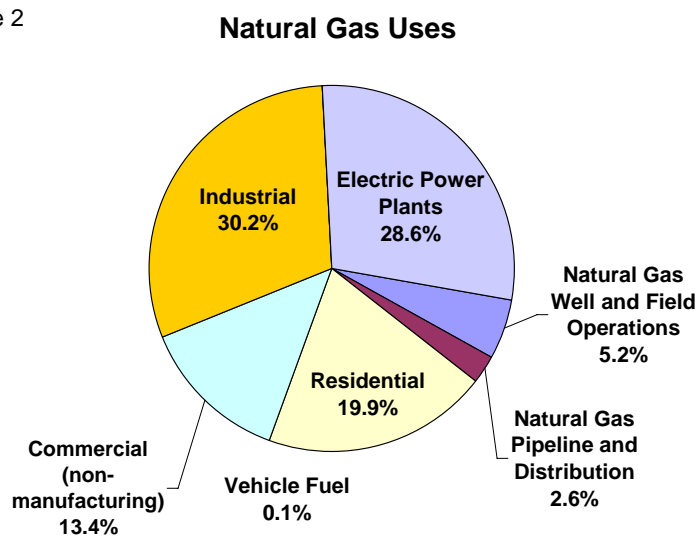


Fig. 1b. Natural gas generates about one-quarter of the energy produced in the U.S. Data source: EIA.

The price of natural gas directly affects every segment of the U.S. economy, from individual households to small businesses to large industries. “Natural gas is used in over sixty million homes. Additionally, natural gas is used in 78% of restaurants, 73% of lodging facilities, 51% of hospitals, 59% of offices, and 58% of retail buildings.”<sup>7</sup> Natural gas generates approximately one-fifth of the domestically produced electricity in the United States.<sup>8</sup> The majority of American homes are heated with natural gas.<sup>9</sup> Additionally, natural gas is used for a variety of industrial products, including fertilizer, paints, carpets, plastics, dyes, photographic film, antifreeze, medicines, and explosives.<sup>10</sup> (Figure 2).

Figure 2



*Fig. 2. Natural gas is used in a variety of economic sectors.  
Data source: EIA.*

The total domestic demand for natural gas is highly seasonal. Total demand increases in the winter as temperatures fall and the demand for natural gas for residential heating rises. Demand for natural gas is at its lowest during the summer months, although in recent years summertime demand for natural gas has risen to meet short-term needs of electric utilities during heat waves. Industrial and commercial use of natural gas is fairly constant year-round. (Figure 3).

<sup>7</sup> American Petroleum Institute (API), Issue: Natural Gas, April 7, 2006, available at API website, <http://www.naturalgasfacts.org/>.

<sup>8</sup> U.S. Department of Energy (DOE) Energy Information Administration (EIA), Natural Gas Basics, EIA website, [http://www.eia.doe.gov/oil\\_gas/natural\\_gas/info\\_glance/natural\\_gas.html](http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html).

<sup>9</sup> A 2001 EIA survey found that 54% of all U.S. households use natural gas as the main heating fuel.

<sup>10</sup> U.S. Department of Energy (DOE) Energy Information Administration (EIA), Natural Gas Basics, EIA website.

Figure 3

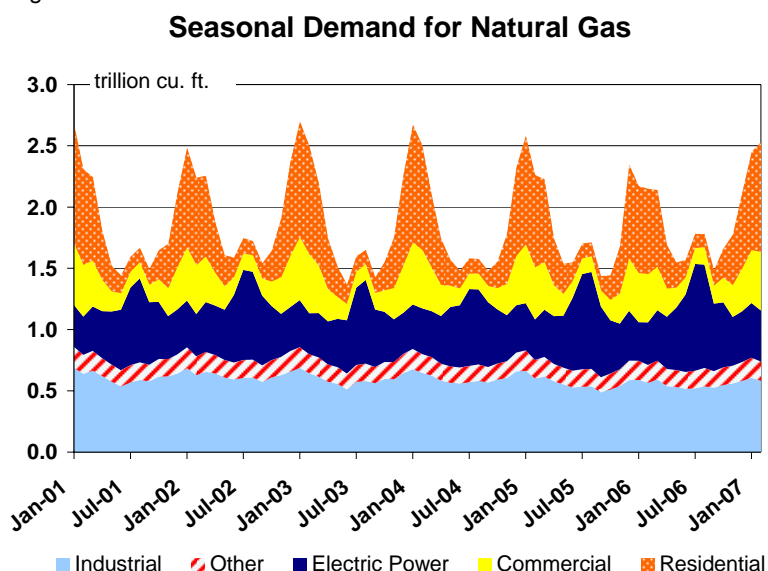


Fig. 3. Demand for natural gas is seasonal. Data source: EIA.

Table 1 presents the total expenditures in 2005, by state, for natural gas delivered to residential, commercial, and industrial consumers and electric power plants. For the U.S. as a whole, these expenditures for natural gas totaled approximately \$205 billion.

**Table 1**  
**Natural Gas Expenditures, by State, 2005 (in dollars)**

State	Residential	Commercial	Industrial	Electric Power	Total Natural Gas Expenditures
<b>Texas</b>	2,309,343,446	1,675,701,340	11,206,533,687	11,906,058,792	<b>27,097,637,264</b>
<b>California</b>	5,729,738,065	2,488,517,884	7,688,789,158	5,568,487,855	<b>21,475,532,962</b>
<b>New York</b>	5,788,094,146	4,865,906,362	750,887,104	2,809,505,992	<b>14,214,393,603</b>
<b>Louisiana</b>	540,003,684	285,499,763	7,300,853,946	2,605,101,053	<b>10,731,458,445</b>
<b>Illinois</b>	5,084,499,781	2,261,066,718	2,607,965,080	523,428,165	<b>10,476,959,744</b>
<b>Ohio</b>	4,195,065,381	1,945,127,275	3,297,072,028	266,273,565	<b>9,703,538,249</b>
<b>Pennsylvania</b>	3,482,855,525	1,890,415,320	2,087,250,527	830,595,996	<b>8,291,117,369</b>
<b>Michigan</b>	3,783,843,799	1,639,555,304	1,850,311,419	731,364,939	<b>8,005,075,461</b>
<b>New Jersey</b>	3,105,519,379	2,225,130,067	844,390,547	1,235,970,374	<b>7,411,010,367</b>
<b>Florida</b>	324,897,975	766,126,281	598,501,153	5,516,086,660	<b>7,205,612,069</b>
<b>Indiana</b>	1,794,438,281	844,647,722	2,662,697,539	309,890,501	<b>5,611,674,043</b>
<b>Georgia</b>	2,087,172,684	780,510,263	1,561,799,588	790,604,525	<b>5,220,087,059</b>
<b>Massachusetts</b>	1,830,265,680	809,748,252	653,077,306	1,467,888,651	<b>4,760,979,888</b>
<b>Oklahoma</b>	692,653,501	433,337,195	1,379,437,439	2,005,233,633	<b>4,510,661,768</b>
<b>Wisconsin</b>	1,565,400,402	893,577,361	1,293,952,456	514,082,737	<b>4,267,012,956</b>
<b>Colorado</b>	1,278,311,707	582,913,885	1,096,804,062	686,379,860	<b>3,644,409,515</b>



<b>Virginia</b>	1,293,128,432	780,182,243	798,612,777	644,068,957	<b>3,515,992,409</b>
<b>Alabama</b>	659,410,142	350,019,343	1,436,795,678	1,013,283,366	<b>3,459,508,529</b>
<b>Minnesota</b>	1,441,889,759	974,505,544	807,424,911	220,684,665	<b>3,444,504,879</b>
<b>Missouri</b>	1,353,859,603	701,490,034	729,188,094	269,930,950	<b>3,054,468,681</b>
<b>North Carolina</b>	982,250,959	616,710,211	971,528,915	229,038,499	<b>2,799,528,584</b>
<b>Arizona</b>	484,285,857	314,094,781	144,800,785	1,792,077,727	<b>2,735,259,149</b>
<b>Mississippi</b>	321,692,759	248,159,908	846,960,587	1,275,641,299	<b>2,692,454,553</b>
<b>Maryland</b>	1,269,370,411	834,523,969	289,303,573	212,156,597	<b>2,605,354,550</b>
<b>Tennessee</b>	894,376,931	676,671,718	954,240,032	47,716,612	<b>2,573,005,294</b>
<b>Washington</b>	868,791,437	518,835,333	686,128,594	436,970,266	<b>2,510,725,631</b>
<b>Kentucky</b>	734,901,018	452,690,889	1,108,843,887	145,697,220	<b>2,442,133,015</b>
<b>Iowa</b>	826,763,404	480,298,410	908,225,747	188,155,281	<b>2,403,442,842</b>
<b>Arkansas</b>	458,712,591	321,509,375	838,481,351	420,798,433	<b>2,039,501,750</b>
<b>Connecticut</b>	723,040,528	464,822,462	239,075,140	594,871,443	<b>2,021,809,574</b>
<b>Kansas</b>	783,973,578	339,426,479	750,503,272	109,740,518	<b>1,983,643,847</b>
<b>Nevada</b>	453,505,112	275,874,667	135,050,738	1,102,162,594	<b>1,966,593,111</b>
<b>Oregon</b>	513,491,814	287,911,738	536,263,536	592,226,412	<b>1,929,893,500</b>
<b>South Carolina</b>	423,489,214	302,941,073	741,503,567	381,697,401	<b>1,849,631,255</b>
<b>New Mexico</b>	370,320,737	225,168,280	213,972,795	349,431,239	<b>1,158,893,051</b>
<b>Utah</b>	563,603,453	283,494,983	185,961,323	103,786,008	<b>1,136,845,767</b>
<b>Nebraska</b>	405,445,972	258,936,086	343,222,769	65,814,978	<b>1,073,419,805</b>
<b>West Virginia</b>	387,331,373	306,522,484	350,262,612	23,051,125	<b>1,067,167,595</b>
<b>Rhode Island</b>	282,307,039	147,091,801	66,167,519	425,072,855	<b>920,639,214</b>
<b>New Hampshire</b>	116,741,776	134,769,220	84,388,915	389,448,961	<b>725,348,872</b>
<b>Idaho</b>	228,775,368	130,456,142	191,726,678	96,886,213	<b>647,844,400</b>
<b>Wyoming</b>	121,427,742	84,403,340	357,693,741	3,337,287	<b>566,862,109</b>
<b>Maine</b>	18,584,197	68,912,469	36,573,146	412,524,567	<b>536,594,379</b>
<b>Montana</b>	212,227,406	140,817,523	180,943,021	1,804,205	<b>535,792,155</b>
<b>Delaware</b>	150,746,119	108,817,285	165,686,904	109,179,907	<b>534,430,215</b>
<b>D.C.</b>	233,695,504	232,879,434	0	0	<b>466,574,938</b>
<b>Alaska</b>	103,305,895	83,329,917	136,976,232	134,350,637	<b>457,962,680</b>
<b>South Dakota</b>	142,639,489	101,525,989	85,605,220	30,247,134	<b>360,017,832</b>
<b>North Dakota</b>	121,892,106	102,299,767	110,681,625	8,092	<b>334,881,589</b>
<b>Vermont</b>	37,676,052	25,286,917	20,100,605	287,653	<b>83,351,227</b>
<b>Hawaii</b>	15,961,296	46,819,500	7,198,755	0	<b>69,979,551</b>
<b>U.S. Total</b>	<b>61,710,782,568</b>	<b>35,946,688,681</b>	<b>57,744,345,049</b>	<b>49,770,350,889</b>	<b>205,172,167,187</b>

Table 1. Data source: EIA, Natural Gas Monthly, March 2007, Tables 13-17, 19-22. Price calculations for several states are based on extrapolations from prior year and aggregate national data.

## B. Sources of Natural Gas

Like the other fossil fuels, natural gas is generated when decayed organic matter is trapped beneath the surface of the earth and subject to high pressures and temperatures over long periods of time. Natural gas is extracted through wells drilled into porous rock in regions of oil and gas deposits. Natural gas consists primarily of methane, but also contains butane, pentane, and other gaseous and liquid hydrocarbons.

In 2005, there were over 425,000 natural gas and gas condensate wells in the United States.<sup>11</sup> The leading areas of gas production within the United States are located in the states of Texas, Oklahoma, Wyoming, New Mexico, Louisiana, and in Federal waters in the Gulf of Mexico. (Figure 4).<sup>12</sup>

Figure 4

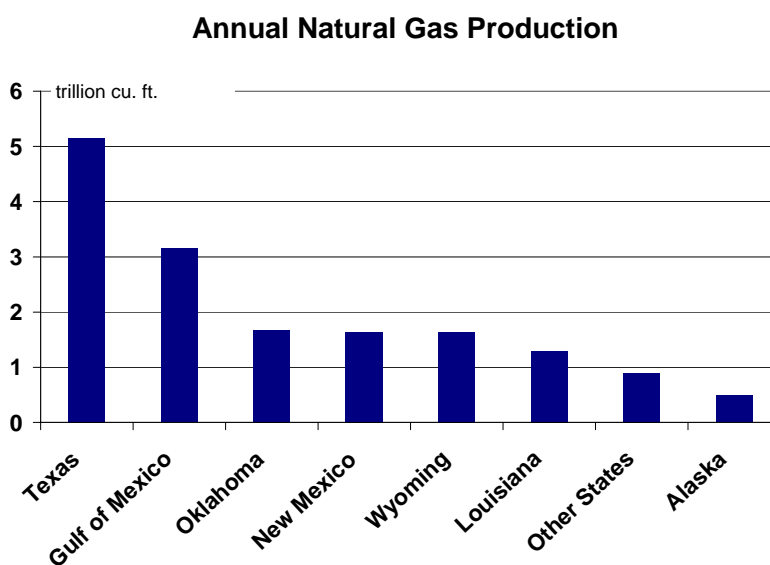


Fig. 4. Texas and the Gulf of Mexico account for over half of domestic production of natural gas. Data source: EIA.

<sup>11</sup> U.S. Department of Energy (DOE) Energy Information Administration (EIA), Number of Producing Gas and Gas Condensate Wells, EIA website.

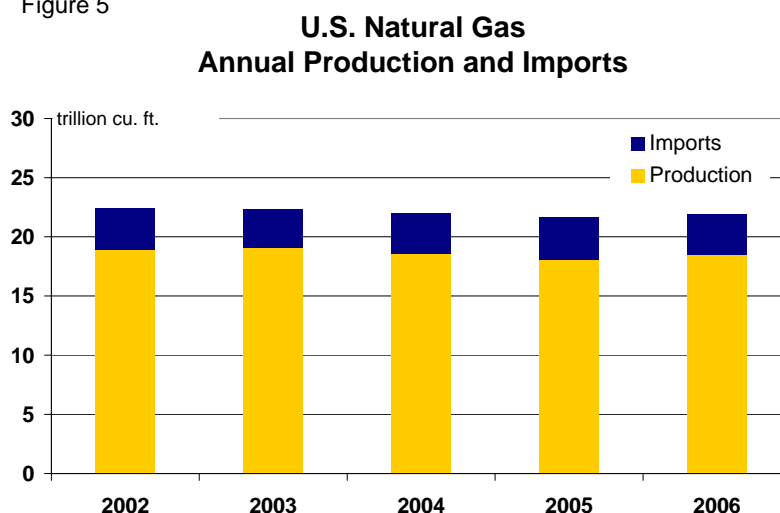
<sup>12</sup> EIA, Natural Gas Monthly, March 2007, Table 6.

### *How Natural Gas is Measured*

In the United States, natural gas is measured by volume (**cubic feet**) and by energy content (**British Thermal Unit, or Btu**). One Btu is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. One cubic foot of natural gas contains about 1031 Btu, or approximately the same amount of energy as in a candy bar. Natural gas usually is measured in quantities of thousands of Btu (**MBtu**) or millions of Btu (**MMBtu**). For retail sales, natural gas is often measured in units of **therms (th)**. One therm equals 100,000 Btu.

As domestic consumption of natural gas now exceeds production, the United States relies on imports for approximately 15% of its natural gas supply (Figure 5). Nearly all of the natural gas imported by pipeline comes from Canada. Since 2000, the United States has imported substantial quantities of liquefied natural gas (LNG), mostly from Trinidad and Tobago (Figure 6).

Figure 5



*Fig. 5. The U.S. imports approximately 15% of its natural gas supply. Data source: EIA, Natural Gas Monthly, March 2007, Table 1.*

Figure 6

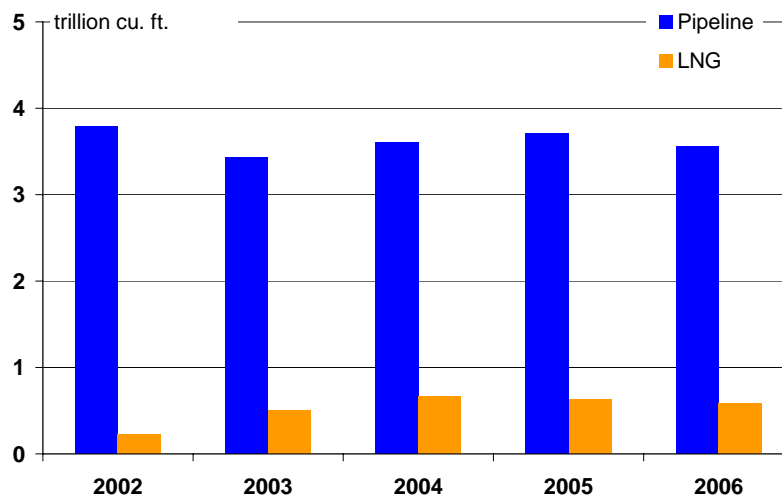
**U.S. Annual Natural Gas Imports**

Fig. 6. Imports of Canadian natural gas by pipeline account for approximately 85% of total U.S. imports. Data source: EIA Natural Gas Monthly, March 2007, Table 5.

**C. Natural Gas Processing, Distribution, and Storage**

After natural gas is produced from a well, it is sent by pipeline from the wellhead to a natural gas processing plant to separate the methane gas from the other liquid and gaseous components. The unwanted liquids are separated and the unwanted gases are vented and flared, while the other useful gases, such as ethane, propane, butane, and iso-butane, are collected for distribution elsewhere.<sup>13</sup>

After processing, the dry natural gas, which is now almost entirely methane, is transported by pipelines either directly to large industrial or electricity-generating end-users, to natural gas marketers, to storage facilities, or to local distribution companies (LDCs). The LDCs, in turn, deliver natural gas to consumers, including households. LDCs are either investor-owned or owned by local governments.

The price of natural gas as a commodity is the largest component of residential natural gas prices, accounting for about half of each residential bill. The cost of local distribution is the second-largest component of residential prices. (Figure 7).

<sup>13</sup> NaturalGas.org, Natural Gas – From Wellhead to Burner Tip, at <http://www.naturalgas.org/naturalgas/naturalgas.asp>.

Figure 7

### Components of Residential Natural Gas Prices

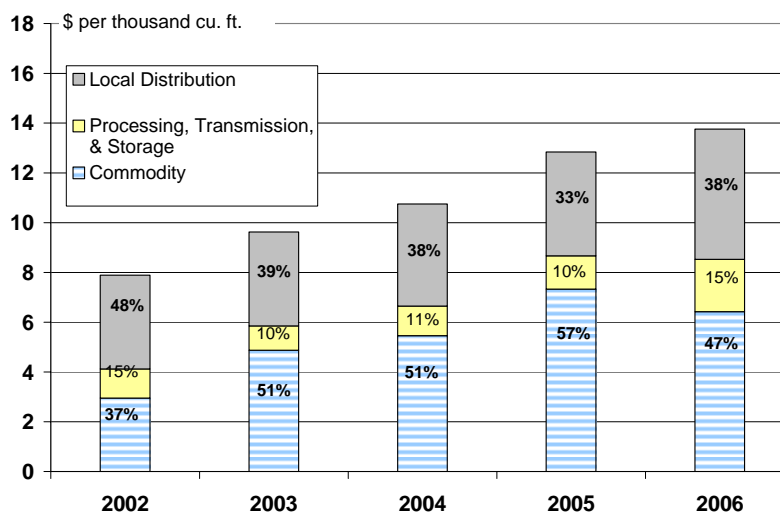


Fig. 7. The commodity cost of natural gas accounts for approximately half of a residential natural gas bill. Data source: EIA, Natural Gas Monthly, March 2007.

Because one of the major uses of natural gas is for home heating, natural gas demand peaks in the winter months and ebbs during the summer months. During the summer months, when supply exceeds demand, natural gas prices fall, and the excess supply is placed into underground storage reservoirs. During the winter, when demand for natural gas exceeds production and prices increase, natural gas is removed from underground storage. (Figure 8).

Figure 8

### Working Gas in Storage

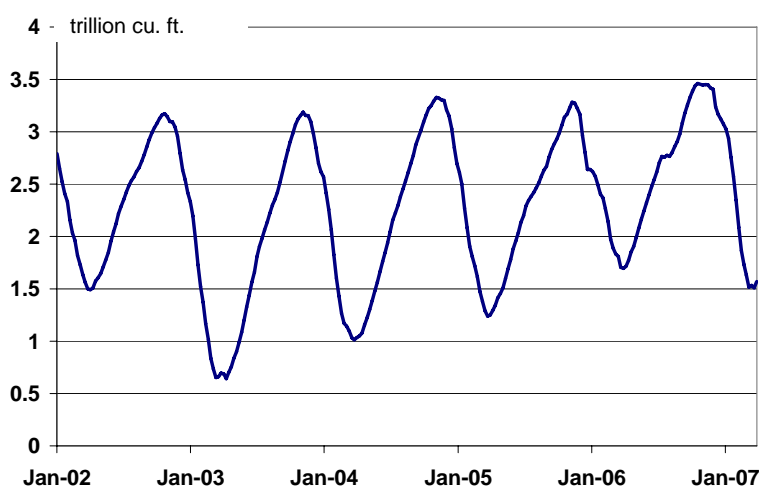


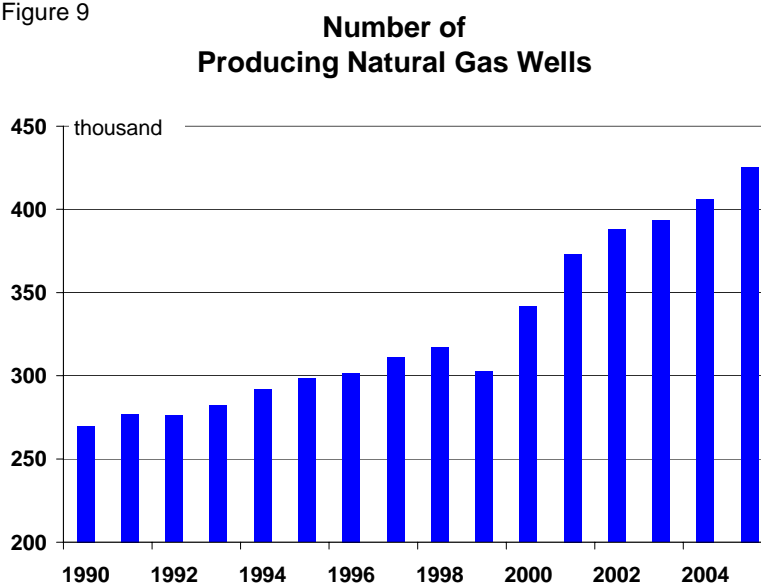
Fig. 8. Natural gas storage levels are seasonal. Natural gas is injected into storage during the summer and taken out of storage during winter. Data source: EIA, Weekly Working Gas in Underground Storage.

Generally, storage reservoirs are created by pumping natural gas into either depleted gas reservoirs, caverns excavated in subsurface salt formations, or underground aquifers. Not all of the gas in underground storage can be recovered because some of the gas must remain to provide adequate pressure to pump out the recoverable gas. The volume of natural gas in a storage reservoir that can be recovered is referred to as the amount of “working gas” in storage.

#### D. Fundamentals of Natural Gas Supply and Demand

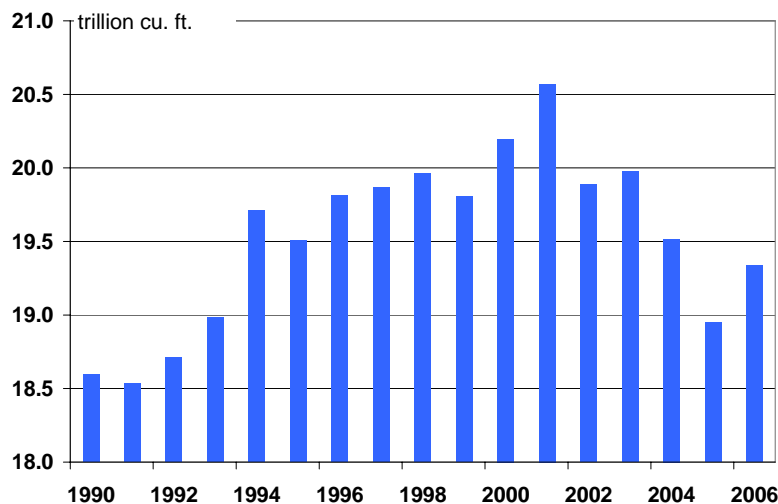
Natural gas production in the U.S. peaked in 2001. Although high prices have stimulated the drilling of many new wells (Figure 9), many of the larger, mature fields, particularly in the Gulf of Mexico, are being depleted, so that overall domestic production has declined over the past few years (Figure 10).

Figure 9



*Fig. 9. Rising natural prices stimulated the drilling of new wells.  
Data source: EIA, Number of Producing Gas and Condensate Wells.*

Figure 10

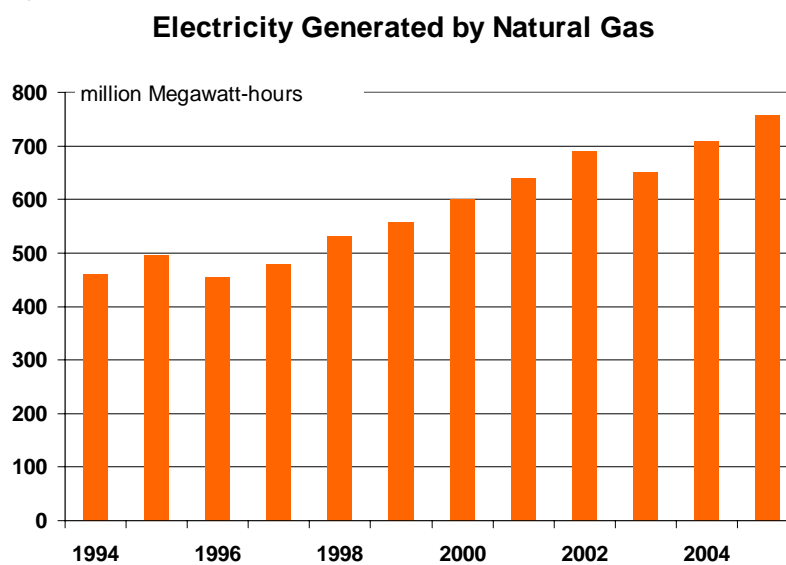
**U.S. Annual Natural Gas Production**

*Fig. 10. Despite the increasing number of natural gas wells, domestic production is declining. Hurricane Katrina significantly reduced production in 2005. Data source: EIA.*

At the same time, demand for natural gas for the generation of electricity is continuing to increase. Because natural gas burns cleaner than either coal or oil, and permits for gas-fired generation are easier to obtain than for other types of fuel, natural gas has been a popular choice for new electrical generating capacity. The amount of natural gas used to generate electricity increased by more than 50% between 1996 and 2005, and the capacity of natural gas-fired electrical generating facilities has tripled since 1999.<sup>14</sup> (Figure 11).

<sup>14</sup> American Petroleum Institute, *Understanding Natural Gas Markets* (2006), at p. 9.

Figure 11

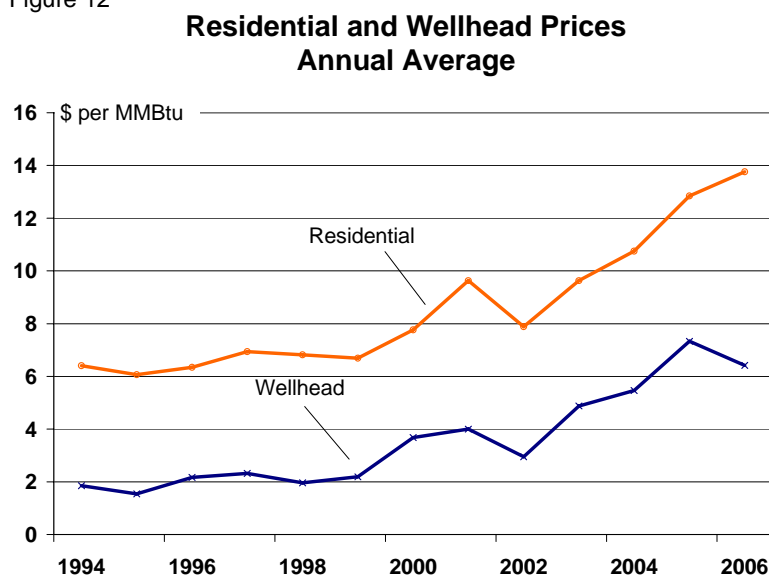


*Fig. 11. Demand for natural gas to generate electricity has been increasing.  
Data source: EIA, Electric Power Annual with data for 2005, Table 1.1.*

Declining production of natural gas in the face of increasing demand and limited storage capacity has contributed to the rise in natural gas prices over the past several years. Various other factors also have pushed up prices. These include rising crude oil prices, which enables the price of substitute fuels, such as natural gas, to rise without creating any economic incentives for fuel switching. Hurricanes during the summers of 2004 (Ivan) and 2005 (Katrina, Rita, and Wilma) destroyed oil and gas drilling platforms in the Gulf of Mexico, resulting in significant production losses. Other extreme weather conditions in each of the past few years, such as arctic blasts during the wintertime and heat waves during the summer, have also increased demand and price volatility. As a result of these various factors, wellhead and residential natural gas prices have doubled over the past six years (Figure 12).



Figure 12



*Fig. 12. Average natural gas prices have doubled since 2000.  
Data source: EIA.*

These price increases have resulted in large cost increases for the average household that uses natural gas for home heating. For example, the average household in the Midwest using natural gas for heating paid approximately \$750 for natural gas during the 2003-2004 heating season (October through March), \$855 for the 2004-2005 heating season, and \$1,101 for the 2005-2006 heating season.<sup>15</sup>

Because most of the demand for natural gas in the winter is inelastic—people will pay to heat their homes and cook their food regardless of how expensive it gets—demand increases or supply shortfalls during the winter months can lead to sharp price spikes. Price spikes have occurred in most of the recent winters. (Figure 13). Tight supplies and cold weather led to a steep rise in natural gas prices in late 2000 that carried into 2001.<sup>16</sup> In February 2003 frigid temperatures that froze production wells nearly doubled natural gas prices.<sup>17</sup> In mid-January 2004, New England “faced its coldest weather since 1943,” leading to record-high spot prices in New England of as much as \$75 per MMBtu.<sup>18</sup> The Federal Energy Regulatory Commission (FERC) concluded that the 2004 spike “appeared to be the result of a supply shortage driven by extraordinary demand that left little residual supply available for allocation through the price-driven spot market. Buyers were willing to pay record prices because the consequences of failure to obtain supply exceeded the cost of paying these unusually high prices.”<sup>19</sup> In late 2005, U.S. gas supplies “faced unprecedented disruption from hurricanes Katrina and Rita. These severe supply disruptions led to sharp price increases that were most severe in the eastern United

<sup>15</sup> EIA, Residential Natural Gas Prices, What Consumers Should Know, DOE/EIA-X046 (November, 2006), at p. 4.

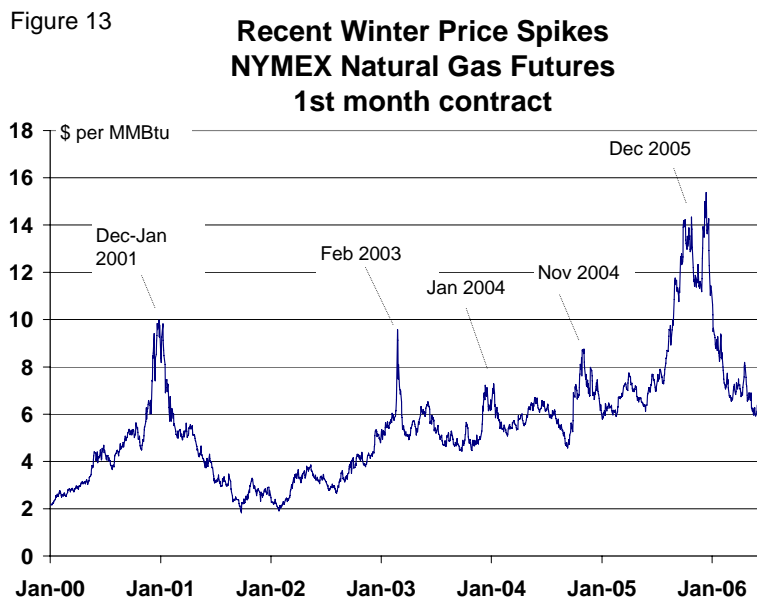
<sup>16</sup> EIA, U.S. Natural Gas Market: Recent Trends and Prospects for the Future (May 2001), at p. vii.

<sup>17</sup> FERC, Report on the Natural Gas Price Spike of February 2003 (July 23, 2003), at p. 3.

<sup>18</sup> FERC, 2004 State of the Markets Report (June 2005), at pp. 12-14.

<sup>19</sup> *Id.*

States.”<sup>20</sup> As production was disrupted for several months, prices stayed high until early 2006, when warmer winter weather and increased production elsewhere ameliorated the effects from the hurricanes.



*Fig. 13. Natural gas prices have spiked in five of the past six winters. Data source: EIA, from NYMEX price data.*

<sup>20</sup> FERC, 2006 State of the Markets Report, at p. 3.

## IV. NATURAL GAS MARKETS

*“If orgies of speculation are permitted to spread too far . . . the ultimate collapse is certain not only to affect the speculators themselves, but also to bring about a general depression involving the entire country.”*

-- Paul M. Warburg, 1929<sup>21</sup>

Natural gas prices are determined through the interaction of the two major types of markets for natural gas: the cash, or physical, market, which involves the purchase and sale of physical quantities of natural gas; and the financial markets, which involve the purchase and sale of financial instruments whose prices are linked to the price of natural gas in the physical market.

This section reviews the nature of these markets and their role in establishing natural gas prices. It then provides an overview of the laws and regulations applicable to the major markets for energy futures and derivatives.

### A. The Cash Market

When natural gas is physically transferred from one firm to another during the process of production, transportation, storage, and distribution, the price of the gas is generally set by negotiation between the parties who either agree on a fixed price or incorporate a reference to the prevailing market price for natural gas at that stage of the process at that particular location. If a transaction takes place at a location where there is not a reliable reference price, then the price may be set at a differential to the prevailing price at the nearest location where there are enough transactions to provide a reference price.

Publishers of industry newsletters, such as *Platts* and *Natural Gas Intelligence*, take surveys of the price of transactions at the key locations where natural gas is sold or delivered, and publish daily summaries and monthly “indexes” of those prices. These key locations are often referred to as “hubs,” a location where natural gas pipelines converge, or “citygates” where gas is delivered to a local distribution company.<sup>22</sup> One such location is known as the Henry Hub in Louisiana where a large number of natural gas pipelines converge.

The published daily prices and monthly indices are often used as reference points in contracts setting the price of subsequent natural gas transactions. “In *Platts*’ daily gas survey the number of transactions now typically exceeds 3,000.”<sup>23</sup> Rather than individually negotiating a contract price, buyers and sellers often base the price of the gas on the published prices for similar transactions at that location, or at a specified differential to a published price in the event that the gas is to be delivered at a different geographic location.

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<sup>21</sup> Commercial and Financial Chronicle, March 9, 1929, cited in Edward Chancellor, *Devil Take the Hindmost: A History of Financial Speculation* (Farrar Straus Giroux, New York, 1999), at p. 210.

<sup>22</sup> See, e.g., *Platts*, Methodology and Specifications Guide, North American Natural Gas, February 2007.

<sup>23</sup> Comments of *Platts* Before the Federal Energy Regulatory Commission, Transparency Provisions of the Energy Policy Act of 2005 (November 1, 2006), Docket No. AD06-11-000, at p. 4.

Large natural gas users, such as industrial users or local distribution companies, usually purchase natural gas in the spot market on a daily basis for immediate delivery, or on a monthly basis for a fixed amount of gas to be delivered each day of the specified month or months. Monthly contracts may be entered into one or more months in advance of the delivery month.

Until recently, most natural gas delivered pursuant to a monthly contract in the physical market was priced according to a published index price for the delivery month. Determining the monthly index price for natural gas is a process steeped in industry tradition. Historically, the focus has been on transactions which occur during the “bidweek,” which is the last five days of the month preceding the month in which the gas is to be delivered. *Platts*, for example, surveys fixed-price transactions entered into during the bidweek, as reported by a large number of major gas sellers, and then uses the reported prices to compute a monthly index price for gas to be delivered during the following month.<sup>24</sup> Monthly purchases of natural gas in the physical market typically use that monthly index price, unless the parties have negotiated their own fixed-price deal.

In recent years, instead of using a published monthly index price derived from reported prices, buyers and sellers are increasingly referencing the relevant NYMEX futures contract for delivery of natural gas and using the price that is finally settled on for delivery of gas under that standard monthly contract. The final settlement price for each NYMEX contract is determined by taking the volume-weighted average of prices on the NYMEX during the last half hour of trading on the date that the NYMEX contract expires, which is on the third-to-last business day of each month. The final NYMEX settlement price is publicly posted shortly after the close of trading.

Natural gas contracts that reference the NYMEX settlement price are called “physical basis” deals. If a physical basis deal seeks to deliver natural gas at a location other than the Henry Hub, the delivery point in all standard NYMEX natural gas contracts, the contract adds a price differential to the standard settlement price to take into account differences in natural gas prices between the Henry Hub and the actual delivery location.

In its most recent “State of the Market” report, FERC took note of the growing reliance on the NYMEX settlement price as the basis for pricing monthly transactions in the cash market:

By 2006, most of the transactions that set these [monthly] indices in the Northeast United States and along the Gulf Coast were *physical basis* deals. But many of these physical basis deals set their price as the final settlement price for the Nymex futures contract at Henry Hub plus a fixed, agreed-upon differential. Consequently, in these locations, index prices are effectively an average of these

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<sup>24</sup> According to *Platts*, “Eight of the 10 largest gas marketers report prices to publishers, and publishers capture 80% of the physical gas volumes sold by the top 25 marketers. Many major gas sellers, primarily producers, have made the necessary commitment to report prices in accordance with FERC’s policy statement. However, participation in price surveys by large gas buyers, primarily local distribution companies, has been notably lower.” Comments of *Platts* Before the Federal Energy Regulatory Commission, Transparency Provisions of the Energy Policy Act of 2005 (November 1, 2006), Docket No. AD06-11-000, at p. 1.

fixed, agreed-upon differentials added to the final Nymex settlement price. In those areas, index prices reflect the Nymex price.<sup>25</sup>

In 2007, *Platts* reported to FERC that its surveys had found: “Physical basis deals [were] used at 33 of 41 delivered-to-pipeline locations and at 14 of 22 market center locations in the monthly survey. . . . In February [2007], for the 47 points where basis is used, basis trade represented 54.1% of total volume and 53.4% of the number of deals.”<sup>26</sup>

The close relationship between the NYMEX settlement price for natural gas futures contracts and the *Platts* monthly index price for natural gas in the cash market is shown in Figures 14a and 14b. FERC summarized the reasons for the linkage between prices in the cash and futures markets as follows:

As a practical matter, monthly cash physical and futures natural gas prices are and must be closely related to one another, if markets are working effectively. The fact that many participants can engage in both futures and monthly cash physical markets means that any material differences will be arbitrated away. That is, at least some market participants will pick the least expensive way to establish a position using different combinations of products. In doing so, they will force the values of those different combinations to converge. Consequently, big changes in cash physical market values naturally affect futures trading, and vice versa.<sup>27</sup>

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<sup>25</sup> FERC, 2006 State of the Markets Report, at p. 49 (emphasis in original).

<sup>26</sup> Supplemental Comments of *Platts* Before the Federal Energy Regulatory Commission, Transparency Provisions of the Energy Policy Act of 2005, Docket No. AD06-11-000, at pp 1-2. The American Gas Association (AGA) reports that LDCs continue to rely heavily on monthly price indices for their long- and mid-term supply agreements. American Gas Association, LDC Supply Portfolio Management During the 2005-2006 Winter Heating Season, (September 7, 2006), at p. 3. The AGA also found that most of these LDCs use financial instruments to hedge at least a portion of these purchases: “Eighty-seven percent of the companies responding to the AGA survey indicated use of financial instruments to hedge at least a portion of their supply purchases. . . . For this past winter, twenty-two of the sample companies providing data hedged up to 50% of their gas supply purchases during the winter.” *Id.* at 4.

<sup>27</sup> FERC, 2006 State of the Markets Report, at p. 48.

Figure 14a

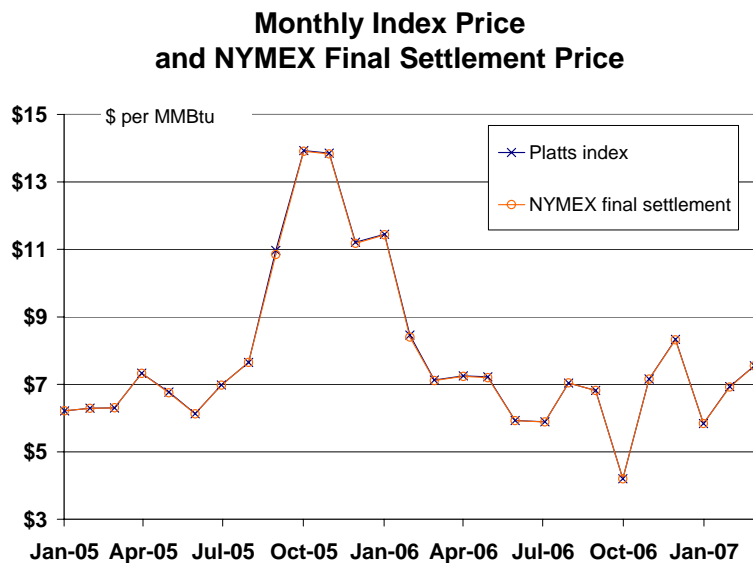


Fig. 14a. The Platts monthly index price and the NYMEX final settlement price are closely linked. Data source: Platts.

Figure 14b

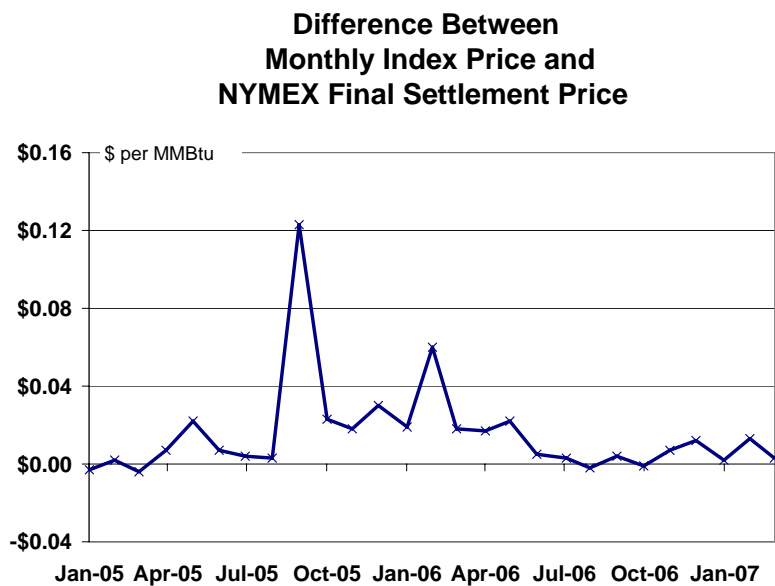


Fig. 14b. The NYMEX futures contract price and the Platts monthly index price typically differ by only a few cents. The 12-cent differential in September 2005 was due to market disruptions from Hurricane Katrina. Data source: Platts.

## **B. The Financial Market**

The natural gas physical or cash market focuses on transactions involving the physical transfer of natural gas. Natural gas financial markets, in contrast, focus on the purchase and sale of financial instruments whose price is linked to the price of natural gas in the physical market but that rarely result in the physical delivery of natural gas.

The financial markets for energy commodities are often described as consisting of two types of markets: “futures exchanges” and “over-the-counter” (OTC) markets. This grouping has traditionally turned on whether a particular financial instrument being traded meets the statutory definition of a “futures contract” under the Commodity Exchange Act (CEA). Under the CEA, financial instruments that meet the statutory definition of a futures contract must be traded on a futures exchange regulated by the CFTC. Financial instruments that do not meet the legal definition of a futures contract are not required to be traded on a regulated exchange. The markets in which these other financial instruments are traded—including both exchanges and bilateral transactions—are often referred to as the OTC market.

Because the definition of a futures contract involves arcane legal considerations regarding the wording and elements of a particular type of contract, another analytical approach is to group the energy commodity markets according to the economic function and nature of the financial instruments being traded. This approach also produces two categories of markets: one market consists of the organized commodity exchanges on which standardized contracts for energy commodities are traded; the other consists of off-exchange transactions between two parties involving contracts that may or may not be standardized.

The major organized commodity exchanges that trade standardized contracts for natural gas and other energy commodities in the United States are NYMEX, which is located in New York City, and ICE, whose headquarters is located in Atlanta, Georgia. NYMEX is a fully regulated futures exchange overseen by the CFTC, whereas ICE is a virtually unregulated exchange that operates largely outside CFTC oversight and the confines of the CEA.

### **1. Energy Commodity Exchanges: NYMEX and ICE**

#### **(a) Characteristics of a Commodity Exchange**

Although brokers and others use a variety of methods and technologies to match buyers and sellers of financial instruments, a commodity exchange has three key features: (i) trading is limited to listed, standardized contracts whose price is linked to the price of the commodity in the physical market; (ii) buyers and sellers do not enter contracts directly with each other, but rather trade through clearing firms and a clearinghouse; and (iii) the bids and offers are transparent to all market participants, and the prices and volumes of completed transactions are immediately posted for public review.<sup>28</sup>

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<sup>28</sup> Some exchanges charge a fee for access to real-time price and volume information.

### **(i) Standardized Contracts**

The standardization of contracts is one of the major advantages of trading on an exchange as compared to individually negotiating bilateral deals. To execute a trade involving a standardized contract, the only term that must be negotiated is the price. A standardized contract specifies all other terms for the commodity transaction, such as quantity, quality, whether and where physical delivery of the commodity is to occur, and how any subsequent financial settlement of the contract is to be calculated.

Standardized contracts can be more easily traded than individually negotiated contracts. They can be traded many times, to many different people. The standardization of contract also improves the price discovery process, as it provides a common reference point for comparing transactions.

On a commodity exchange, the price negotiation takes place through either the open outcry system, which is the traditional system of traders and brokers gesturing and shouting to each other bids and offers in trading pits located on the exchange floor, or through an electronic system in which bids and offers are posted on computer screens located anywhere and matched electronically without any face-to-face contact between the parties or their brokers.

Three basic types of standardized financial instruments are traded on commodity exchanges: futures, swaps, and options.

**Futures contracts.** A futures contract is a standardized contract by a buyer to accept and a seller to deliver a specified quantity of a particular commodity at a specified place and time in the future for a price specified at the time the contract is entered. Rather than provide a mechanism for the actual delivery of physical volumes of natural gas, the primary purposes of futures contracts are to allow market participants to protect themselves against future price changes and provide a market-based mechanism for price discovery.<sup>29</sup> The vast majority of traders who buy or sell futures contracts do not intend to make or take delivery of the commodity under the futures contract. Speculators buy and sell futures contracts in an attempt to profit from changes in prices over time. Hedgers use the futures market to lock in the price of future purchases or sales. All of these market participants and others look to the futures market for information about anticipated trends in supply, demand, and prices.

Trading on a futures contract is required to be concluded at the end of the month before delivery is due. Most traders who are holding futures contracts (“long” positions) will sell an equivalent number of contracts so they will not have to take delivery of the underlying commodity. Similarly, in the last month of trading, most traders who have sold futures contracts (“short” positions) will then buy an offsetting number of futures contracts so they will not have to make delivery of the commodity.

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<sup>29</sup> One of the major differences between a forward contract and a future contract is that in the former delivery is intended whereas in the latter is not. See *Commodity Futures Trading Comm. v. Co. Petro Marketing Group, Inc.*, 680 F.2d 573 (9th Cir. 1982).



Take, for example, a producer of natural gas who has a contract to deliver gas to a client several months into the future, and will be paid for that gas according to the price in the cash market (the “spot” price) at the time of delivery. The producer is concerned that the spot market price for natural gas may fall and reduce or eliminate its profits. At the same time, an industrial user who has to purchase gas in the future may be concerned that the spot price in that future month may be too high. By entering into a futures contract that fixes the price of natural gas to be delivered in the future month, both the producer and the industrial user can protect themselves against adverse price movements.

In addition to natural gas producers and end-users, market speculators may also be willing to buy or sell futures contracts and bear the risk of price movements in return for the possibility of obtaining a financial gain from the price changes. Many speculators routinely trade futures and other financial instruments to profit from changes in the price of the underlying commodity. A certain amount of speculation, therefore, plays a vital function in bringing liquidity to the market.

**Swaps.** Like a futures contract, a commodity swap locks in the value of a commodity at a particular price. Unlike a futures contract, however, swaps do not involve the delivery of the commodity. In one of the most common types of commodity swaps, the seller of the swap agrees to pay the buyer for any increases in the price of the underlying commodity above an agreed-upon value (the price of the swap) at the time when the swap expires, and the buyer agrees to pay the seller for any decreases below the agreed-upon value. As with a futures contract, a seller of a swap is protected against any decreases in the price of the commodity, and a buyer is protected against any price increases.

Swaps were originally developed in the financial markets to provide a means to hedge against fluctuations in currency exchange rates, interest rates, bond rates, and mortgage rates. Commodity traders adopted these instruments to provide a better hedge against price risks that could not be fully covered by the standardized futures contracts traded on the exchanges.

Buyers and sellers of commodity swaps soon recognized, however, that the standardization of commodity swaps would facilitate the trading of these instruments and enhance the overall liquidity of the swap market. Standardized swaps were developed to parallel the performance of futures contracts, and electronic exchanges developed to provide for the electronic trading of these standardized swaps, which were often called “futures look-alikes.” Today, ICE is the leading exchange for the trading of energy commodity swaps in natural gas and electricity.

The ICE natural gas swap and the NYMEX natural gas futures contract perform the same economic functions. The ICE swap contract even provides that its final settlement price will equal the final settlement price of the NYMEX futures contract for the same month, which means that the final price for two financial instruments will always be identical.

The major difference between the two is that the ICE swap is “financially settled,” meaning that the holder of a swap at expiration is not under any obligation to make or take delivery of the commodity, but rather will either pay, or be paid, the difference in the price paid

for the swap and the final settlement price of the swap. A person who has bought or sold a financially-settled contract that has not offset that position before the contract expires will either pay or be paid a dollar amount based on the price of the contract at expiry; no physical delivery of any commodity is involved.

Unlike the holder of a futures contract, the buyer or seller of a financial swap contract does not have to trade out of that position prior to expiration of the contract to avoid having to make or take delivery of the commodity.

If a trader buys a swap for \$8, for example, and the final settlement price is \$9, then the trader would be paid \$1. This economic result is the same as if the trader had purchased a NYMEX futures contract for \$8 and then either sold a NYMEX futures contract at settlement for the final settlement price of \$9, or taken delivery of the natural gas at settlement, and sold the gas for \$9 in the cash market. Because ICE fixes the final settlement price for its main natural gas swap equal to the final settlement price of the corresponding NYMEX futures contract, NYMEX futures contracts and ICE swaps provide economically identical hedging and risk-management functions for natural gas users and traders.

**Options.** An options contract gives the holder of the contract the right, but not the obligation, to buy or sell the underlying futures contract at a certain price for a specified time. On the opposite side, the seller, or writer of an options contract, incurs an obligation to perform should the options contract be exercised by the purchaser.<sup>30</sup> Options can also be used for swaps.

## **(ii) Clearing**

In addition to standardized financial instruments, another key feature of an exchange is the clearinghouse, which is operated by or on behalf of the exchange. In many exchanges, firms that are members of the exchange own and operate the clearinghouse. In addition to keeping track of all the trades that occur on the exchange each day, the clearinghouse actually clears each individual trade and guarantees performance on all the contracts traded on the exchange. Traders on an exchange do not actually enter into contractual relationships with each other; rather each trades through the clearinghouse which, in effect, acts as a party to every transaction.

To guarantee contract performance, the members of the clearinghouse deposit funds into the clearinghouse. The rules of the exchange also require brokers trading through the clearinghouse and their customers to post deposits or “margins” related to the value of the positions taken in their trades to cover any losses that may occur. At the end of each day of trading these margin accounts are “marked-to-market” – the exchange collects money from accounts that have lost value and credits those accounts that have gained value – so that sufficient funds to guarantee performance are on deposit at all times.<sup>31</sup> In this manner,

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<sup>30</sup> NYMEX website, Frequently Asked Questions, at <http://www.nymex.com/faq.aspx>.

<sup>31</sup> Marked-to-market is defined by NYMEX as a “[d]aily cash flow system used by U.S. futures exchanges to maintain a minimum level of margin equity for a given futures or options contract position by calculating the gain or loss in each contract position resulting from changes in the price of the futures or options contracts at the end of each trading day.” NYMEX website, Glossary, at <http://www.nymex.com/glossary.aspx>.

“counterparty risk” – the risk that the other party to a trade will default on performance – is greatly reduced.

Traditionally, one of the major advantages of trading on an approved exchange has been that the exchange guarantees financial performance and removes counterparty risk. According to the Chicago Board of Trade (CBOT), which uses a clearinghouse, “the success of this system is obvious. Since its start in 1925, no customer within or outside of the [CBOT] exchange has lost money due to default on a futures position.”<sup>32</sup> This advantage to trading on an approved exchange has diminished in recent years as clearing services have been developed for traders entering into standardized contracts off-exchange.

ICE, for example, has contracted with a clearinghouse for traders who trade standardized, cleared products. Unlike NYMEX, ICE does not require its participants to become formal members of its exchange or to join a clearinghouse. Instead, ICE allows any large commercial company qualifying as an “eligible commercial entity” under the CEA to trade on ICE’s electronic exchange without having to become a member of the exchange, pay a fee, or employ a broker. ICE has contracted with a third party to provide clearing services for traders who desire to have their trades cleared. By trading only with other cleared traders, a party trading on ICE can eliminate the risk of default by the other party just as if the trade was conducted on a futures exchange. Many of the same large firms that are clearing firms for trading on NYMEX also have contracted to be clearing firms for trading on ICE.

ICE extols the virtues of trading through its clearinghouse: “The introduction of cleared OTC trading has revolutionized the market by reducing bilateral credit exposure while improving capital efficiency and increasing market liquidity.”<sup>33</sup> ICE has also stated the following in a filing with the Securities and Exchange Commission (SEC):

The use of a central clearinghouse rather than the reliance on bilateral trading agreements [has] resulted in more participants becoming active in the OTC markets. In addition, clearing through a central clearinghouse typically offers market participants the ability to reduce the amount of capital required to trade as well as the ability to cross-margin positions in various commodities.<sup>34</sup>

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<sup>32</sup> Chicago Board of Trade, *Action in the Marketplace*.

<sup>33</sup> ICE, “You Are Cleared to Trade,” ICE website, at [https://www.theice.com/otc\\_cleared.jhtml](https://www.theice.com/otc_cleared.jhtml).

<sup>34</sup> Intercontinental Exchange Inc., Form 10-Q, filed May 2, 2006 (“ICE 10-Q”), at p. 16. ICE derives significant revenues from its cleared transactions. In its most recent 10-K filed with the SEC, ICE reported, “Transaction fees derived from trade execution in cleared OTC contracts were \$131.2 million for the year ended December 31, 2006 and represented 71.8% of our total OTC revenues during the year ended December 31, 2006, net of intersegment fees.” Intercontinental Exchange Inc., Form 10-K, filed February 26, 2007, at p. 9. ICE also wrote: “While we derive no revenue directly from providing access to these clearing services, we believe the availability of clearing services and attendant improved capital efficiency has attracted new participants to the markets for energy commodities trading.” *Id.*

### **(iii) Transparency**

The third key feature of an exchange is that bids, offers, and basic data about transactions are transparent to all market participants, whether or not they are parties to a particular trade. On the floor of an open-outcry exchange, bids and offers are either shouted or gestured for all floor brokers and traders to see and hear; on an electronic exchange the bids and offers are electronically posted to everyone with an access terminal.

Each time a transaction is completed on an exchange, the exchange records the names of the parties and the time and terms of the transaction, including the price and the volume. The prices and volumes of each transaction are immediately posted on the exchange “ticker” for all market participants to see.

### **(b) NYMEX Natural Gas Futures and ICE Natural Gas Swaps**

In the United States, the major exchange-traded financial contracts used for natural gas are the NYMEX natural gas futures contract and the corresponding ICE natural gas swap (called “the Henry Hub” swap).

The standard natural gas futures contract traded on NYMEX is for a volume of 10,000 MMBtu of natural gas to be delivered at the Henry Hub during the month specified in the contract. The contract directs that, “All deliveries shall be made at as uniform as possible an hourly and daily rate of flow over the course of the delivery month.”<sup>35</sup> Traders can buy or sell a standardized NYMEX futures contract to deliver natural gas in any future month in any year for up to five years into the future.

Under NYMEX rules, trading on a futures contract terminates on the third business day prior to the month in which delivery of the natural gas is due. A futures contract is said to “expire” after the last day of permitted trading. The final price of the futures contract is determined using a formula that focuses on the trades made during the last half hour of trading on the last day of trading. Trading ends each day at 2:30 p.m. The last half hour is often referred to as the “final settlement period,” and the final contract price is often referred to as the “final settlement price.” The final settlement price is important, because many natural gas contracts, both on and off exchange, state that the price to be used in the contract will equal the final settlement price of the corresponding NYMEX futures contract.

NYMEX futures contracts often experience the most trading in the last few months before the contract expires. It is not uncommon for many trades to take place during the last trading day, and even during the last half hour. The CFTC and NYMEX have focused significant attention on the trading that takes place near the expiration of a futures contract in an attempt to prevent large trades from inappropriately affecting the final settlement price. For example, the CFTC has imposed a “position limit” that bars any trader from buying or selling more than 1,000 contracts during the last half hour of trading, unless the trader has obtained an exemption or made another arrangement with regulators.

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<sup>35</sup> NYMEX, Natural Gas Futures, Specifications, NYMEX website at [http://www.nymex.com/NG\\_spec.aspx](http://www.nymex.com/NG_spec.aspx).

Many natural gas producers and users buy or sell futures contracts for up to 12 months in the future to hedge their purchases or sales. The volume of trading in natural gas contracts more than 18 months in the future is not large, and most of the trading this far into the future is done by speculators.

The ICE natural gas swap has many features similar to the NYMEX futures contract, but there are also some differences. Table 2 presents the standard specifications applicable to both types of natural gas contracts:

**Table 2**  
**NYMEX and ICE Basic Natural Gas Contract Specifications**

	<b>NYMEX Natural Gas Futures Contract</b>	<b>ICE Natural Gas Henry Hub Swap</b>
<b>Trading Unit</b>	10,000 MMBtu	2,500 MMBtu
<b>Price Unit</b>	\$ per MMBtu	Same as NYMEX
<b>Last Trading Day</b>	Trading terminates three business days prior to the first calendar day of the delivery month.	Same as NYMEX
<b>Settlement Type</b>	Physical	Financial
<b>Final Settlement Price</b>	Volume-weighted average of prices of trades during the last half-hour of Last Trading Day (2:00 to 2:30 PM).	Same as NYMEX Final Settlement Price on Last Trading Day
<b>Delivery Location</b>	Henry Hub, Louisiana	N/A
<b>Delivery Period</b>	First calendar day of delivery month through last calendar day of delivery month.	N/A
<b>Trading Hours</b>	Open outcry: 9:00 AM - 2:30 PM Electronic trading: 6:00 PM of the prior trading day to 5:15 PM of the trading day.	Electronic trading: 2:30 PM of the prior trading day to 2:30 PM of the trading day.

As Table 2 indicates, the NYMEX natural gas futures contract is physically settled, meaning that a trader that is a net buyer of futures contracts for a particular month (a “long” position) must either sell an equivalent number of contracts for that month prior to the expiration of the contract or take delivery of the amount of gas in the contracts at the contract delivery location, which for natural gas futures contracts is the Henry Hub in Louisiana. Similarly, a trader that is a net seller of futures contracts for a particular month (a “short” position) must either buy an equivalent number of contracts prior to expiration or make delivery of the net volume of natural gas in the trader’s short position at the contract delivery location.

Like other commodity traders, natural gas traders rarely make or take delivery pursuant to a futures contract. Buyers and sellers of physical quantities of natural gas use futures contracts to hedge their exposure to price changes in the physical market rather than as a means to acquire physical quantities of natural gas. Many large traders nonetheless have acquired the capability to

make or take delivery of natural gas in order to obtain the flexibility at contract settlement to not have to buy or sell futures contracts if the prices in the futures market are less favorable to the trader than the prices in the cash market.

NYMEX futures contracts can be bought or sold either on the floor of the exchange in New York, through the open outcry process, or through the NYMEX electronic trading platform, called Globex, where the bids and offers appear on a computer screen, which can be located anywhere. Since its introduction last summer, the Globex electronic trading system has become a widely used platform for trading the NYMEX natural gas futures contract.<sup>36</sup> The prices and volumes of all completed transactions are immediately posted to the market and can be viewed from the floor of the exchange, on an electronic trading screen, or through paid subscription. Basic daily trading data, including daily trading volume, the closing and daily settlement price, and open interest, is available for free on NYMEX's website.<sup>37</sup>

The main natural gas contract traded on ICE is functionally equivalent for risk management purposes to the NYMEX natural gas futures contract, but is labeled by ICE as a "swap" rather than a futures contract. As previously explained, because the final settlement price of the ICE Henry Hub natural gas swap is pegged to the final settlement price for the corresponding NYMEX futures contract, these two types of contracts behave identically for risk-management purposes.<sup>38</sup> All bids and offers are immediately posted on the ICE trading screen, as are the price and volume of all completed trades. Basic daily trading data is available for a fee.<sup>39</sup>

All of the traders interviewed by the Subcommittee considered NYMEX natural gas futures and ICE natural gas swaps to be functionally equivalent and interchangeable for risk management purposes. These traders stated their decisions on which type of contract to trade – futures or swaps – are based on which of the two markets has greater liquidity and on which

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<sup>36</sup> NYMEX exchange-wide statistics indicate that as of mid-April 2007, the volume of futures contracts traded electronically was greater than twice the volume traded on the NYMEX floor. NYMEX.com: Estimated Exchange Wide Volume, 04/13/2007, at <http://www.nymex.com/volume.aspx>.

<sup>37</sup> The Commodity Exchange Act requires regulated markets to publish daily information about settlement prices, volume, open interest, and opening and closing ranges for all actively traded contracts. 7 U.S.C. § 7(d). Open interest is defined by the CFTC as "the total of all futures and/or option contracts entered into and not yet offset by a transaction, by delivery, by exercise, etc." Open interest held or controlled by a trader is referred to as that trader's position. See CFTC Backgrounder, *The Commitment of Traders Report*, at <http://www.cftc.gov/opa/backgrounder/opacot596.htm>.

<sup>38</sup> Because the final settlement price for the ICE swap is defined to be the final settlement price of the NYMEX futures contract for the same month, the most significant divergence in price between the two contracts often occurs during the final 30 minutes of trading for the NYMEX contract, which is used to compute the final NYMEX contract price. (The NYMEX final settlement price is computed by taking the volume-weighted average price of all trades during the final 30-minute period.) Most of the trading during these final 30 minutes will occur on NYMEX rather than ICE, and hence the NYMEX price often will "lead" the ICE price during this period. Based on the ICE and NYMEX data reviewed by the Subcommittee, as well as trader interviews, this final settlement period is the only period in which it can be categorically stated that one exchange "leads" the other in price.

<sup>39</sup> Under the Commodity Futures Modernization Act, the CFTC may require exempt commercial markets to publish similar information if the CFTC determines that the market "performs a significant price discovery function" for the underlying cash market. 7 U.S.C. § 2(h)(4)(D). The CFTC has not made this determination for any of the futures look-alike contracts traded on ICE.

contract is more favorably priced. Data provided to the Subcommittee shows that many traders have positions in multiple contracts on both exchanges at the same time.

Several traders explained to the Subcommittee that there is significant volume of arbitrage trading between the ICE swaps market and the NYMEX futures market. Arbitrage traders seek to exploit any differences in price that temporarily emerge during the course of trading; by buying the lower-priced contract and then selling the higher-priced contract, an arbitrage trader will make a profit as the two prices converge. As more and more traders pursue this strategy, however, the lower-priced contract rises in price, and the higher-priced contract falls in price, so that any price differences soon disappear.

Figures 15a and 15b show how closely the price of an ICE swap matches the price of the corresponding NYMEX futures contract. The interrelatedness of the price curves for these two types of contracts means that the price risks from purchasing an ICE swap are identical to the price risks from purchasing a NYMEX futures contract.

Figure 15a

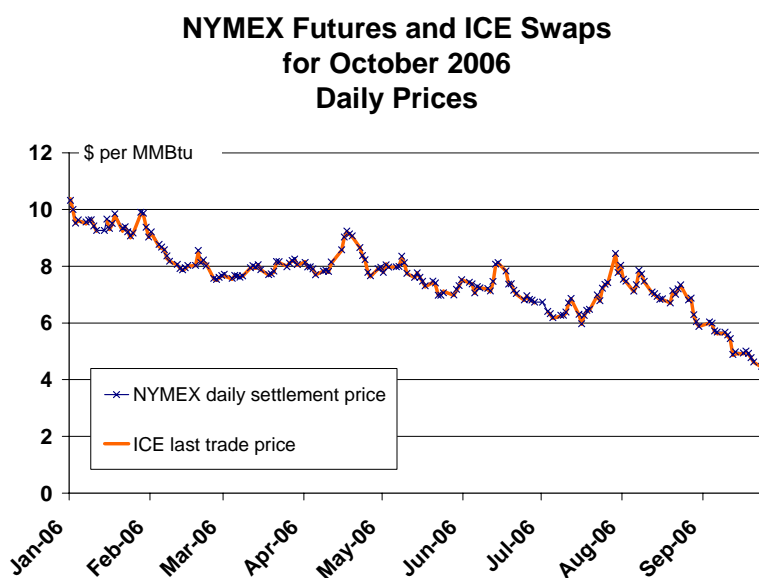
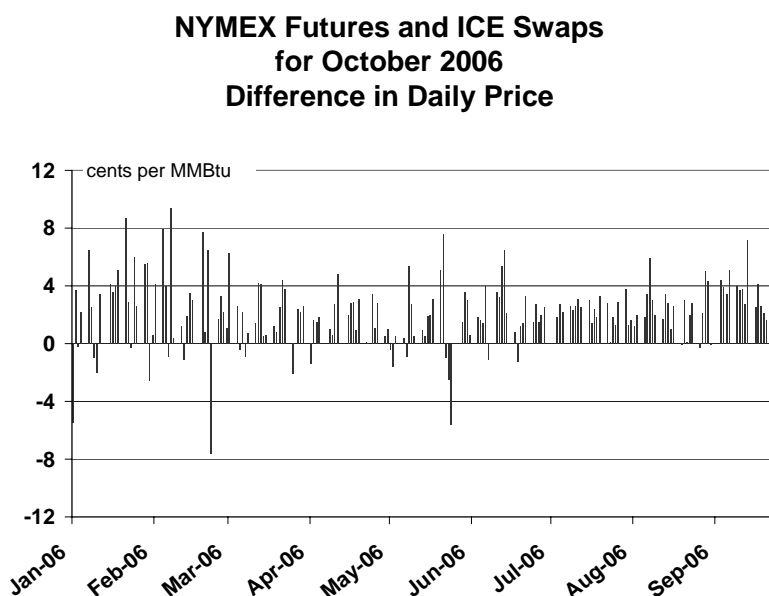


Figure 15b



*Figs. 15a and 15b. Although ICE and NYMEX prices closely track each other, the NYMEX contract often is priced a few cents higher than the ICE swap. (Traders differ on why.) For each trading day, these charts show the NYMEX daily settlement price and the last traded daily price on ICE. Data sources: NYMEX and ICE.*

Since both types of exchange-traded contracts are cleared, there is no greater counterparty risk from trading in one market rather than the other. In sum, the structure of the ICE swaps and NYMEX futures contracts, the virtually identical prices of these two contracts, and the testimony of traders provide compelling evidence that the NYMEX natural gas futures contract and the corresponding ICE natural gas Henry Hub swap are economically indistinguishable financial instruments for risk-management purposes.

## 2. Off-Exchange Bilateral Transactions

In addition to using an organized exchange to find a counterparty and a suitable price, traders often seek to find a counterparty on their own or through a broker. Traders also can use the ICE trading screen to enter into bilateral, non-cleared transactions rather than cleared transactions.

Traders who use a broker to facilitate a trade pay the broker a commission for his or her services in locating a counterparty. Although the firms that specialize in bringing parties together for off-exchange energy commodity trades have historically been referred to as “voice brokers” because of the way they traditionally conducted their business – over the telephone – this term no longer accurately describes their practices. Today, much of the process of soliciting and communicating with potential counterparties is conducted through the use of e-mails and instant messaging. In many instances, voice communication is used only to formally



acknowledge acceptance of terms that already have been agreed to by means of electronic communication.<sup>40</sup>

Unlike trades conducted on an exchange, where each party to a trade remains anonymous to the other, each party to a bilateral off-exchange transaction learns the identity of the other party. Unless the parties to an off-exchange transaction agree to submit their trade for clearing, each party to a bilateral, non-cleared transaction must bear the risk of non-performance by the other party, and thus needs to know the identity of that party to determine their creditworthiness.<sup>41</sup> In addition, because a bilateral deal is entered into off-exchange, the price and volume of the trade is not posted for other market participants. Hence, these bilateral deals do not provide a real-time price discovery mechanism for other traders to nearly the same extent as the trades conducted on an exchange do.

Both NYMEX and ICE provide clearing services for parties that want to reduce their counterparty risk by having their off-exchange bilateral transactions cleared. Although there is no market-wide data on the percentage of off-exchange bilateral trades that are submitted for clearing; anecdotal evidence presented to the Subcommittee and the trading data reviewed by the Subcommittee indicates that most off-exchange bilateral transactions involving standardized natural gas contracts – perhaps as much as 80-90% – are later submitted for clearing. To submit a trade for clearing, each party must have established an account with a clearing firm and the transaction must involve one of the standardized contracts approved by the exchange. Unlike transactions completed on an exchange, there is no real-time reporting of the prices and volumes of off-exchange transactions that are subsequently submitted for clearing.<sup>42</sup>

ICE will accept for clearing a bilateral transaction that involves a standardized contract that is also traded on the ICE electronic exchange. Hence, ICE provides a trader with three different ways to accomplish risk-management goals: (1) use of the electronic exchange to enter into a trade involving a cleared standardized contract; (2) use of the ICE electronic exchange trading screen to identify a counterparty to a bilateral non-cleared transaction involving one of the standardized contracts traded on ICE; and (3) use of ICE to clear a standardized ICE-traded bilateral contract entered into off-exchange.

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<sup>40</sup> Subcommittee interviews of natural gas traders.

<sup>41</sup> Typically, traders provide brokers with a list of acceptable potential counterparties. The brokers will then seek to facilitate trades only between mutually acceptable counterparties. In these brokered transactions, a trader may not learn the actual identity of a counterparty until after the trade has been agreed to, although the trader will know that the counterparty is acceptably creditworthy. Similarly, traders that choose to use the ICE electronic trading screen to identify counterparties for bilateral, non-cleared transactions will inform ICE of the firms with which it has appropriate credit arrangements; the ICE trading screen observed by that trader will then show bids and offers only from such approved counterparties. Once the bilateral transaction is executed, each party learns the actual identity of the other party. *Id.*

<sup>42</sup> The ICE screen displays the price and volume of off-exchange transactions submitted for clearing (ICE calls these “block” trades), but there may be a significant time delay from when the initial transaction is completed and when it is sent to ICE for clearing. Several traders stated to the Subcommittee that because of this potential delay they do not view the reported prices and volumes of block trades as a reliable indicator of current prices and volumes.

The NYMEX ClearPort system also provides both a trading and clearing service. According to NYMEX:

NYMEX ClearPort gives market participants unparalleled flexibility to either trade this extensive slate of derivatives through the NYMEX ClearPort trading system or, to conduct their own transactions off-exchange, negotiate their own prices, and still take advantage of the financial depth and integrity of the Exchange clearinghouse by submitting the transactions through NYMEX ClearPort clearing.<sup>43</sup>

Because the CEA prohibits the trading of futures except on a regulated exchange, traders cannot enter into natural gas futures contracts off-exchange and then submit them for clearing. NYMEX, however, offers a swap contract for trading or clearing through ClearPort that, like the ICE Henry Hub natural gas swap, is economically equivalent to its natural gas futures contract. Like the ICE swap, the NYMEX natural gas swap financially settles at the final settlement price of the NYMEX natural gas futures contract, and the standard volume is one-quarter the volume of the natural gas futures contract. In contrast with ICE, however, the NYMEX Henry Hub natural gas swap is considered to be a part of the natural gas futures market for regulatory purposes, and thus NYMEX applies the same regulatory oversight to the trading of this contract as it does to the trading of the natural gas futures contract.<sup>44</sup>

Figure 16 shows the volumes of the basic Henry Hub natural gas futures contracts and swaps traded on ICE and NYMEX for a single contract month, October 2006. As shown in these charts, the volumes of the natural gas swaps traded on the ICE electronic exchange are comparable to – and on some days even greater than – the volumes of the natural gas futures contracts traded on NYMEX, particularly in the last couple of months prior to the expiration of the contract.

Additional figures for additional contract months are provided in Appendix A. Generally, these figures indicate that for more distant contract months, trading volumes are greater for the NYMEX natural gas futures contract than the comparable ICE swap, making it the more liquid contract in the distant months. The data also suggest that off-exchange bilateral transactions may represent a significant portion of outstanding positions in these long-dated contracts.

Overall the 2006 trading data show that NYMEX and ICE are active commodity markets, in competition with each other, and whose traders play a central role in determining natural gas prices in the United States.

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<sup>43</sup> NYMEX, NYMEX ClearPort Services, at [http://www.nymex.com/cp\\_overview.aspx](http://www.nymex.com/cp_overview.aspx). Although substantial volumes of off-exchange contracts are submitted to ClearPort for clearing, the ClearPort trading platform has yet to develop a substantial volume of exchange-type trading.

<sup>44</sup> Interview with NYMEX, March 27, 2007.

Figure 16

**NYMEX AND ICE TRADING VOLUMES  
NATURAL GAS CONTRACTS FOR OCTOBER 2006**

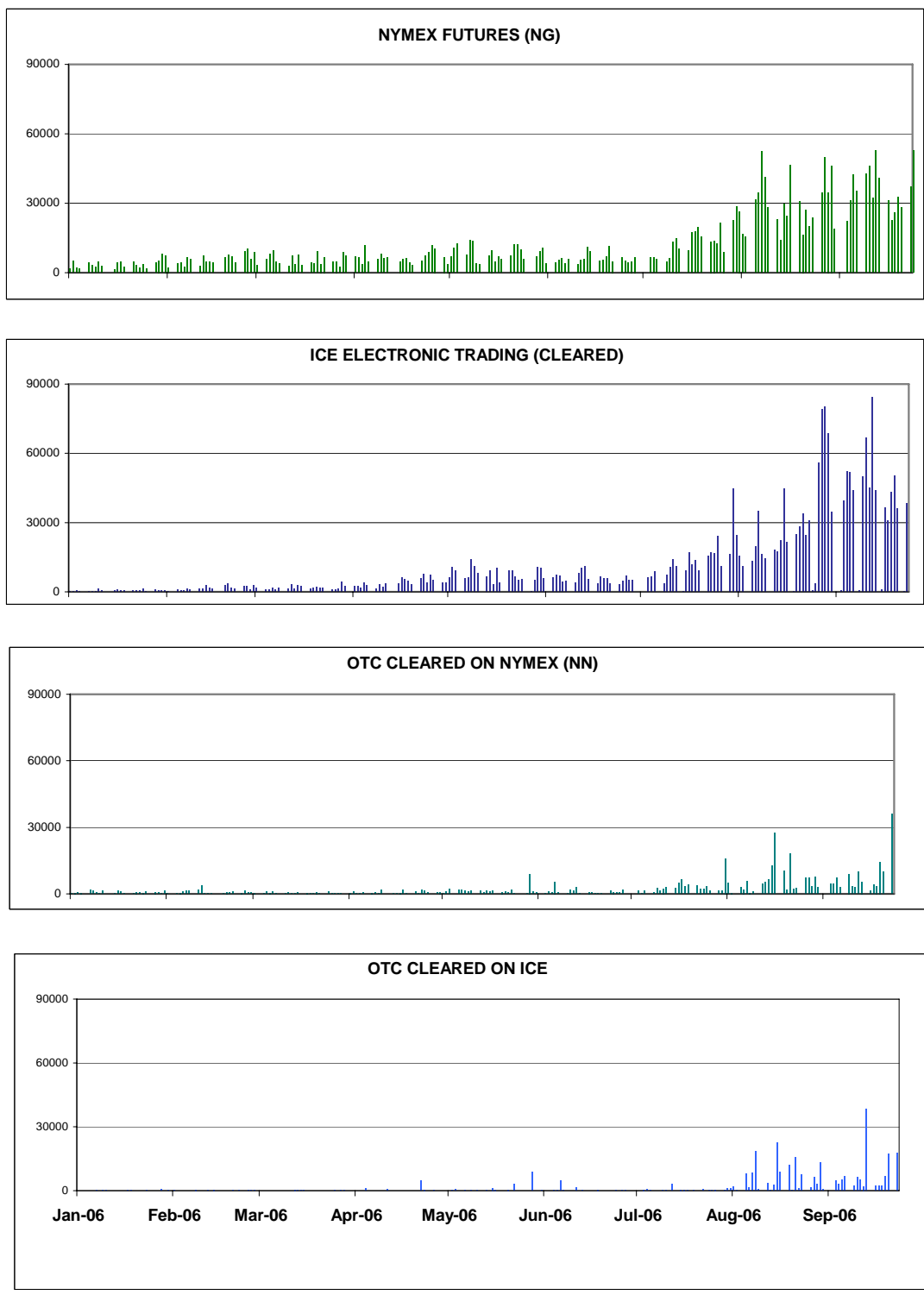


Fig. 16. Volume of contracts traded and cleared on NYMEX and ICE for natural gas contracts for October 2006. Data source: NYMEX and ICE.

## C. Market Regulation

Although both NYMEX and ICE play an integral role in natural gas price formation, the two exchanges are subject to vastly different regulatory restrictions and government oversight under current federal law.

Section 3 of the CEA states that the purpose of the Act is to establish “a system of effective self-regulation of trading facilities, clearing systems, market participants and market professionals under the oversight of the [Commodity Futures Trading] Commission.” Under this tiered regulatory structure, the exchanges have the primary responsibility for market surveillance and oversight. The CFTC’s regulatory program is designed to rely on the market oversight and surveillance conducted by the exchanges, but the CFTC also supplements the exchanges’ efforts with its own surveillance and oversight of trading. One of the key purposes of the CFTC’s commodity market surveillance and oversight is “to deter and prevent price manipulation or any other disruption to market integrity.”<sup>45</sup>

Due to provisions in the Commodity Futures Modernization Act of 2000 (CFMA) that are often referred to as the “Enron loophole,” electronic energy exchanges are exempt from this system of regulation.<sup>46</sup> The result is that one type of energy exchange – represented by NYMEX – is both self-regulated and regulated by the CFTC, whereas the other type of energy exchange – exemplified by ICE – is not required to be self-regulated and is not regulated by the CFTC. As will later be shown, ICE’s exemption from regulatory oversight has undermined the effectiveness and market integrity of both ICE and NYMEX in pricing U.S. energy commodities.

### 1. Regulated Markets (NYMEX)

The CEA, as amended by the CFMA, requires that all futures contracts be traded on a futures exchange that has been approved by the CFTC as a “Designated Contract Market” (DCM). To qualify as a DCM, an exchange must develop a market regulation and oversight program that complies with the core principles set forth in the CEA. These core principles require a DCM to maintain certain programs and capabilities to prevent market manipulation and to ensure fair and orderly trading:

- “the ability to prevent market manipulation through market surveillance, compliance, and enforcement practices and procedures, including methods for real-time monitoring of trading and comprehensive and accurate trade reconstructions;”<sup>47</sup>
- the enforcement of rules to ensure fair and equitable trading;<sup>48</sup>

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<sup>45</sup> 7 U.S.C. § 5(b) (2006).

<sup>46</sup> The legislative history of the Enron loophole is set forth in the Subcommittee’s previous reports. See Minority Staff of the Permanent Subcommittee on Investigations, *U.S. Strategic Petroleum Reserve: Recent Policy Has Increased Costs to Consumers but not Overall U.S. Energy Security*, S. Prt. 108-18, at p. 185, 108<sup>th</sup> Congress, 1<sup>st</sup> Sess. (Mar. 5, 2003).

<sup>47</sup> 7 U.S.C. § 7(b)(2) (2006).

<sup>48</sup> 7 U.S.C. § 7(b)(3) (2006).

- the enforcement of disciplinary rules that authorize the board of trade to discipline, suspend, or expel market participants that violate the rules of the exchange;<sup>49</sup>
- the trading only of contracts that are “not readily susceptible to manipulation;”<sup>50</sup>
- the monitoring of trading “to prevent manipulation, price distortion, and disruption of the delivery or cash-settlement process;”<sup>51</sup>
- the adoption of position limits or position accountability for speculators “to reduce the potential threat of market manipulation or congestion, especially during trading in the delivery month;”<sup>52</sup>
- the emergency authority to suspend trading in any contract, require traders to liquidate positions, or impose special margin requirements;<sup>53</sup> and
- daily publication of trading information.<sup>54</sup>

NYMEX is one of thirteen exchanges the CFTC has designated as a contract market.<sup>55</sup> To meet its obligations to monitor trading, prevent manipulation, and ensure the financial integrity of its markets, NYMEX has established a regulatory program, which is headed by a Chief Regulatory Officer, to monitor daily trading, determine overall and daily margin requirements, oversee and evaluate the conduct of brokers and traders, monitor the performance of clearing firms, establish and enforce position limits, investigate complaints, and bring enforcement actions for violations of the exchange’s rules of conduct. The NYMEX regulatory program has an annual budget of approximately \$6.2 million, most of which supports the salaries of the nearly 60 people in that program.

## 2. Unregulated Markets

### a) ICE

None of these core principles apply to ICE. ICE has no legal obligation to monitor trading, no legal obligation to prevent manipulation or price distortion, and no legal obligation to ensure that trading is fair and orderly. In addition, the CFTC has no authority or obligation to monitor trading on ICE. As a result, there is no regulatory oversight of trading on ICE.

ICE’s unregulated status is due to the 2000 enactment of the so-called Enron loophole in the CFMA, which added section 2(h)(3) to the CEA. Section 2(h)(3) exempts from CFTC

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<sup>49</sup> 7 U.S.C. § 7(b)(5) (2006).

<sup>50</sup> 7 U.S.C. § 7(d)(3) (2006).

<sup>51</sup> 7 U.S.C. § 7(d)(4) (2006).

<sup>52</sup> 7 U.S.C. § 7(d)(5) (2006).

<sup>53</sup> 7 U.S.C. § 7(d)(6) (2006).

<sup>54</sup> 7 U.S.C. § 7(d)(7) (2006). The CFTC’s regulations at 17 C.F.R., Part 38, Appendix A, provide guidance on maintaining compliance with these core principles.

<sup>55</sup> See CFTC.gov, Designated Contract Markets Registered with the CFTC, at [http://www.cftc.gov/dea/deadcms\\_table.htm?from=home&page=epexchcontent#Designated\\_Contract\\_Markets](http://www.cftc.gov/dea/deadcms_table.htm?from=home&page=epexchcontent#Designated_Contract_Markets).

oversight all agreements, contracts, and transactions in energy and metals (“exempt commodities”) that are traded on electronic trading facilities between “eligible commercial entities” (ECEs).<sup>56</sup> Generally, an ECE must be a large financial institution, insurance company, investment company, corporation or individual with significant assets, employee benefit plan, government agency, registered securities broker, or futures commission merchant. An ECE may not act as a broker for another party. A market operating under section 2(h)(3) is deemed an “exempt commercial market” (ECM) – exempt from CFTC oversight.<sup>57</sup>

The CEA imposes few requirements on exempt commercial markets. An ECM is subject to the CEA’s general statutory prohibitions against fraud and price manipulation. An ECM must report summary market data to the CFTC and if the CFTC determines that the market performs a significant price discovery function in the cash market – which the CFTC has never done for any market – the ECM must provide volume and price data to the public. An ECM also must keep trading records and inform the CFTC of complaints it receives about trading practices. Other than these broad provisions, an ECM is exempt from the CFTC’s regulatory oversight.

The CFTC describes its lack of authority over exempt commercial markets as follows:

In contrast to its authority over designated contract markets and registered derivatives transaction facilities, the CFTC does not have general oversight authority over exempt commercial markets. Exempt commercial markets are not registered with, or designated, recognized, licensed, or approved by the CFTC.<sup>58</sup>

The CFTC does not apply any of the oversight or monitoring measures it uses to oversee regulated futures markets like NYMEX to exempt commercial markets like ICE. Table 3 compares the oversight mechanisms that apply to the two types of exchanges.

**Table 3**  
**NYMEX and ICE**  
**Differences in Measures to Prevent Price Manipulation**

Measure to Prevent Price Manipulation	Does the Measure Apply to:	
	Futures Markets (NYMEX)	Exempt Markets (ICE)
<b><i>CFTC Market Surveillance Program</i></b>		
• CFTC staff monitoring of daily trading reports	Yes	No
• Weekly reports and reviews for expiring contracts	Yes	No
• Option of special data call by CFTC	Yes	Yes

<sup>56</sup> 7 U.S.C. § 2(h)(3) (2006).

<sup>57</sup> 7 U.S.C. § 1a(11) (2006).

<sup>58</sup> See CFTC, Exempt Commercial Markets That Have Filed Notice with the CFTC, at CFTC website at [http://www.cftc.gov/dea/dea\\_ecm\\_table.htm](http://www.cftc.gov/dea/dea_ecm_table.htm).

Measure to Prevent Price Manipulation	Does the Measure Apply to:	
	Futures Markets (NYMEX)	Exempt Markets (ICE)
<b><i>Core Principles for Exchange Operation</i></b>		
• Exchange is responsible for monitoring compliance with market rules	Yes	No
• Traded contracts must not be readily susceptible to manipulation	Yes	No
• Exchange must monitor trading to prevent manipulation, price distortion, and disruption of the delivery or cash-settlement process	Yes	No
• Position limits for speculators to reduce the threat of manipulation or congestion	Yes	No
• Emergency authority to liquidate positions, suspend trading, or impose special margin requirements	Yes	No
• Daily submission of trading data to CFTC	Yes	Limited
• Daily publication of trading data	Yes	No
• Exchange must keep records of trading	Yes	Yes
<b><i>Large Trader Reporting</i></b>		
• Large trader reporting by clearing members	Yes	No
• Large trader reporting by exchanges	Yes	Voluntarily provided by ICE
• Trading account information filed by traders	Yes	No

### b) Off-Exchange Bilateral Transactions

Several provisions of the CFMA also exempt from government oversight bilateral transactions in energy commodities that are individually negotiated by the parties and that are “not executed or traded on a trading facility.” Under section 2(g) of the CEA, for example, which was added to the CEA by the CFMA in 2000, energy swaps are placed outside of the Act’s requirements. Section 2(g) provides that all agreements, contracts, and transactions “in a commodity other than an agricultural commodity” between “eligible contract participants” that are individually negotiated by the parties and that are “not executed or traded on a trading facility” are fully exempt from all regulation under the CEA.<sup>59</sup>

<sup>59</sup> 7 U.S.C. § 2(g) (2006). The term “eligible contract participant” (ECP) includes financial institutions; insurance companies; corporations, trusts, and partnerships with total assets greater than \$10 million; large pension benefit plans, governmental entities, natural persons with assets greater than \$5 million who are entering the transaction for risk management purposes, and certain others. *Id.* at § 1a(12). The term ‘trading facility’ means a person or group of persons that constitutes, maintains, or provides a physical or electronic facility or system in which multiple participants have the ability to execute or trade agreements, contracts, or transactions by accepting bids and offers made by other participants that are open to multiple participants in the facility or system.” *Id.* at § 1a(33). An

Section 2(h)(1) of the CEA provides a similar exclusion. Section 2(h)(1) was intended to exempt from regulation dealer markets and one-to-many trading platforms, such as the defunct “Enron Online,” in which one person or firm would act as the counterparty to many or all other traders. This section provides that all agreements, contracts, and transactions in an “exempt commodity,” which includes both energy and metal commodities, between “eligible contract participants” and “not entered into on a trading facility” are generally exempt from the requirements of the CEA.<sup>60</sup> Unlike the swap transaction exclusion, this exemption applies even if the agreement, contract, or transaction is not individually negotiated.

One of the sources of confusion following the passage of the CFMA is the inconsistency between sections 2(g) and 2(h)(1) – whereas § 2(g) totally excludes energy and metals swaps that are individually negotiated from the CEA, § 2(h)(1) exempts energy and metals transactions from the exchange-trading and other requirements but generally applies the anti-fraud and anti-manipulation provisions to over-the-counter transactions in these commodities. It is not clear whether the exclusion provision takes precedence over the exemption provision, or vice versa.

Moreover, to the extent that a negotiation over price can be considered “an individual negotiation,” it would appear that sections 2(g) and 2(h)(1) cover the same transactions and are in direct conflict regarding the applicability of the CEA’s anti-fraud and anti-manipulation provisions. The CFTC staff interprets the term “individual negotiation” to include price negotiations; under this interpretation there is no difference between sections 2(g) and 2(h)(1). Under this interpretation, all instruments traded under 2(h)(1) on “one-to-many” facilities or through dealer-brokers could be considered excluded swaps.

Off-exchange bilateral transactions that would be wholly or partially exempt from CFTC regulation under either of these exemptions may be brought within the CFTC’s scope of regulation if those transactions are subsequently submitted for clearing to a CFTC-regulated market. Thus, for example, off-exchange bilateral transactions that are subsequently submitted to NYMEX for clearing are regulated as futures contracts. Off-exchange bilateral transactions that are subsequently submitted to ICE for clearing, however, are still generally exempt from CFTC regulation.

#### **D. Excessive Speculation**

In addition to requiring market regulation and oversight, and prohibiting market manipulation, the CEA prohibits excessive market speculation. Section 4a(a) of the CEA directs the CFTC to establish limits on speculation in order to prevent “sudden or unreasonable fluctuations or unwarranted changes” in the price of commodities traded on an exchange:

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“electronic trading facility” is a trading facility that “operates by means of an electronic or telecommunications network” and maintains an audit trail of bids, offers, orders, and transactions on the facility. *Id.* at § 1a(10).

<sup>60</sup> 7 U.S.C. § 2(h)(1) (2006). “The term ‘exempt commodity’ means a commodity that is not an excluded commodity or an agricultural commodity.” *Id.* at § 1a(14). “Excluded commodities” are a variety of financial derivatives, including interest rate, currency, equity, debt, credit, weather, economic index, and other derivatives based on one or more commodities for which there is no cash market or whose price levels are not within the control of any party to the transaction. *Id.* at § 1a(13).



Excessive speculation in any commodity under contracts of sale of such commodity for future delivery made on or subject to the rules of contract markets or derivatives transaction execution facilities causing sudden or unreasonable fluctuations or unwarranted changes in the price of such commodity, is an undue and unnecessary burden on interstate commerce in such commodity. For the purpose of diminishing, eliminating, or preventing such burden, the Commission shall . . . fix such limits on the amounts of trading which may be done or positions which may be held by any person.<sup>61</sup>

The CFTC explains, “All agricultural and natural resource and many financial futures and options contracts are subject to speculative position limits. For several markets (corn, oats, wheat, soybeans, soybean oil, soybean meal, cotton), the limits are determined by the Commission and set out in Federal regulations. For all other markets, the limits are determined by the exchanges according to standards established by the Commission.”<sup>62</sup>

Because the potential for congestion, disruption, and price manipulation is highest during the month in which a contract expires (termed either the “spot” or “expiration” month), the CFTC applies and requires more stringent speculative position limits during the spot month. CFTC’s regulations state: “For physical delivery contracts, the spot month limit level must be no greater than one-quarter of the estimated spot month deliverable supply.”<sup>63</sup> For the spot month in cash-settled markets, an exchange must establish speculative position limits “no greater than necessary to minimize the potential for manipulation or distortion of the contract’s or the underlying commodity’s price.”<sup>64</sup>

CFTC regulations and exchange rules allow a trader to be granted an exception to the speculative position limits if they are engaged in “bona fide hedging” rather than speculating. By definition, traders who are using the futures market to offset or “hedge” a risk in the physical market are not speculating on price changes in either the physical or futures market; because of their hedge they neither gain nor lose from price changes in the futures market. To achieve this price neutrality, a trader needs to be able to take a position in the futures market that is equal to and opposite to their position in the cash market. Hence, the CFTC’s regulations allow a trader to apply for and receive a “hedge exemption” for positions or transactions whose purpose is “to offset price risks incidental to commercial cash or spot operations and such positions are established and liquidated in an orderly manner in accordance with sound commercial practices.”<sup>65</sup> Traders seeking a hedge exemption must apply for a specific exemption and supply documentation to support the application.

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<sup>61</sup> 7 U.S.C. § 6a(a) (2006).

<sup>62</sup> CFTC, Background: Speculative Limits, Hedging, and Aggregation in Commodity Futures and Options, CFTC website, at <http://www.cftc.gov/opa/backgrounder/opaspeclmts.htm>. In calculating position limits, the CFTC and the exchanges will aggregate multiple positions that are subject to common ownership as if they were held by a single trader, and will combine futures and options positions on those futures to obtain an aggregate futures-equivalent position in that contract.

<sup>63</sup> 17 C.F.R. § 150.5 (2002).

<sup>64</sup> *Id.*

<sup>65</sup> 17 C.F.R. § 1.3(z) (2002).

For certain futures markets, including the energy markets, the CFTC has authorized exchanges to establish “accountability levels” rather than position limits for traders holding contracts in months other than the spot month.<sup>66</sup> The CFTC explains:

If a market has accountability rules, a trader—whether speculating or hedging—is not subject to a specific limit. Once a trader reaches a preset accountability level, however, he must provide information about his positions upon request by the exchange. Depending on the size of the market and type of commodity, any trader over the accountability level must also consent to stop increasing his position if so ordered by the exchange.<sup>67</sup>

In compliance with the CFTC’s directives, NYMEX has established position limits and accountability levels for various energy contracts.<sup>68</sup> The NYMEX position limits and accountability levels are shown in Table 4.

**Table 4**  
**Position Limits and Accountability Levels for NYMEX Energy Futures Contracts**

Market	Position Limits (# of contracts)	Accountability Levels (# of contracts)	
	Expiration Month	Net Single Month (other than expiration)	Net All Months Combined
Natural Gas	1,000 for last 3 days	12,000	12,000
RBOB Gasoline	1,000 for last 3 days	7,000	7,000
Heating Oil	1,000 for last 3 days	7,000	7,000
Crude Oil	3,000 for last 3 days	20,000	20,000

In contrast to NYMEX, ICE has established no position limits or accountability levels for its traders. That means a trader can speculate without limit by trading on ICE, where no such restrictions apply. As the Subcommittee has found in this investigation, when NYMEX attempted to limit Amaranth’s speculative positions in the natural gas market, Amaranth simply switched its positions to ICE.

As currently written, the CEA does not directly prohibit traders from engaging in excessive speculation. Rather, the CEA directs the CFTC to issue position limits to prevent excessive speculation from causing sudden, unreasonable, or unwarranted price changes. To enforce this provision of the CEA in the energy markets, the CFTC has issued fixed position limits for specific energy commodities and contracts, and authorized regulated exchanges to issue accountability limits to trigger reviews of trader positions. If an exchange determines that a position is excessively concentrated, the exchange can order the trader to reduce that position.

<sup>66</sup> See 17 C.F.R. § 10.5(e) (2002).

<sup>67</sup> CFTC, Backgrounder on Speculative Limits.

<sup>68</sup> NYMEX.com: Exchange Rulebook, §§ 9.26A, 9.27, 9.27A, at NYMEX website, at [http://nymex.com/rule\\_main.aspx](http://nymex.com/rule_main.aspx).

Violations of a position limit or an order to reduce a position are considered civil violations of the CEA, punishable in the same manner as violations of other statutory and regulatory provisions. NYMEX policy is to send warning letters on the first two occasions that a trader violates a position limit; for subsequent violations traders are subject to civil monetary penalties and even forfeiture of their trading privileges on the exchange. These types of violations are not treated as crimes, unless they are part of an effort to manipulate commodity prices or commit some other criminal offense.

### **E. Market Manipulation**

The CEA states that the manipulation of commodity prices is a felony punishable by a fine of up to \$1 million and imprisonment of up to five years.<sup>69</sup> Although it is one of the core provisions of the law, neither the CEA nor its implementing regulations provides a specific definition of manipulation. The CEA states only that it is against the law for “[a]ny person to manipulate or attempt to manipulate the price of any commodity in interstate commerce, or for future delivery on ... any registered [exchange], or to corner or attempt to corner any such commodity.”<sup>70</sup>

The case law interpreting the CEA’s prohibitions against market manipulation is confusing and contradictory. The current test for establishing manipulation requires the following four elements to be established by a preponderance of the evidence:

- (1) the accused had the ability to influence market prices;
- (2) the accused specifically intended to influence market prices;
- (3) artificial prices existed; and
- (4) the accused caused the artificial prices.<sup>71</sup>

### **F. Natural Gas Trading**

To understand the natural gas market, it is important to examine not only the nature of the commodity, the cash and financial markets, and CFTC regulation and oversight, but also the key trading strategies that many natural gas traders follow.

In general, natural gas producers and marketers are less concerned with the absolute price of natural gas than with ensuring they obtain an adequate margin of profit for the gas they sell. What matters most to producers and marketers is whether they can sell the gas for more than it cost to acquire. End users of natural gas have a slightly different perspective – they are most concerned with obtaining natural gas at the lowest price relative to their other costs and expenses. Speculators have a third perspective: they seek to profit from the frequent price changes in the natural gas market – devising strategies to profit from both price differences and price volatility.

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<sup>69</sup> Section 9 of the CEA.

<sup>70</sup> 7 U.S.C. § 13(a)(2). For more information, see the Subcommittee’s detailed discussion of this provision of the law in its 2003 Report, Appendix 1, pp. 125-37.

<sup>71</sup> *In the matter of Cox and Frey*, 1987 Westlaw 106879 (C.F.T.C.).

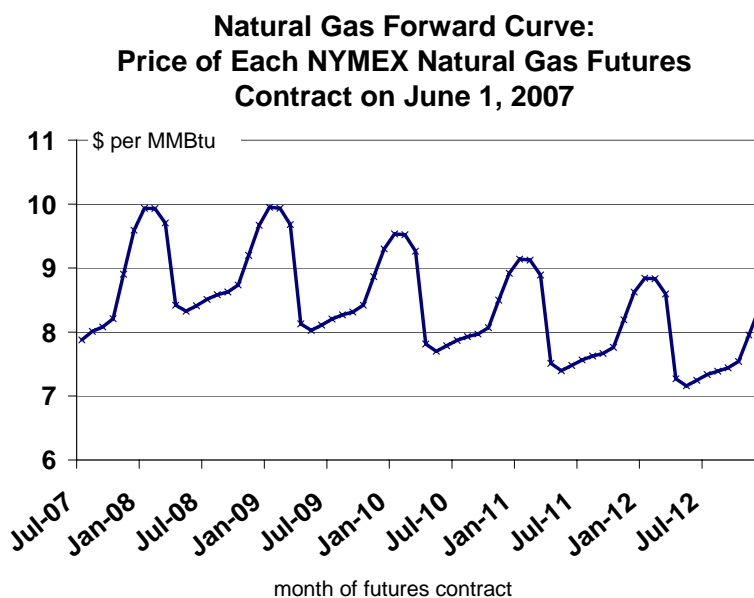
**Price Spreads.** Typically, rather than purchase a contract that locks in an absolute price level for a particular month, natural gas traders use trading strategies that involve relative price levels between different months. These strategies—called “spread trading”—involve the simultaneous purchasing of a futures contract for one month—called the “long” month—and the selling of the same number of futures contracts for a different month—called the “short” month. The purchases are linked together in the exchange’s trading records with the price difference between the two shown as the price spread. For example, if a trader buys a contract for March at \$7.50, and in the same transaction sells a contract for April at \$7.25, the exchange will list both trades together as a single transaction with a price spread of \$0.25.

A natural gas distributor, for example, may use a spread strategy to buy a futures contract for natural gas to be delivered to the distributor in the summer, when prices are low, and at the same time sell a futures contract for natural gas to be delivered in the winter, when prices are high. In this manner, the distributor can lock in a profit by selling natural gas for more than it cost the distributor to purchase the gas. A distributor is likely to pursue this type of strategy if the difference in price between the winter and summer contracts—the price spread—is greater than the distributor’s costs in storing the physical gas between those summer and winter months. Large winter/summer price spreads therefore provide a financial incentive for marketers and distributors to accumulate gas in storage during the summer months for sale during the winter months.

On the other side of the trade, a speculator may believe that a price spike is likely to occur in the upcoming winter, as has occurred in most of the previous years, and therefore that winter prices will be much higher than the summer prices. To profit from the difference in prices, the speculator may buy a winter/summer spread, meaning that the speculator will buy a futures contract for a winter month and at the same time sell a futures contract for a summer month. For example, a speculator who buys 100 January contracts for \$7.50 each and simultaneously sells 100 July contracts for \$7.25 can be said to be “buying 100 January/July spreads at 25 cents,” which will cost the speculator a total of \$2.50. If the speculator had instead bought 100 January contracts, without any offsetting July contracts, it would have had to pay \$75.00 for those contracts. As this example shows, spread trading can be a lot less expensive than buying contracts for single months.

**The “Forward Curve.”** To aid in their analysis of price spreads in the natural gas markets, traders use a type of chart called the “forward curve.” The forward curve shows, for any given date, the price of each NYMEX futures contract for successive future months. The forward curve for natural gas clearly depicts the differences in natural gas futures prices between the winter and summer months. Figure 17 displays, for example, the forward curve for natural gas on June 1, 2007. The points that make up the forward curve reflect the final, actual NYMEX price on that date to buy a futures contract to deliver natural gas in each future month over the next five years. The points form curves that look like waves because, in each year, the futures prices for the winter months are higher than the futures prices for the summer months, reflecting a higher anticipated demand for natural gas during the winter heating seasons.

Figure 17



*Fig. 17. The seasonality of natural gas demand is reflected in the “forward curve,” which shows for a specified date the price of each natural gas futures contract for future months. The natural gas forward curve peaks in the winter months and falls in the summer months. Data source: NYMEX.*

Figure 18 shows what the forward curve looked like in mid-August of each year from 2002 through 2006. Not only did the absolute level of futures prices rise from 2002 to 2006, but the difference in futures prices between summer and winter months – the winter/summer spread – increased as well, reflecting the market’s view that natural gas prices during the winters would continue to be at a premium. The reason for the unusually high prices and large differences between the winter and summer prices in 2006 is discussed in the next section. Amaranth’s excessive speculation in natural gas futures played a central role.

Figure 18

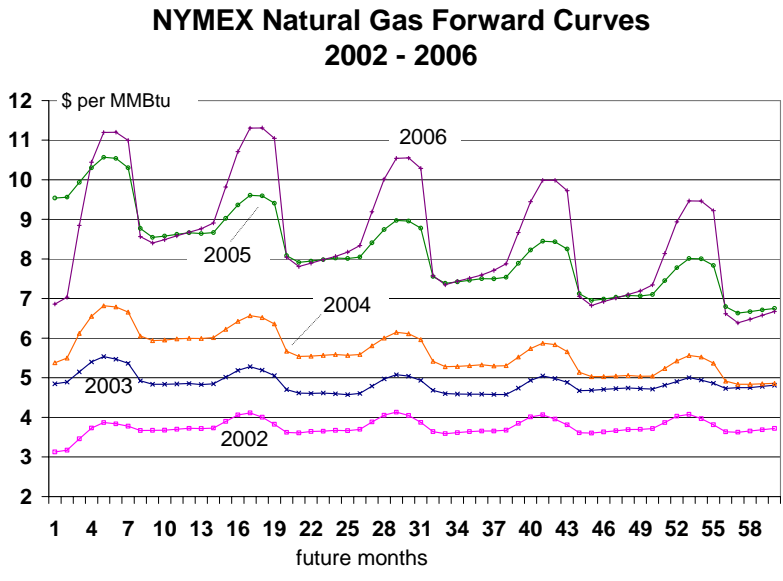


Fig. 18. The forward curve in 2006 was higher and the winter/summer price spreads were larger than in previous years. Data source: NYMEX.

## V. EXCESSIVE SPECULATION IN THE NATURAL GAS MARKET IN 2006

*“Nowhere does history indulge in repetitions so often or so uniformly as in Wall Street. When you read contemporary accounts of booms or panics the one thing that strikes you most forcibly is how little either stock speculation or stock speculators to-day differ from yesterday. The game does not change and neither does human nature.”*

--Edwin Lefevre, *Reminiscences of a Stock Operator* (1923)<sup>72</sup>

### A. Overview

In early 2006, it began to be clear that the effects of Hurricanes Katrina and Rita on natural gas supplies had dissipated. Due to a warm winter, a large amount of natural gas remained in storage, indicating there would be a relatively high level of supply for the upcoming summer, and likely an above-average amount of natural gas in storage for the next heating season. Despite above-average amounts of natural gas in inventories, the price of natural gas in the futures markets remained extremely volatile, and the difference in price—or “spread”—between natural gas futures contracts for the next winter and the upcoming summer kept increasing. The paradox of unusually high winter/summer price spreads in the face of above-average supplies persisted throughout the summer and into early September. Then, in mid-September, the winter/summer price spreads suddenly collapsed. As these price spreads collapsed, so did Amaranth, the largest single trader in the natural gas markets. Reports indicated that Amaranth lost more than \$2 billion in the natural gas market during the first three weeks of September, precipitating the liquidation of the entire \$8 billion fund.

The Subcommittee began this investigation in October 2006 to understand why certain natural gas futures prices, particularly the winter/summer price spreads, had remained so high in the face of above-average supplies and whether the large-scale trading conducted by Amaranth had contributed to those high prices. To conduct this investigation the Subcommittee subpoenaed natural gas trading records from NYMEX, ICE, Amaranth, and other traders.<sup>73</sup> The Subcommittee’s analysis of this trading data, which includes several million individual trades, indicates that the extreme levels of winter/summer price spreads were driven by Amaranth’s excessive speculative trading in natural gas contracts on both NYMEX and ICE, persisting over several months.

Prior to its collapse, Amaranth dominated trading in the U.S. natural gas market. It bought and sold thousands of natural gas contracts on a daily basis, and tens of thousands of contracts on certain days. All but a few of the largest energy companies and hedge funds consider trades of a few hundred contracts to be large trades. Amaranth held as many as 100,000 natural gas futures contracts at once, representing one trillion cubic feet of natural gas, or 5% of the natural gas used in the United States in a year. At times Amaranth controlled up to 40% of

<sup>72</sup> J. Wiley & Sons, New York, 1994, at p. 180.

<sup>73</sup> The Subcommittee appreciates the responsiveness of both NYMEX and ICE in providing extensive trading records in user-friendly electronic formats in a timely manner. The Subcommittee also appreciates the co-operation of Amaranth and its former personnel, and of persons from other firms who provided information to the Subcommittee.

all of the open interest on NYMEX for the winter months (October 2006 through March 2007). Amaranth accumulated such large positions and traded such large volumes of natural gas futures that it distorted market prices, widened price spreads, and increased price volatility.

Amaranth's fundamental view was that winter natural gas prices would be much higher than summer natural gas prices. It pursued its fundamental view largely through two major trading strategies: (1) buying futures contracts for January 2007 while selling futures contracts for November 2006—the “January/November spread”—representing a bet that January prices would be much higher than November prices; and (2) buying futures contracts for March 2007 while selling futures contracts for April 2007—the “March/April spread”—representing a bet that March prices would be higher than April prices, when demand for natural gas for home heating diminishes significantly.

Amaranth pursued these strategies to an extreme. On almost every day from mid-February through July, Amaranth held more than 50% of the open interest on NYMEX in the January 2007 and November 2006 contracts. In late July, Amaranth held a total of more than 80,000 NYMEX and ICE contracts for January 2007—representing a volume of natural gas that equaled the entire amount of natural gas eventually used in that month by U.S. residential consumers nationwide. Amaranth's large-scale trading was a major driver behind the rise of the January/November price spread from \$1.40 in mid-February to \$2.20 in late April, an increase of more than 50%.

Amaranth also held large positions in the March/April spread, meaning it had bought a large volume of March contracts and sold a large number of April contracts. Amaranth's effect on this price spread was evident on particular dates when it traded extraordinarily large numbers of these contracts. For example, on July 31, Amaranth bought over 10,000 March 2007 futures contracts on NYMEX and sold about the same number of April 2007 futures contracts. Amaranth's trading represented almost 70% of the total NYMEX trading volume in each of these contracts on that date. Similarly, on July 31, Amaranth bought 13,000 March 2007 natural gas swap contracts on ICE, and sold nearly 11,000 April contracts. These trades accounted for about 60% and 50% of the volume of trading in these contracts on ICE, respectively. Amaranth's large volume of trading was the prime reason the March/April price spread increased by 72 cents on July 31. This increase was an extremely large one-day jump in price.

Amaranth also held large positions in other winter and summer months spanning the five-year period from 2006-2010. In aggregate, Amaranth amassed an extraordinarily large share of the total open interest on NYMEX. During the spring and summer of 2006, Amaranth controlled between 25 and 48% of the outstanding contracts (open interest) in all NYMEX natural gas futures contracts for 2006; about 30% of the outstanding contracts (open interest) in all NYMEX natural gas futures contract for 2007; between 25 and 40% of the outstanding contracts (open interest) in all NYMEX natural gas futures contracts for 2008; between 20 and 40% of the outstanding contracts (open interest) in all NYMEX natural gas futures contracts for 2009; and about 60% of the outstanding contracts (open interest) in all NYMEX natural gas futures contracts for 2010.



The current regulatory regime proved ineffective in limiting Amaranth's excessive speculation. Neither the CFTC nor NYMEX had a full view of Amaranth's trades, positions, or overall market presence because Amaranth's trades on ICE were exempt from regulatory oversight and scrutiny. Moreover, unlike NYMEX, ICE had no legal obligation to monitor positions held by traders, or to report positions to CFTC.

Without a view of natural gas trades on ICE, neither the CFTC nor NYMEX had a full appreciation or understanding of how speculative trading in natural gas contracts was affecting the price of natural gas. NYMEX's attempts to prevent Amaranth's large volume of trading from disrupting the orderly settlement of the NYMEX futures contract for September 2006 were unsuccessful due to Amaranth's ability to conduct its speculative trading without any limitation on ICE. In early August, NYMEX directed Amaranth to reduce its holdings in the September and in the October 2006 contracts. Amaranth responded by moving its positions in the September and October contracts to ICE.

After moving its September and October positions from NYMEX to ICE, Amaranth placed even more trades on ICE, further increasing its overall positions for these contracts. It continued to trade very large volumes of September and October contracts on ICE until just before the September contracts expired at the end of August. Amaranth's large-scale trading in the days and hours leading up to the expiration of the September contract increased the price volatility of the September contract.

On August 29, the last day of trading on the September contract, Amaranth repeatedly made large-scale trades on ICE, selling the September contract and buying the October contract. Its trades were counterbalanced during the day by other traders taking the opposite positions, buying the September contract and selling the October contract. Altogether, Amaranth sold about 16,000 September contracts on ICE, while the largest opposing trader, a hedge fund called Centaurus, bought about 12,000. Due to a request from NYMEX to limit its trading on the September contract, Amaranth ceased trading on both NYMEX and ICE an hour before trading closed. Centaurus continued to buy the September contract, and its price rose dramatically in the final hour. Amaranth suffered substantial losses and, on August 30, charged that it had been the victim of a price spike caused by large-scale trading rather than market forces, and requested an investigation by regulators.

In late August, the market moved sharply against Amaranth. The amount of natural gas in storage was very high, and there had been no major hurricanes to disrupt production. The winter/summer spread positions that Amaranth had invested in during the spring and summer began to fall. Amaranth's margin requirements grew to over \$2 billion, and eventually reached nearly \$3 billion. As a result, Amaranth no longer had the capital to buy large positions in the face of falling prices. As other traders perceived that at long last prices were finally returning to their fundamental value, the market began to fall even faster, compounding Amaranth's losses. By mid-September, Amaranth was forced to sell its positions to its clearing firm, JPMorgan Chase, and another hedge fund, Citadel, and liquidate the rest of the holdings in the \$8 billion fund.

## B. Setting the Stage: Natural Gas Market Fundamentals in Early 2006

In mid-summer 2005, U.S. natural gas storage facilities were nearly full, and natural gas was plentiful. When Hurricanes Katrina and Rita hit in the late summer, however, they caused major damage to natural gas pipelines and wells in the Gulf of Mexico, resulting in a sharp drop in natural gas production and a spike in natural gas prices.<sup>74</sup> Fortunately, these adverse conditions lasted for only a few months. Mild winter temperatures in early 2006, including the warmest January on record, greatly reduced the demand for natural gas.<sup>75</sup> By the spring of 2006, overall U.S. natural gas production had returned to pre-hurricane levels, with increased production from new wells offsetting the declines in the Gulf of Mexico. (Figure 19).

Figure 19

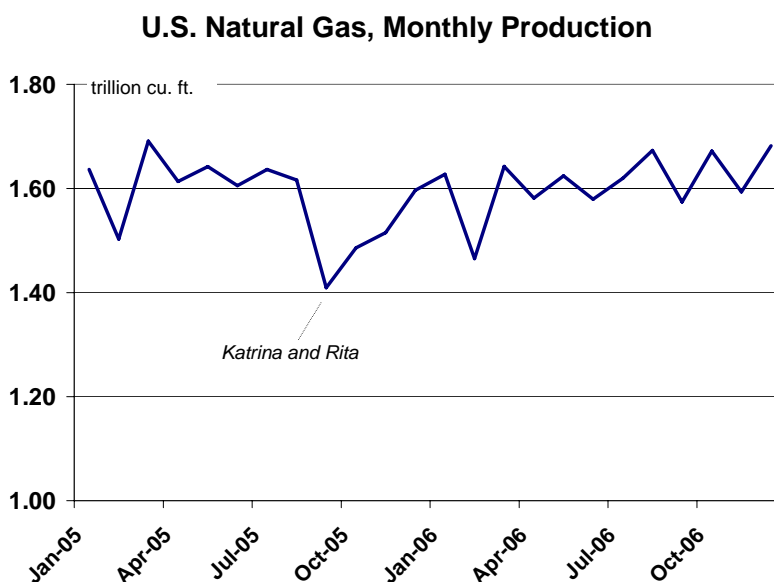


Fig. 19. By spring 2006, natural gas production levels had returned to pre-hurricane levels. Data source: EIA, *Natural Gas Gross Withdrawals and Production*.

By April 1, natural gas inventories were nearly 40% above the previous five-year average.<sup>76</sup> Inventories would remain above the five-year average for the remainder of 2006. (Figure 20). The turnaround in the natural gas supply outlook dampened the record high prices that followed the hurricanes in 2005. By late spring, near-term futures prices had returned to pre-hurricane levels. (Figure 21).

<sup>74</sup> According to DOE's Energy Information Administration, "Hurricane Katrina destroyed 44 [natural gas] platforms in the Gulf of Mexico and damaged 20 others, while Hurricane Rita destroyed 69 platforms and damaged 32 others." As of June 2006, almost 1 billion cubic feet per day of production remained off-line – representing about 9% of daily production in the Gulf of Mexico and about 5% of total U.S. daily production. EIA, *Natural Gas Year-In-Review 2006*, at p. 3.

<sup>75</sup> EIA, *Natural Gas Year-In-Review 2006* (March 2007); FERC, 2006 State of the Markets Report.

<sup>76</sup> FERC, 2006 State of the Markets Report, at p. 8.

Figure 20

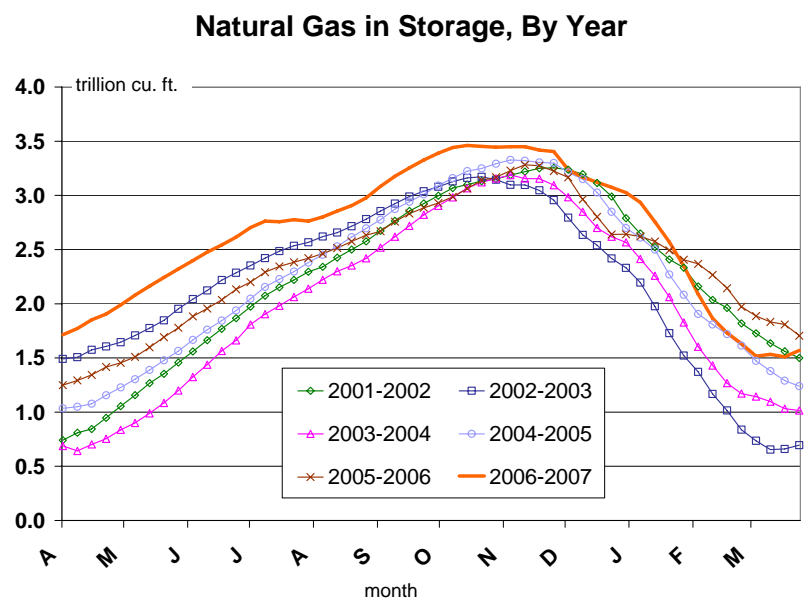


Fig. 20. In April 2006, at the start of the 2006-2007 natural gas injection (storage) season, the amount of natural gas in inventories was higher than at any time in the previous 5 years. Throughout the rest of 2006 inventory levels remained higher than in any of the previous five years. Data source: EIA.

Figure 21

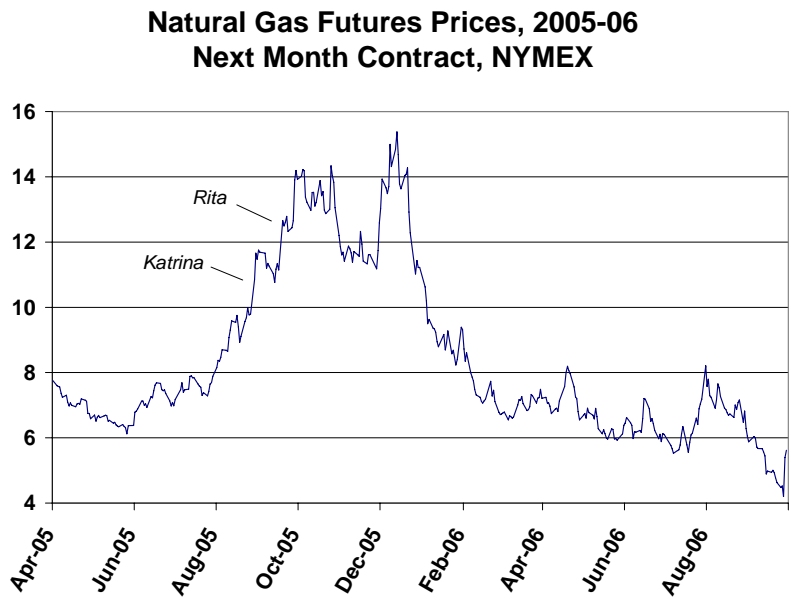
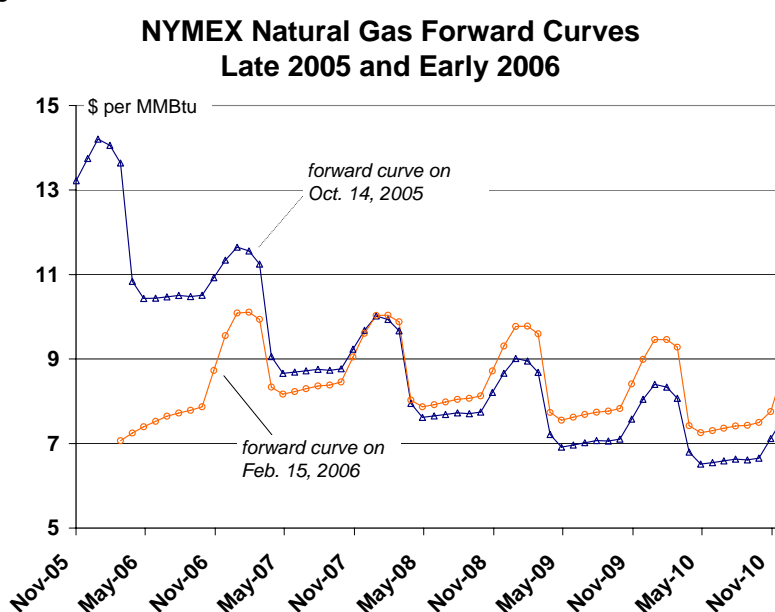


Fig. 21. By spring 2006 natural gas next-month futures prices had returned to pre-hurricane levels. Data source: EIA.

At the same time that near-term futures prices began falling in early 2006 to pre-hurricane levels, prices for futures contracts for the months further into the future also were much lower. Figure 22 displays forward curves on two dates—reflecting the final prices of NYMEX futures contracts on those dates for all of the future months in which NYMEX contracts can be traded. The first curve is from October 2005, shortly after the Katrina and Rita hurricanes, and the second is from February 2006 toward the end of the mild winter. Figure 22 shows how the price of every natural gas futures contract from March 2006 through March 2007 was lower in February 2006 than it had been in October 2005, just after Katrina and Rita. This downward adjustment in prices reflected a general belief in early 2006 that the effects from the hurricanes would not be as severe on natural gas prices as initially feared.

Figure 22



*Fig. 22. By early 2006, futures prices for the next 12 months had fallen significantly from their post-hurricane levels, reflecting a lessening concern regarding the long-term effects of those hurricanes on natural gas prices. Data source: NYMEX.*

Some traders, however, thought winter prices would increase. Amaranth, for example, told the Subcommittee that, with increasing domestic demand for natural gas, their traders expected supply shortages, delivery bottlenecks, and weather-related disruptions to develop during the winter and boost prices. In their view, the fundamentals of supply and demand justified much higher spreads between the natural gas winter and summer prices, and presented Amaranth with a profit-making opportunity. Over the next seven months, Amaranth aggressively pursued this market view.

### C. The Rise of Amaranth

*“But to tell the truth, Sam, I had sort of made up my mind to keep out of speculation since my last little deal. A man gets into this game, and into it, and into it, and before you know he can’t pull out – and he don’t want to.”*

-- Frank Norris, *The Pit: A Story of Chicago* (1902)

Amaranth Advisors, LLC, was created in 2000 as a multi-strategy hedge fund. Nicholas Maounis, the founder and Chief Executive Officer of Amaranth, had previously worked at another hedge fund, Paloma Partners Management Company (“Paloma”), where he both traded and managed teams of traders. Mr. Maounis brought with him a trading team from Paloma, consisting of four portfolio managers, eight analysts, five traders, four quantitative analysts, and various technical support personnel. Paloma held a minority interest in the newly spun-off fund and provided additional back-office and administrative support. Amaranth began operation with approximately \$600 million in capital and sought to employ “a diverse group of arbitrage trading strategies,” particularly featuring convertible bonds, mergers, and utilities.<sup>77</sup>

In 2002, Amaranth added energy commodity trading to its slate of strategies and hired several former Enron traders to its staff. JPMorgan Chase, which served as Amaranth’s clearing firm for its commodity trades, explained: “Due to the bankruptcy of Enron North America and its departure as the largest market maker in a number of energy derivatives exchanges and OTC markets the Fund manager views this as an expansion/diversification opportunity for Amaranth.”<sup>78</sup> The clearing firm noted: “Initially only 2% of Amaranth’s capital will be allocated to energy related trading.”

During its first few years Amaranth generated excellent returns, exceeding 29% in 2001, 15% in 2002, and 21% in 2003. In 2004, however, Amaranth found it increasingly difficult to maintain these high returns through its existing arbitrage strategies. Amaranth’s core strategy of convertible bond arbitrage had yielded no return at all for the first seven months of 2004, and its overall net return across all strategies was just over 3%, well below the fund’s previous performance.<sup>79</sup>

During this period of low returns Amaranth decided to increase its exposure to potentially higher-yielding markets, particularly energy. In mid-2004, Amaranth hired Brian Hunter as a natural gas trader; in 2005, Mr. Hunter was promoted to co-head of Amaranth’s commodities group. As the convertible bond market continued to falter into 2005, Amaranth shifted more capital into energy trading. Whereas in mid-2004 energy trading was a negligible fraction of

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<sup>77</sup> JPMorgan Chase, CP Leveraged Funds Due Diligence, Annual Review 2001, Bates No. JPM-PSI 00007004; Interview with Amaranth officials, December 20, 2006. Convertible bond arbitrage consists of buying a convertible bond and short selling the underlying common stock that the bond can be converted into. Merger arbitrage consists of investing in securities of companies that may be involved in mergers, takeovers, recapitalizations, or other types of corporate restructuring. Utilities arbitrage consists of buying one basket of utility stocks and selling short another basket of utility stocks and hoping to profit from the changes in the price differentials between the two baskets.

<sup>78</sup> JPMorgan Chase, CP Leveraged Funds Due Diligence, Annual Review 2001, Bates No. JPM-PSI 00007004 .

<sup>79</sup> JPMorgan Chase, CP Leveraged Funds Due Diligence, Annual Review 2004, Bates No. JPM-PSI 0007031; Interview with Amaranth officials, Dec. 20, 2004.

Amaranth's portfolio, by mid-2005, Amaranth had devoted approximately 30% of its capital to energy arbitrage.

Amaranth employed a variety of energy trading strategies. JPMorgan Chase described them as follows:

The Fund has hired a couple of former Enron energy traders to build an Energy Arbitrage desk. Energy arbitrage opportunities can also take a number of forms due to the significant amount of available "Energy" products. A generic geographical energy arbitrage can be trading the difference of price in a given commodity either in the same location or in [a] different geographical location. Other arbitrage opportunities include Grade arbitrage which encompasses trading the difference in price of two related crude oil based commodities such as the spread between WTI and Brent Crude. Generally these arbitrage opportunities are created by fundamental news affecting production and inventory. In addition trades may also be on the perceived price volatility of crude oil and other crude products such as gasoline, jet fuel and heating oil and or the correlation between one another. These views have been expressed through calendar spreads. In addition, deep out-of-the-money call options are purchased as a cheap way to take advantage of price shocks. Leverage ranges from 5-8x.<sup>80</sup>

Amaranth's purchase of inexpensive deep out-of-the-money call options paid off handsomely when natural gas prices spiked after Hurricanes Katrina and Rita. The purchase of these options allowed Amaranth to buy very expensive natural gas futures contracts at a steep discount.

The effect of these options and Amaranth's other natural gas positions on Amaranth's overall performance in 2005 was dramatic. For the first six months of 2005, Amaranth lost money; the net return was negative one percent. In August and September, largely due to Amaranth's natural gas positions, Amaranth's domestic portfolio gained nearly 15%. By year-end, the portfolio had gained just over 21%.

JPMorgan Chase reported, "For [the domestic Amaranth funds] the majority of the positive performance for 2005 came from profits in the energy book, approximately 98% of the funds' [year-to-date] performance was related to energy trades. Energy trading profits/losses are derived primarily from natural gas calendar swaps."<sup>81</sup> Reports indicated that, in 2005, as a result of these trades, Mr. Hunter personally made \$75 million.<sup>82</sup>

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<sup>80</sup> JPMorgan Chase, CP Leveraged Funds Due Diligence, Annual Review 2004, Bates No. JPM-PSI 0007031.

<sup>81</sup> JPMorgan Chase, CP Leveraged Funds Due Diligence, Annual Review 2005, Bates No. JPM-PSI 0007051.

<sup>82</sup> Ann Davis et al., *Hedge-Fund Hardball, Amid Amaranth's Crisis, Other Players Profited*, Wall St. J., Jan. 30, 2007, at A1.

**Table 5**  
**Amaranth Returns**  
**2005**

Month	Monthly Return (%)	Year-to-Date Return (%)
Jun 05	3.03	-0.98
Jul 05	2.39	1.38
Aug 05	5.19	6.65
Sep 05	7.49	14.63
Oct 05	-0.90	13.60
Nov 05	3.48	17.53
Dec 05	3.13	21.21

By 2006, in part due to its energy trading successes, Amaranth had grown significantly, both in terms of the number of its employees and in net asset value. It now had approximately \$8 billion in assets under management. It employed more than 400 people in offices around the world, including Greenwich, Connecticut; London; Toronto; Singapore; Calgary; and Houston. Its staff included a Chief Risk Officer and 12 risk “lieutenants” to monitor the risks in the various trading books.<sup>83</sup>

#### **D. January-April 2006: Amaranth Buys and Profits from Large Spread Positions**

*“How are you going to buy a big block of a stock in a bull market without putting up the price on yourself? That would be the problem.”*

*--Reminiscences of a Stock Operator, p. 233.*

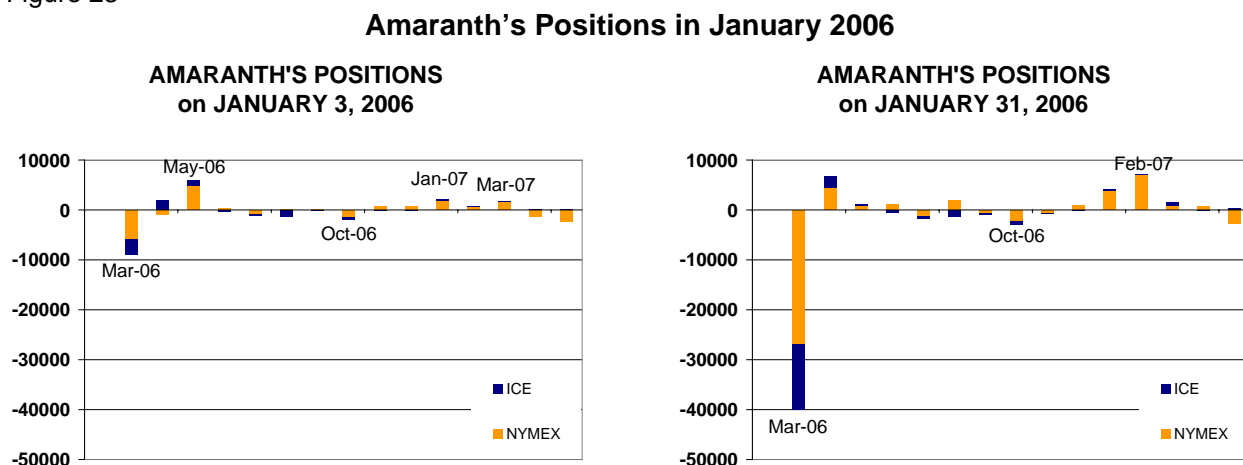
According to Amaranth, in January 2006, as the warmer-than-usual weather mitigated the post-hurricane concerns over the adequacy of supplies, Amaranth’s traders believed that natural gas prices would fall.<sup>84</sup> Over the course of January, Amaranth made a series of trades that resulted in its acquisition of huge natural gas positions, selling nearly 30,000 natural gas contracts for March 2006, and ending the month with a total short position for March of about 40,000 contracts. Amaranth held about two-thirds of its positions on NYMEX and the other third on ICE.

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<sup>83</sup> *Id.*

<sup>84</sup> All of the data and information in this Report regarding Amaranth’s trading is derived from trading data obtained from Amaranth, ICE, and NYMEX and Subcommittee interviews with Amaranth officers and traders.

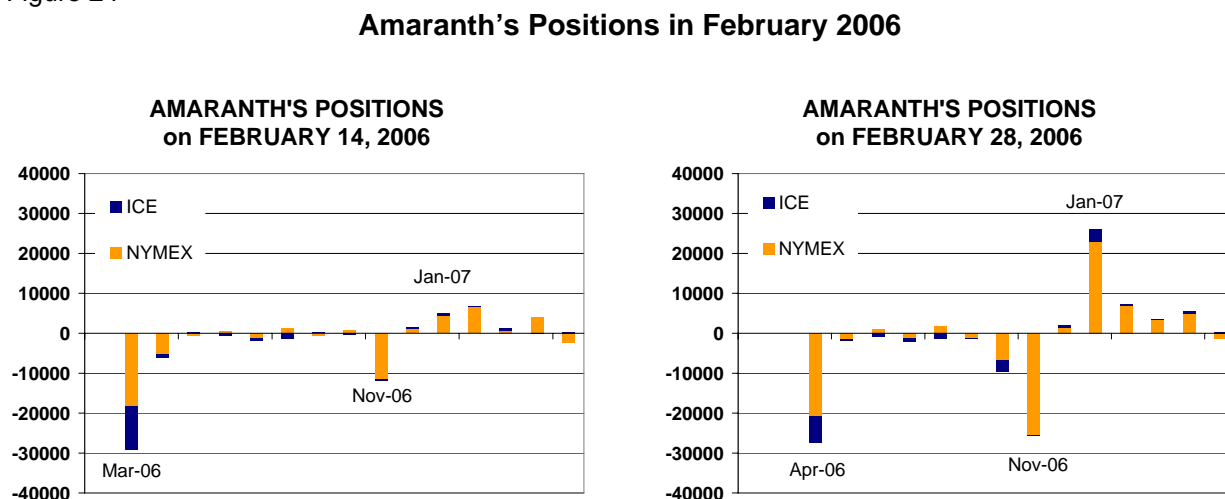
Figure 23



*Fig. 23. In January 2006, Amaranth built a short position of about 40,000 March 2006 contracts, about 2/3 of which were on NYMEX and 1/3 on ICE. Positions beyond May 2007 are not displayed. Data source for charts on Amaranth's positions: NYMEX, ICE, and Amaranth.*

During February 2006, Amaranth shifted its short March positions into April, maintaining its bet that natural gas prices would continue to fall. By the middle of the month, as the relatively mild weather continued, Amaranth concluded that the growing glut of gas would carry through the summer and into the fall. Amaranth began selling futures contracts for the fall months and buying futures contracts for the winter months with the expectation that the price of winter gas would be at a premium. In particular, Amaranth bought contracts for January 2007 and sold contracts for November 2006 (the “January/November spread”), in effect betting that January prices would rise faster than November prices. Amaranth invested heavily in its trading strategy, finishing the month with a short position of more than 25,000 November contracts and a long position of more than 25,000 January contracts.

Figure 24



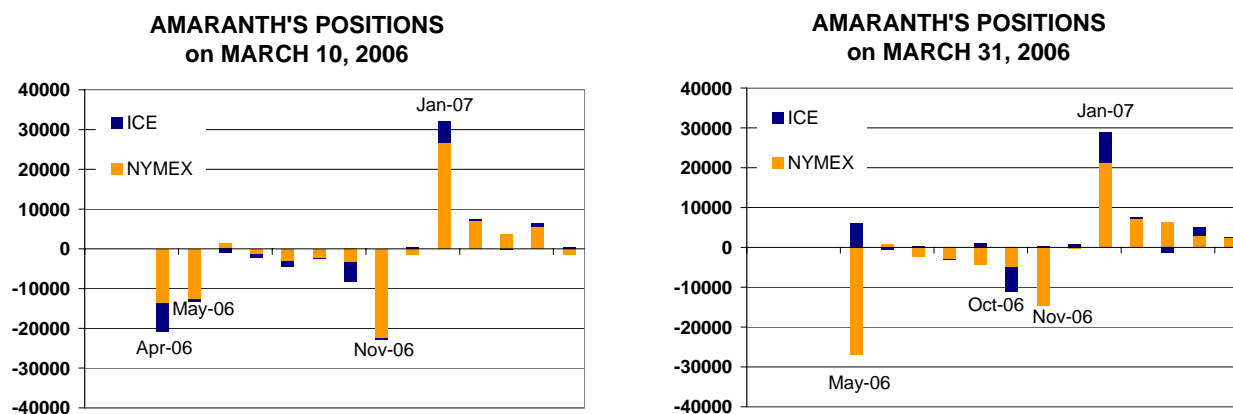
*Fig. 24. In mid-February, Amaranth began building a large spread position between January 2007 and November 2006. Most of the trading in these contracts occurred on NYMEX.*



Amaranth pursued a similar strategy in March 2006; it maintained a short position in the nearby spring months, shifting 30,000 short April contracts into May. It also maintained its large spread position between the upcoming fall and winter months. Although Amaranth began building this spread by selling November 2006 contracts and buying January 2007 contracts, in March, Amaranth shifted some of its short positions from November 2006 contracts into October 2006 contracts. To build these positions, Amaranth traded primarily on NYMEX, and to a lesser amount on ICE.

Figure 25

### Amaranth's Positions in March 2006



*Fig. 25 During March Amaranth continued to hold a short spring position and a spread between the fall months of October and November 2006, and January 2007.*

Amaranth continued the same strategies in April. It rolled its short May 2006 contracts into short June 2006 contracts and increased its January/November spread position by several thousand contracts. By the end of April, Amaranth was short approximately 30,000 contracts for November 2006 and long more than 34,000 contracts for January 2007. Amaranth had also accumulated significant short positions in the summer and fall months and significant long positions in the winter months. All of these positions reflected Amaranth's fundamental market view that the price of natural gas during the winter would be very expensive as compared to the summer.

Figure 26

### Amaranth's Positions in April 2006

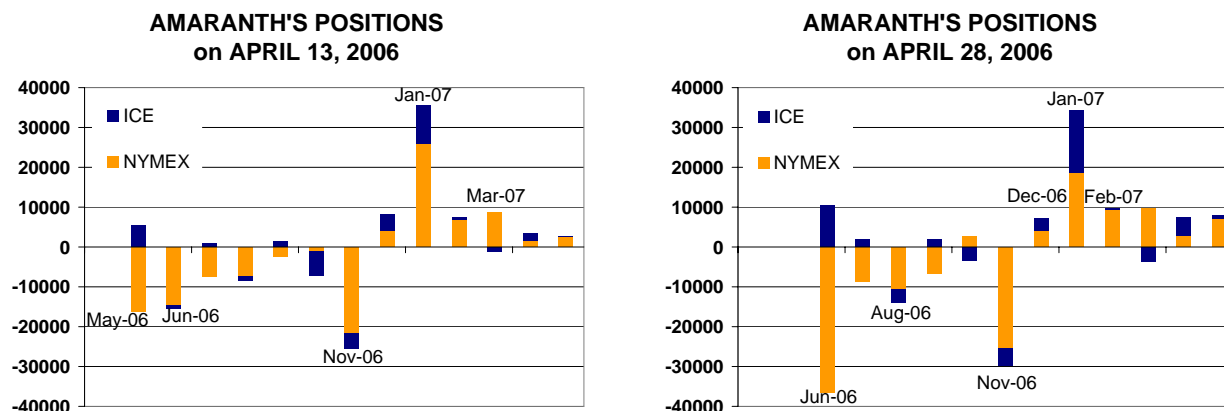


Fig. 26. In April Amaranth maintained its short position in the nearby spring and summer months and slightly increased its winter/fall spread position.

According to traders interviewed by the Subcommittee, Amaranth's fundamental market outlook in early 2006 was not unreasonable under the circumstances. What was striking about Amaranth's positions, and unknown to other traders, was the size of Amaranth's natural gas holdings. By the end of February, Amaranth held nearly 70% of the open interest in the NYMEX natural gas futures contract for November 2006 (Figure 27), and nearly 60% of the open interest in the NYMEX natural gas futures contract for January 2007 (Figure 28). In other words, Amaranth's long position in the January contract accounted for about 60% of all of the futures contracts for January that had been bought and had not yet been sold back. Similarly, Amaranth's short position in November accounted for about 70% of the November contracts that had been sold but had not yet been bought back. These were extremely large positions by any measure.

Figure 27

### Amaranth Open Interest, NYMEX Natural Gas Contract for November 2006

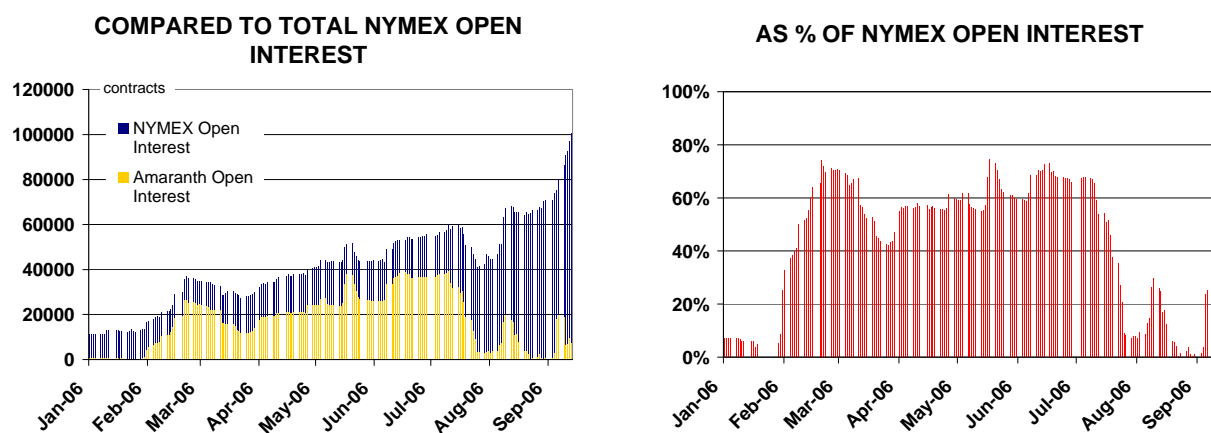
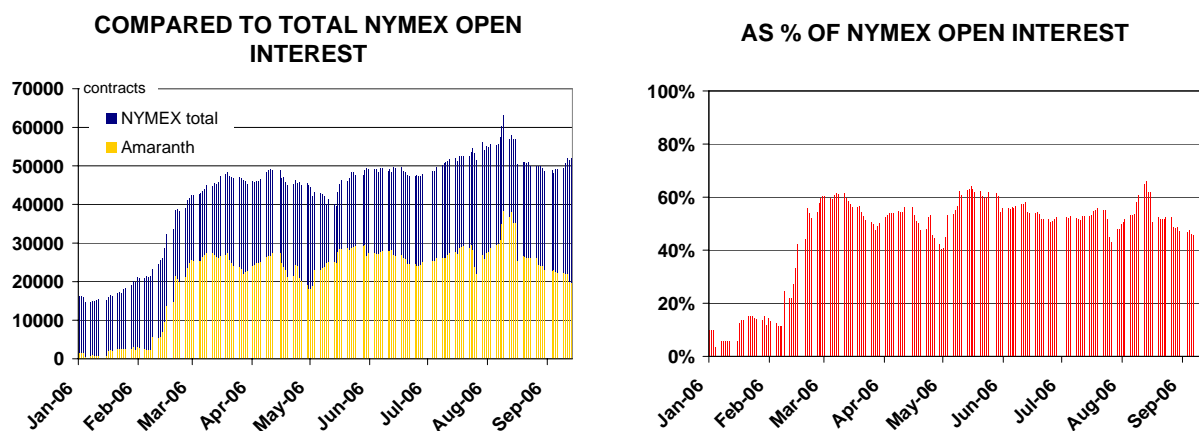


Figure 28

### Amaranth Open Interest, NYMEX Natural Gas Contract for January 2007



Figs. 27 and 28. Amaranth held extremely large shares of open interest in the November 2006 and January 2007 NYMEX natural gas futures contracts. Data source: Amaranth and NYMEX.

**Table 6**  
**NYMEX Natural Gas Futures:**  
**Cost of Position Size**

Number of Contracts	Margin Requirement*	Profit or Loss From Price Change of 1¢
1	\$6,750	\$100
10	\$67,500	\$1,000
100	\$675,000	\$10,000
1000	\$6,750,000	\$100,000
10,000	\$67,500,000	\$1,000,000
100,000	\$675,000,000	\$10,000,000

\*Initial Margin requirement for 1<sup>st</sup> month natural gas futures contract for traders not a Member of the Exchange. Margin requirements will be less for spread positions.

of a margin of over \$67 million. Assuming the price of natural gas is about \$7.50 per MMBtu, an outright position of 10,000 NYMEX futures contracts would be worth \$750 million. A change of just one cent in a position of 10,000 futures contracts, whether an outright position or a spread position, would change that trader's profit or loss by \$1 million. At times, from late April through mid-August 2006, Amaranth held more than 100,000 natural gas futures contracts. Amaranth's total margin requirements routinely exceeded \$1 billion.

Although Amaranth traders and officers told the Subcommittee that they did not consider any of Amaranth's positions or trades to be unusually large or risky, very few, if any, other traders appeared to hold positions as large as Amaranth or to trade as much volume as Amaranth. Generally, except for large energy companies and multi-billion dollar funds, positions of a few thousand contracts are beyond the financial capability and risk tolerance of most traders.

All traders are required to post funds—called “margins”—with their clearing firms to ensure that they have the financial resources to perform under the contract and make up for any losses incurred in their positions. Large holdings incur large margin requirements. An outright position of 10,000 contracts, for example, requires the posting

Amaranth's short-term and long-term positions yielded good returns in April 2006. The spread between the November 2006 contract and the January 2007 contract widened from \$1.59 to \$2.22. Amaranth's short June position did very well in April too, as the price of the June 2006 contract fell from \$7.42 to \$6.55 during the month of April. The March/April spread in 2008 increased from \$1.97 to \$2.48, and the March/April spread for 2010 increased from \$1.99 to \$2.40. In total, Amaranth's energy portfolio gained more than \$1 billion in value in April 2006, by far the largest contribution to Amaranth's overall return of more than 14% for the month and more than 30% for the year-to-date.<sup>85</sup>

### *How big is 100,000 contracts?*

From late April through mid-August, Amaranth had a total open interest on NYMEX of more than 100,000 natural gas futures contracts – more than 40% of the total open interest on NYMEX during this period. By late summer, Amaranth also had built total positions on NYMEX and ICE of nearly 100,000 contracts in individual months.

100,000 contracts represent an amount of natural gas equivalent to:

- 1 trillion cubic feet of natural gas;
- 23% of the amount of natural gas consumed by residential users in 2006;
- 5% of the total amount of natural gas consumed in the United States in 2006.

Amaranth explained its successful April in a monthly letter on the fund's performance sent to Amaranth's investors<sup>86</sup>:

Our energy and commodities portfolios generated outsized returns due to unusual volatility across the crude oil, natural gas, and metals businesses. Primary drivers of returns included (1) natural gas spread trades, which benefited from the significant increase in crude oil prices and the glut of summer 2006 natural gas relative to storage capacity and prospective summer demand, and (2) a profound increase in base metals prices (copper in particular) with an associate volatility spike. As volatility increased during the month, we took the opportunity to reduce exposure in our natural gas and metals portfolios and realized profits.

**Table 7**  
**Amaranth Returns – January – April 2006**

<b>Month</b>	<b>Monthly Return (%)</b>	<b>Year-to-Date Return (%)</b>
Jan	6.45	6.45
Feb	4.30	11.03
Mar	2.91	14.26
Apr	14.42	30.73

<sup>85</sup> Amaranth, Performance and Net Asset Value Report—September 2006 YTD, provided to JPMorgan Chase, Bates No. JPM-PSI 00006995.

<sup>86</sup> Amaranth investor letter in April 2006 monthly update to JPMorgan Chase, Bates No. JPM-PSI 00006978.

Upon closer analysis, Amaranth itself appears to have been a significant contributor to the “unusual volatility” in the natural gas market that added so much to its “outsized returns” for April. Amaranth purchased large numbers of January contracts, coupled with large sales of the November contract, a trading strategy called “buying a spread position.” By buying one contract and selling the other in linked transactions, Amaranth helped to widen the difference in price between these two contracts. Amaranth was the predominant buyer of the January contract during this period; its long January position constituted as much as 60% of the amount of open interest in that contract on NYMEX. At the same time, Amaranth was the predominant seller of the November 2006 contract; its short November position constituted as much as 75% of the amount of open interest in that contract on NYMEX. As Figure 29 shows, Amaranth’s large purchases of NYMEX natural gas futures contracts for January 2007 are highly correlated with movements in the price spread between the January 2007 and November 2006 contracts (the January/November price spread).

Figure 29a

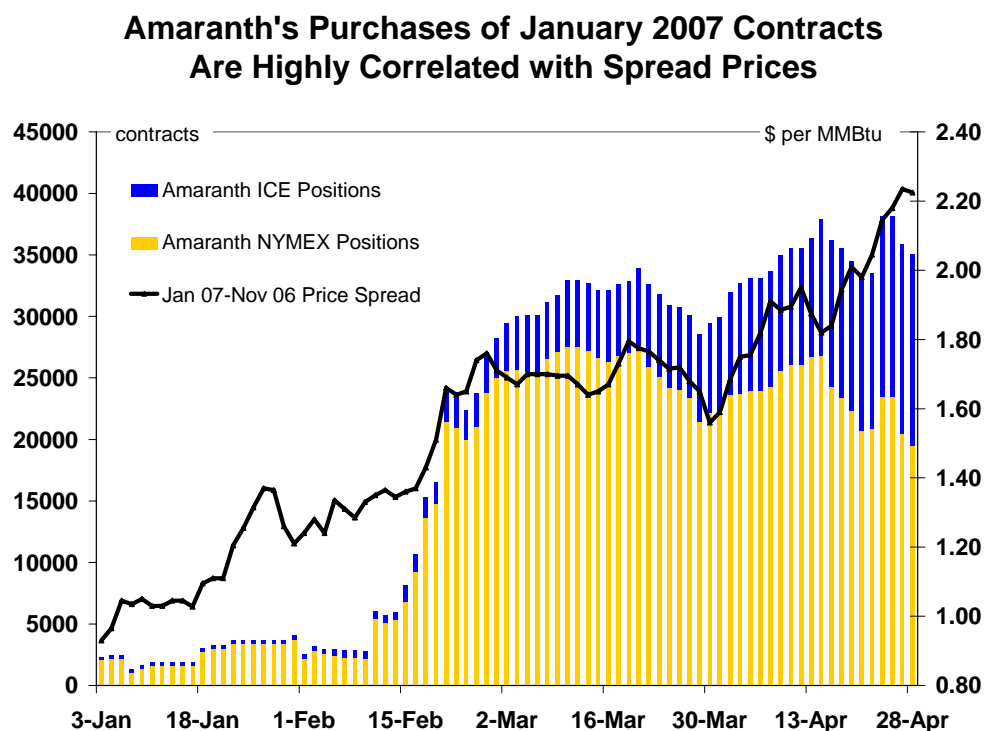


Fig. 29a. From mid-February through April, Amaranth’s large sales of November 2006 futures contracts and purchases of roughly the same number of January 2007 futures contracts increased the price spread between the two contracts. Data source: NYMEX and ICE.

Figure 29b

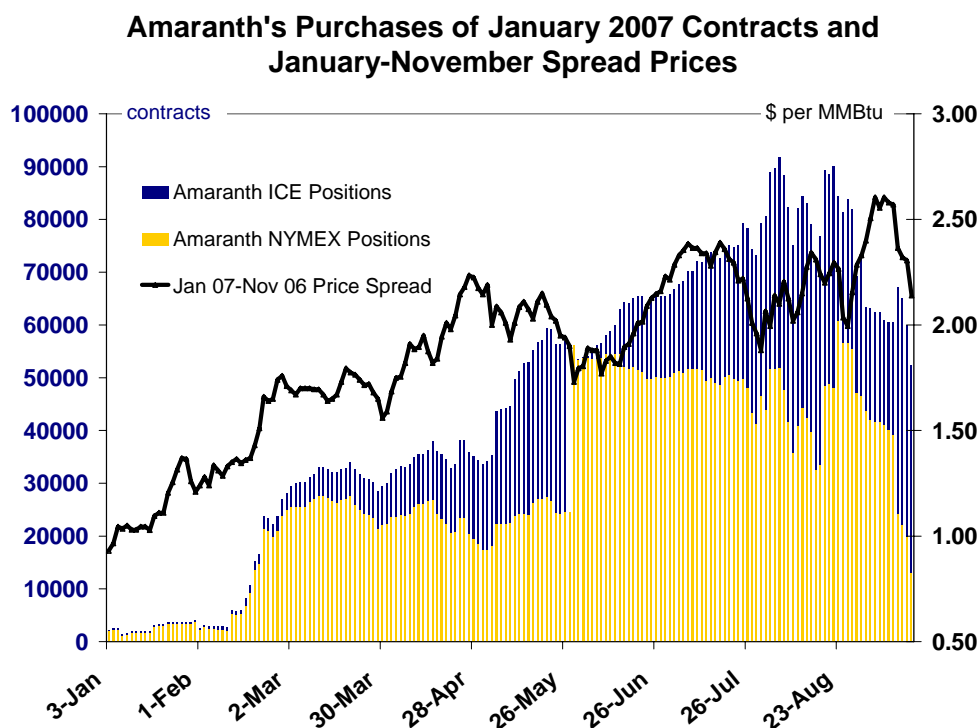


Fig. 29b. The size of Amaranth's position in the January-November spread (and the January-October spread) was highly correlated with the January-November prices spread during the winter, spring, and summer of 2006. Data sources: NYMEX and ICE.

**Table 8**  
**Correlations Between**  
**Amaranth Positions in the Jan 07 Natural Gas**  
**Contract and the Jan 07-Nov 06 Price Spread**

	Correlation Between:		
	NYMEX Positions and Spread Price	ICE Positions and Spread Price	Total Positions and Spread Price
1/3-4/28	0.86	0.90	0.93
1/1-8/31	0.78	0.75	0.87

Statistically, there is also a high degree of correlation between Amaranth's spread positions and the price of the January/November spread. For the time period from January 3, 2006 through April 28, 2006, the correlation coefficient between the January/November price spread and Amaranth's net long position in NYMEX futures and ICE swaps for January 2007 equals 0.93.

A high degree of statistical correlation between two variables does not, by itself, establish a causal relationship between the two. Two highly correlated variables may each be caused or partially explained by an independent third variable and thus bear no causal relationship to each other.<sup>87</sup>

<sup>87</sup> For example, the day after Thanksgiving is usually the busiest shopping day of the year. Although there is a high correlation between the consumption of turkey and consumer spending in late November, it would be incorrect to conclude that eating lots of turkey in late November causes people to buy gifts. Rather, there is a high correlation

Several factors, however, support the conclusion that Amaranth's trades were a major cause of the increase in these price spreads. First, the nature of a commodity market dictates that the price is the dependent variable. The interactions between buyers and sellers through bids and offers immediately determine the price of the commodity. When there are more buyers than sellers prices rise, and when there are more sellers than buyers prices fall.

Because Amaranth was overwhelmingly the predominant buyer of January contracts and the predominant seller of November contracts during this period, meaning the predominant buyer of the January/November spread, Amaranth's actions must be considered to be the predominant cause of the increase in the January/November price spread. Amaranth's predominant buying of the January contract is reflected in the open interest percentages for that contract—Amaranth held more than half of all outstanding contracts that had been bought. Amaranth's predominant selling of the November contract is reflected in the open interest percentages for that contract—Amaranth had sold more than half of all outstanding contracts that had been sold.<sup>88</sup>

Other traders who bought or sold this spread position also would have contributed to the price of the spread. However, since Amaranth acquired and held the majority of long open interest in the January 2007 contract and the majority of short open interest in the November contract, it follows that Amaranth alone contributed more to the increase in the price of these spreads than all of the other buyers of this spread combined.

Moreover, Amaranth did not confine its natural gas trading to just November and January contracts. It also acquired a large share of the open interest in the surrounding months. From mid-February through mid-September, Amaranth always held at least 30%, and on occasion as much as 45%, of the total open interest in the NYMEX futures contracts for the 2006-07 heating season (October through March). Until its September collapse, Amaranth had by far the largest positions of any single trader in the 2006 U.S. natural gas financial markets.

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between the two variables because another independent variable – the end-of-year holiday season – causes both results.

<sup>88</sup> Open interest reflects not just past activity—who has bought and held the most contracts, for example—but also gives an indication of who must do most of the selling and buying in the future, before the contract expires. A trader that acquires a large share of open interest not only may have had a significant effect on the current price structure, but can have a significant effect on future prices depending on how it reduces its open interest. For example, if a trader with a large share of long open interest suddenly decides to sell its contracts, it likely will push down the price of the contract. On the other hand, if a trader with a large share of open interest decides to hold onto those contracts and wait for a higher price before selling, the price will move down more slowly, if at all, because there will be much less selling pressure.

Figure 30

### Amaranth Open Interest, NYMEX Natural Gas Contracts for Winter, 2006-07

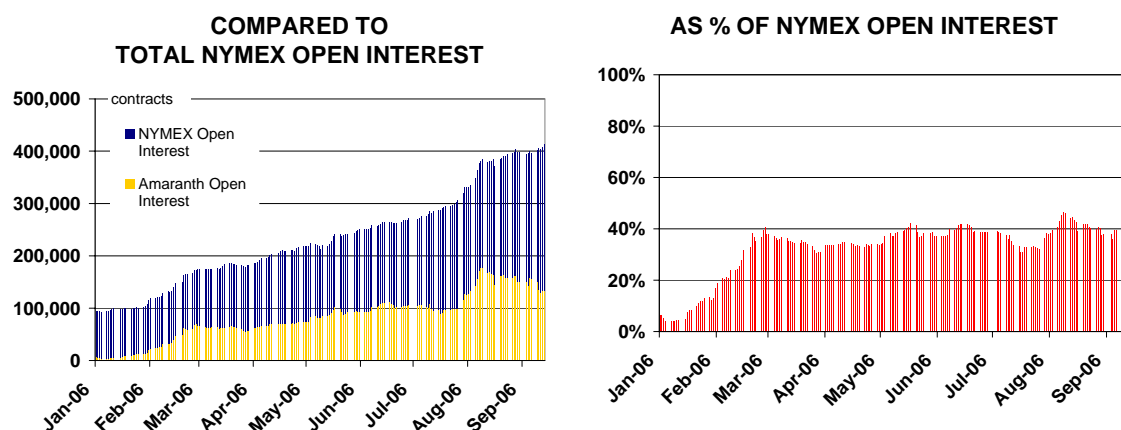


Fig. 30. Amaranth held nearly 40% of the total open interest in NYMEX futures contracts for the winter of 2006-07 (October through March). Data source: Amaranth and NYMEX.

Table 9, which provides selected data from these figures, shows how Amaranth's open interest in natural gas contracts increased from February to April 2006. The significant growth in Amaranth's positions in other winter and summer contracts during this period is further evidence that Amaranth's large buys of winter contracts and large sales of summer contracts were the major cause of the widening difference in price between the winter and summer contracts.

**Table 9**  
**Growth in Amaranth Positions in Early 2006**

		NYMEX Contract Month									
		Jun 06	Jul 06	Aug 06	Sep 06	Oct 06	Nov 06	Dec 06	Jan 07	Feb 07	Mar 07
% of NYMEX open interest held by Amaranth on:	2/1/06	9	2	12	0	1	9	5	12	53	20
	4/28/06	32	14	27	18	3	61	16	45	40	38

Amaranth's trades were not the sole cause of the increasing price spreads between the summer and winter contracts; rather they were the *predominant* cause. This analysis does not draw any conclusions regarding whether the underlying market conditions provided a sound rationale for investing in the January/November price spread; rather it focuses on how large buys and sells of futures contracts by a single trader, whatever the underlying market conditions and regardless of the trader's motivation, were responsible for producing most of the price variation in that spread. The trading data show, in short, that the sheer volume of Amaranth's trades and size of its positions affected the November and January contract prices and the resulting price spread.



The trading data also indicate that Amaranth's effect on the January/November price spread affected other key price spreads. For example, because the fundamentals of natural gas supply and demand for October are so closely related to the supply and demand fundamentals for November, the price of the October contract is typically closely related to the price of the November contract. Hence, the difference in price between the January contract and the November contract is closely related to the difference in price between the January contract and the October contract. Because October is warmer than November, the January/October spread will generally be larger than the January/November spread, and changes in the January/October spread will generally be larger than the corresponding changes in the January/November spread.

**Table 10**  
**Correlations Between**  
**January/October and**  
**January/November**  
**Price Spreads**

Year (of Nov contract)	Correlation Between Spreads
2002	0.97
2003	0.97
2004	0.89
2005	0.98
2006	0.89

In early 2006, as the price spread between the November futures contract and the January futures contract widened, the spread between the January futures contract and the October futures contract also widened. There is an extremely high correlation between the behavior of these two price spreads in 2006, as reflected in Table 10.<sup>89</sup> As Amaranth's trades increased the January/November price spread, the January/October price spread increased too. (Figure 31).

Figure 31

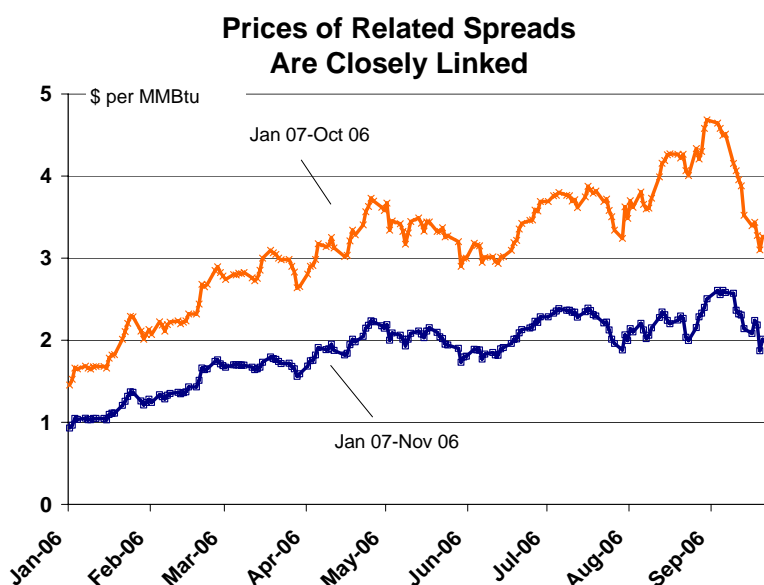


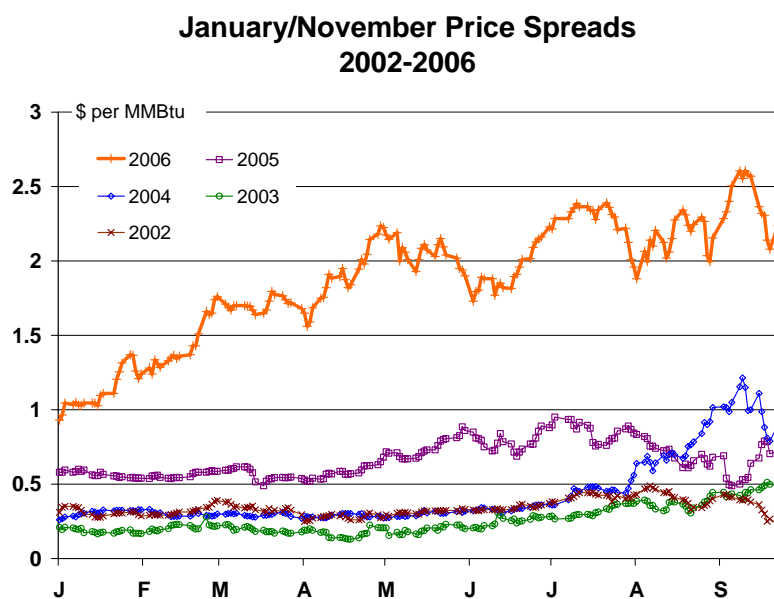
Fig. 31. The large increases in the January/November price spread contributed to even larger increases in the January/October price spread. Data source: NYMEX.

<sup>89</sup> Correlations are calculated for the time period preceding the October contract from the first trading day in January through the date in August of expiry of the September contract.

Moreover, a significant change in just one price spread can have a cascading effect on a whole suite of price spreads. Indeed, the data show that, as both the January/November and the January/October spreads widened, a variety of other spreads involving the months close to October, November, and January also widened.<sup>90</sup> The increases caused by Amaranth in the January/November price spread thus appear to have contributed to increases in other related price spreads as well.

The behavior of the two price spreads in early 2006 differed dramatically from previous years. Figure 32, which depicts the historical behavior of January/November price spreads, and Figure 33, which depicts the same information for the January/October price spreads, show how the 2006 price spreads were significantly greater and displayed more volatility than previous years.<sup>91</sup> Many traders told the Subcommittee they attributed the increased price spreads to heightened concerns about the vulnerability of natural gas production to hurricanes or other disruptions. Many traders interviewed by the Subcommittee also stated that they considered both spreads to be overpriced and that they did not reflect a rational market response to the hurricane risk.

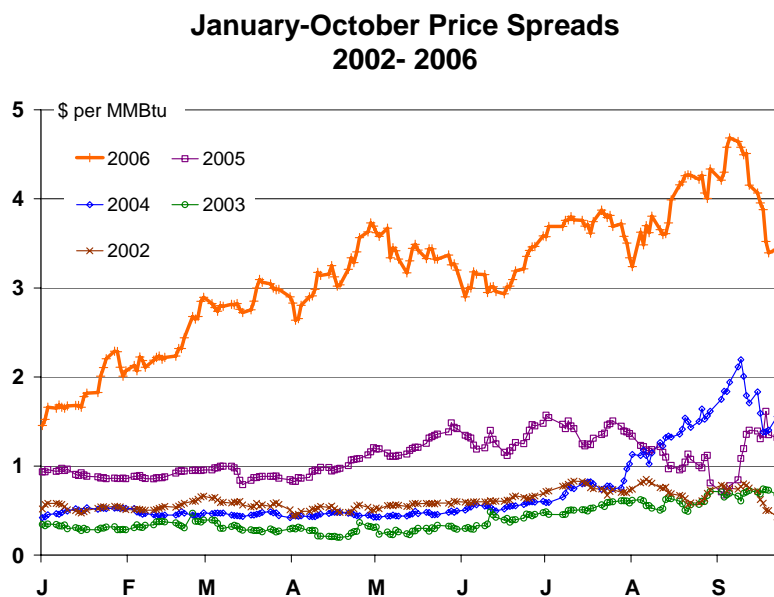
Figure 32



<sup>90</sup> Arbitrage trading between futures contracts for different months strengthens these relationships.

<sup>91</sup> Amaranth acquired the majority of the long open interest in the January 2007 contract as a result of its purchases of the January/November spread. On several occasions, Amaranth switched some of its short positions from the November 2006 contract to the October 2006 contract. For the purposes of this analysis, it does not make a difference whether the short leg of the spread was in the October or November contract.

Figure 33



*Figs. 32 and 33. Amaranth's trading in early 2006 caused extreme volatility in the price spreads for natural gas for the winter of 2006-2007. Data source: NYMEX.*

In sum, in early 2006, Amaranth accumulated tens of thousands of natural gas contracts in multiple months, primarily on NYMEX but also on ICE. In late spring, this strategy looked extremely successful; Amaranth's books showed that its energy trading gains in April alone exceeded \$1 billion.

### **E. May 2006: Liquidity Evaporates**

*"There is no sense in marking up the price to a very high level if you cannot induce the public to take it off your hands later."*

*--Reminiscences of a Stock Operator, p. 245.*

Amaranth's natural gas trading strategy was highly profitable in April 2006. In May, the market took all those profits back.

In May, Amaranth increased the size of its position in the January/November price spread to nearly 60,000 contracts. It also increased its total short position for the next few summer months to nearly 70,000 contracts. (Figure 34). During this period, Amaranth continued to hold between 60 and 70% of the open interest for the NYMEX natural gas futures contract for November 2006, and between 50 and 60% of the open interest for the NYMEX natural gas futures contract for January 2007. (Figures 27 and 28, *supra*).

Figure 34

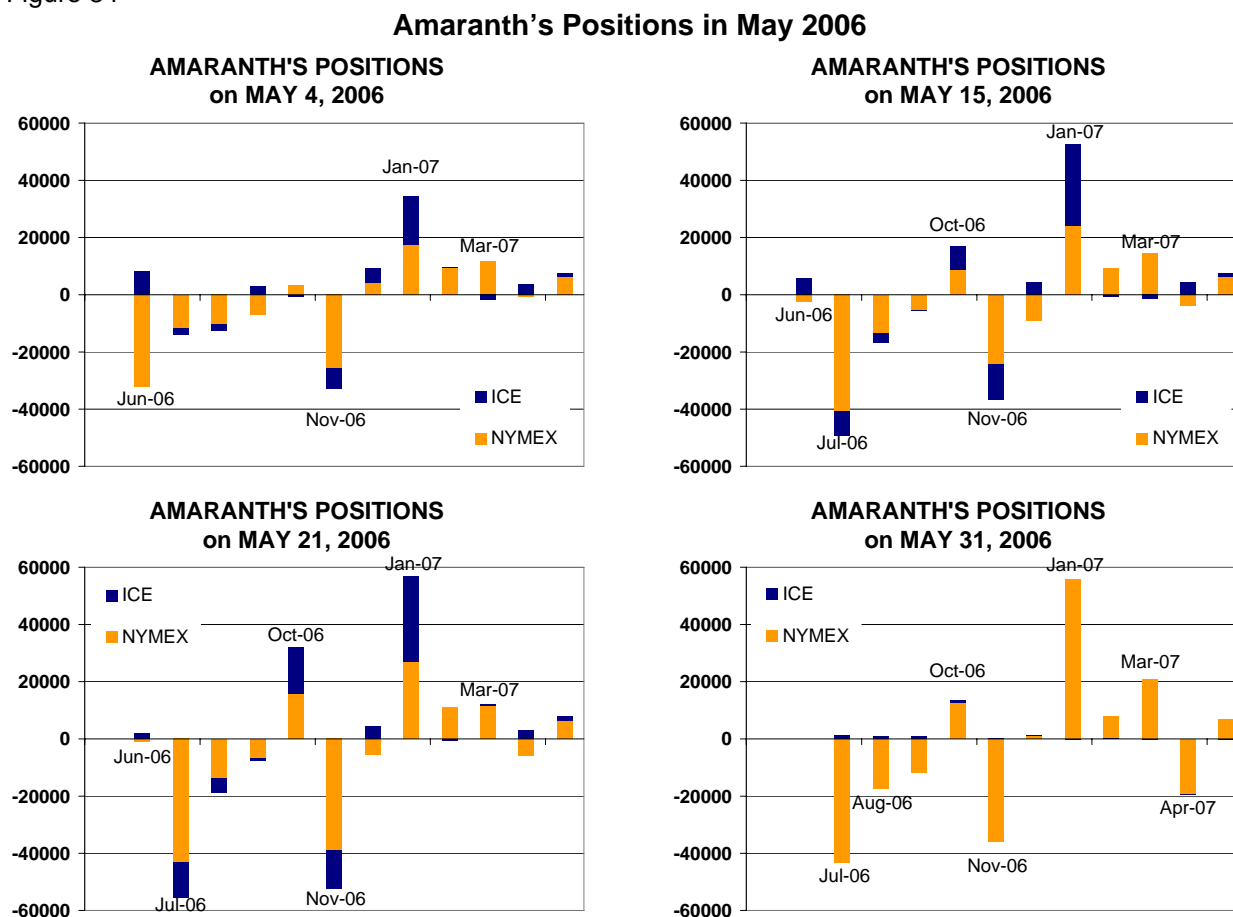


Fig. 34. In May 2006, Amaranth increased the size of its position in the January/November price spread while simultaneously increasing its short position for the next few summer months. Following its losses during the last week of May, Amaranth switched its positions on ICE to NYMEX to reduce its margin requirements.<sup>92</sup>

In mid-May Amaranth tried to reduce some of its positions and realize some of the gains in the value of its holdings. Amaranth found it difficult to find enough buyers willing to pay the prevailing market prices for these positions. Additionally, toward the end of the month a number of other large traders sold futures contracts while prices were high. This pushed prices down, making it even harder for Amaranth to find buyers at the prices it wanted to lock in its profits. Amaranth's traders debated whether to hold their positions and wait for buyers at higher prices, or to begin selling its positions and give back some of their previous gains.

During the last week of May the market turned sharply against Amaranth. All of the winter/summer price spreads fell sharply. The January/November price spread, for example, fell from \$2.15 to \$1.73, a drop of about 20%. In total, Amaranth lost more than \$1.16 billion in the value of its energy contracts during the last week of May. Nevertheless, due to its large gains in

<sup>92</sup> E-mail from Damir Durkovic to Jim Glynn, David Chasman, Jeff Baird, Brian Hunter, May 30, 2006, Bates No. AALC\_REG0154959.

the previous months, Amaranth was able to report to its investors a net return of more than 15% for the first five months of the year.

In its monthly letter to investors Amaranth described May 2006 “as the worst month since inception.” Amaranth’s officers explained that after the successful month of April the fund had tried to reduce its positions and capture some of its gains but was unable to do so:

Historically, the market has provided sufficient liquidity and opportunity for us to tailor the portfolio as desired despite rapidly changing market dynamics. This “expansion/contraction” approach has enabled us to generate more profits than if we had required the team to unwind trades aggressively whenever markets moved in our favor. In this case, as we endeavored to monetize gains (and reduce risk) within the portfolio, liquidity in the market seized up due to high volumes of producer hedging that oversaturated market demand for forward natural gas. While this was a humbling experience that has led us to recalibrate how we assess risk in this business, we believe certain spread relationships remained disconnected from their fundamental value drivers.<sup>93</sup>

It is not surprising that Amaranth had difficulty finding buyers when it tried to sell its high-priced spread positions. Generally, a buyer will be able to build a large position if he or she is willing to pay escalating prices to do so. As prices are rising, there will be plenty of sellers. The presence of many sellers at high prices, however, does not mean there will be many buyers at high prices. If a very few or only one trader had been doing all the buying as prices were rising, there may be even fewer or no buyers at all at the resulting high prices.

In addition, there is an inherent imbalance between buyers and sellers in the natural gas futures market. Generally, the producers of natural gas use the futures market to hedge their future sales and thus are generally sellers of futures contracts. Many end users, such as residential customers and even some LDCs, do not use the futures market to hedge their future purchases. The end result is that the natural gas market consists of more “natural” sellers than buyers.

Speculators in the natural gas market help balance out the buyers and sellers. By purchasing futures when they believe them to be under-priced, speculators help make up for the structural shortage of buyers and help producers hedge their future sales.<sup>94</sup> Amaranth had no difficulty finding sellers when it was buying contracts for the winter months while spread prices were high. In this instance, the presence of more sellers than buyers worked to Amaranth’s advantage. When Amaranth decided to try to sell those high-priced positions, however, it could not find nearly enough buyers who were willing to pay even higher prices to take those positions from Amaranth. In this instance, the natural shortage of buyers worked against Amaranth.

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<sup>93</sup> Amaranth letter to investors from JPMorgan Chase, May 2006 Update, Bates No. JPM-PSI 00006981. In interviews with the Subcommittee, Amaranth traders provided similar explanations for their May losses.

<sup>94</sup> For a more detailed discussion of the financial strategies of producers and speculators, see also Hillary Till, *EDHEC Comments on the Amaranth Case: Early Lessons from the Debacle* (2006).

Amaranth's inability to find buyers at the prevailing prices is additional evidence that most traders considered the market to be overpriced. Winter/summer spread prices were at unusually high levels compared to past years. Although Amaranth may have believed that its positions reflected fundamental values, few other traders appear to have shared that view. One hedge fund trader told the Subcommittee that the level of the January/October spread at that point in time was "totally out-of-whack;" another trader said that it was "ridiculous."

The sheer size of Amaranth's positions made it difficult to find enough buyers to purchase its holdings. On 18 of 21 trading days in May, Amaranth's positions accounted for more than 50% of the open interest in the January 2007 NYMEX natural gas futures contract. On all trading days in May, Amaranth accounted for at least 55% of the open interest in the November 2006 contract. Amaranth's open interest in the November contract was greater than the total open interest in each of the NYMEX November contracts during the month of May in each of the preceding three years. (Figure 35a). Similarly, in May 2006, Amaranth held as much or more open interest in the NYMEX January contract than all NYMEX traders combined in the month of May in each of the prior three years. (Figure 35b). In other words, in 2006, Amaranth's positions in each of these two contracts was about as large as the entire NYMEX market for these contracts over a similar time period in each of the three previous years. Put simply, Amaranth was too big for the market it had created.

Figure 35a

**NYMEX Futures Contracts for November:  
Open Interest from January-May**

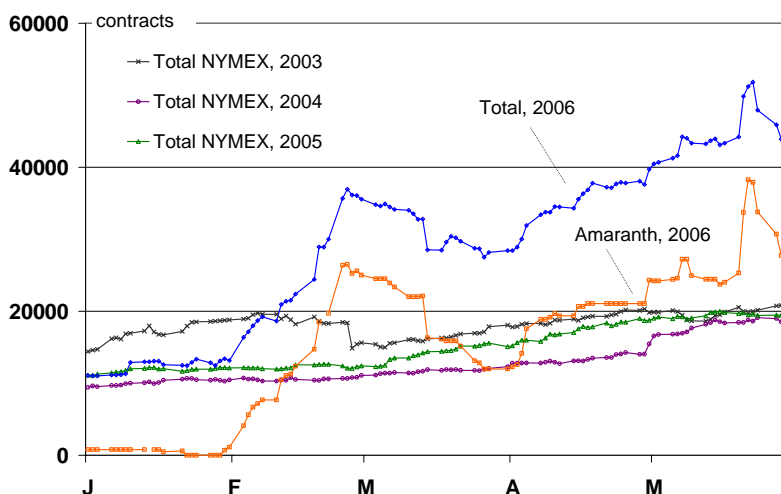
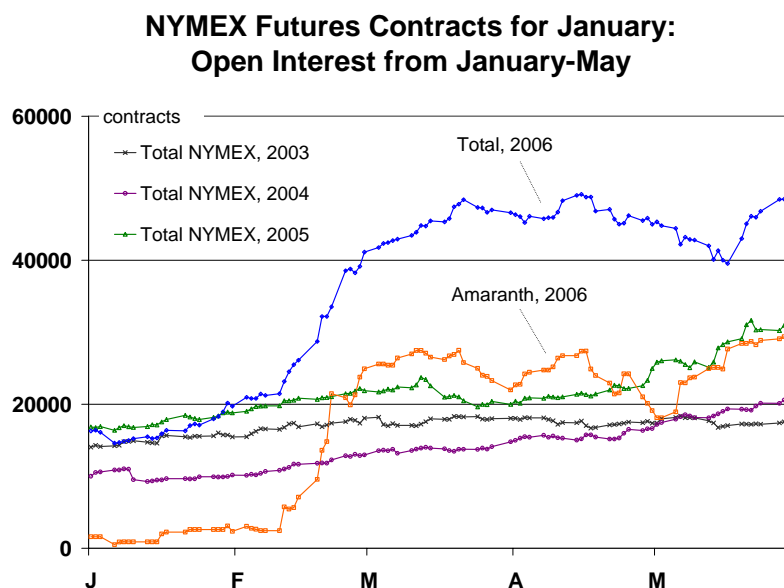


Figure 35b



*Figs. 35a and 35b. From March through May 2006, Amaranth held more open interest in the November NYMEX futures contract than was held by all other traders combined in the November contract in a similar time period in previous years. Amaranth also held as much or more open interest in the January contract than all other traders combined in previous years. Data source: NYMEX.*

The box that Amaranth built and found itself inside of—buying up the market, bidding up the prices, and then finding a lack of other persons to sell those positions to—had detrimental consequences for many other market participants too. The prevailing price levels, especially the extraordinary price spreads that arose in the spring of 2006, did not arise from the interaction of many buyers and sellers or reflect the “consensus” market view of the fundamentals of supply and demand. Rather, the market largely reflected the actions of a single trader whose steady buying and accumulation of very large positions exerted a continuing upward push on prices over this time period.

On the last trading day in April before the May futures contract expired, Amaranth made a sizeable last-minute sale that caught the attention of the NYMEX market surveillance program. The last day of trading for the May 2006 NYMEX futures contract was on April 26, 2006. On that day, Amaranth sold just over 3,000 May futures contracts, 2,527 of which were sold during the final 30 minutes of regular trading, the period in which the final settlement price for the expiring May contract was determined. According to NYMEX, “Of these 2,527 contracts, Amaranth sold 99%, or 2,517 contracts, during the final four minutes of regular trading hours. Of these 2,517 contracts, Amaranth sold 75%, or 1,897 contracts, during the final minute of regular trading hours. Amaranth further sold 517 contracts during the ‘post-close’ trading session.”<sup>95</sup>

<sup>95</sup> Letter from Anthony V. Densieski, Senior Director, Market Surveillance, NYMEX, to Mike Carreiri, Chief Compliance Officer, Amaranth, August 2, 2006, Bates No. NX-USSEN-00096. Post-close trading refers to a two-minute period of trading that occurs after natural gas trading has ended for the day. NYMEX reopens the markets to

Amaranth was the largest seller of contracts during the final minutes of the settlement period, accounting for about 15% of the trading volume during the last eight minutes of trading. During that period, the price of the May contract fell significantly. At 2:00 p.m., the start of the settlement period for the May contract, the price of the May contract was around \$7.15 per MMBtu. Over the next 10 minutes the price rose about 12 cents to around \$7.27. The price remained at that level for about 12 minutes. During the last eight minutes of trading, the price fell 17 cents to around \$7.10. The final settlement price for the May contract, which is calculated to be the volume-weighted average of the prices during the 30-minute settlement period, was fixed at \$7.198.

After noting Amaranth's large volume of trading near the close of this contract, NYMEX asked Amaranth to "provide a written explanation of the commercial need and justification for their trading."<sup>96</sup> In its response, Amaranth stated that in early 2006 its "primary natural gas trading strategy was to hold long winter month positions and short summer month (which consisted of NG, ICE OTC Cleared, OTC and ClearPort Contracts)."<sup>97</sup> After its gains in April, Amaranth wrote, it began to develop strategies to reduce these positions.<sup>98</sup>

Amaranth told NYMEX that on the date of the expiration of the May 2006 contract it was waiting to see how many long winter contracts it could sell before deciding how to dispose of its summer 2006 contracts. "Amaranth monitored the winter natural gas market on April 26 hoping to sell winter, and roll the long May NG to June on a spread. Towards the end of the trading day it became apparent that Amaranth would not be able to sell the winter contracts at attractive prices. Thus, Amaranth decided (to the best of its recollection), at some time between approximately 2:17-2:23 p.m., to sell the May NG contracts outright."<sup>99</sup> Amaranth explained that its trading of May 2006 contracts during the settlement period "was motivated by the desire to achieve an aggregate reduction in the risk of its portfolio." The CFTC has an ongoing investigation into Amaranth's trading activities on that date.

Amaranth's energy portfolio showed a loss of \$1 billion during the month of May. Reports of Amaranth's large losses spread through the natural gas market. One trader told the Subcommittee: "Bad news travels fast in this industry. You can't lose a billion dollars and not have a lot of people find out about it." The size of the losses also alerted the market to the potential size of Amaranth's natural gas holdings. "A big hedge fund that shows big losses must have big positions that were losing money," a trader told the Subcommittee. "It didn't take rocket science to figure out there was one player in the market, and who that player was. No one else could have taken positions of this size."

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trading during this time, but does not count trading during this period toward that day's settlement price. See NYMEX Rule 6.57, "Post-Close Trading Session."

<sup>96</sup> *Id.*

<sup>97</sup> Letter from Mike Carreiri, Chief Compliance Officer, Amaranth, to Anthony V. Densieski, Senior Director, Market Surveillance, NYMEX, August 15, 2006, Bates No. NX-USSEN-001208-10.

<sup>98</sup> Amaranth wrote that "One effective strategy had been to sell winter positions and cover short summer positions by allowing financially settled swaps to expire and by either selling or rolling futures prior to their expiration." *Id.*

<sup>99</sup> Letter from Amaranth to NYMEX, August 15, 2006, Bates No. NX-USSEN-001209The term "NG" refers to natural gas.



This same trader told the Subcommittee that, based on the size of the losses and the volume of trading activity, it was not difficult to discern what Amaranth's positions were. He guessed that Amaranth was behind the unprecedented price spread between the October and January contracts. He observed that, "The October-January spread had never done anything like this." This trader also concluded that Amaranth was long on the March 2007/April 2007 price spread, and long on the November/January spread, since both those price spreads were out of proportion to historical norms. "It was naïve to think that they could get out of the market with a size of 100,000 positions," the trader added. "I knew Amaranth would eventually implode. It was just a question of when."

## **F. June and July 2006: Amaranth Increases its Positions**

*"Who cares about the fundamentals?"*

--James J. Cramer, 2007<sup>100</sup>

*"It is not wise to disregard the message of the tape, no matter what your opinion of crop conditions or of the probable demand may be."*

--*Reminiscences of a Stock Operator*, p. 124.

By the end of May, at least some of Amaranth's traders and officers were aware of the firm's predicament – that it had accumulated larger natural gas positions than it could sell profitably. According to Amaranth traders interviewed by the Subcommittee, the firm decided to wait and see if more liquidity would develop for Amaranth to be able to reduce the size of its winter/summer spread positions at favorable prices. The alternative would have been to unwind some of its positions and take the loss that would result from selling those positions in a falling market. "We thought about pulling the trigger and taking the loss," an Amaranth trader said. "We had many discussions about it. We figured we could get out for maybe a billion dollars. But we decided to ride it out and see if the market would come around," he explained.

### **(1) Increasing Summer and Winter Positions**

In June and July 2006, Amaranth did not, however, pare down its spread positions; it enlarged them. At the beginning of June, Amaranth held around 53,000 January 2007 contracts, virtually all of which were on NYMEX. Over the course of the month, Amaranth increased its January 2007 position by about 13,000 contracts, mostly by trading on ICE. By the end of June, Amaranth held short positions of about 44,000 contracts for August 2006, 46,000 contracts for September 2006, and 51,000 contracts for November 2006. It was long about 26,000 contracts for October 2006, and 60,000 contracts for January 2007. These positions were the largest Amaranth had held to date.

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<sup>100</sup> Interview from TheStreet.com, December 2006.

Figure 36

## Amaranth Positions in June 2006

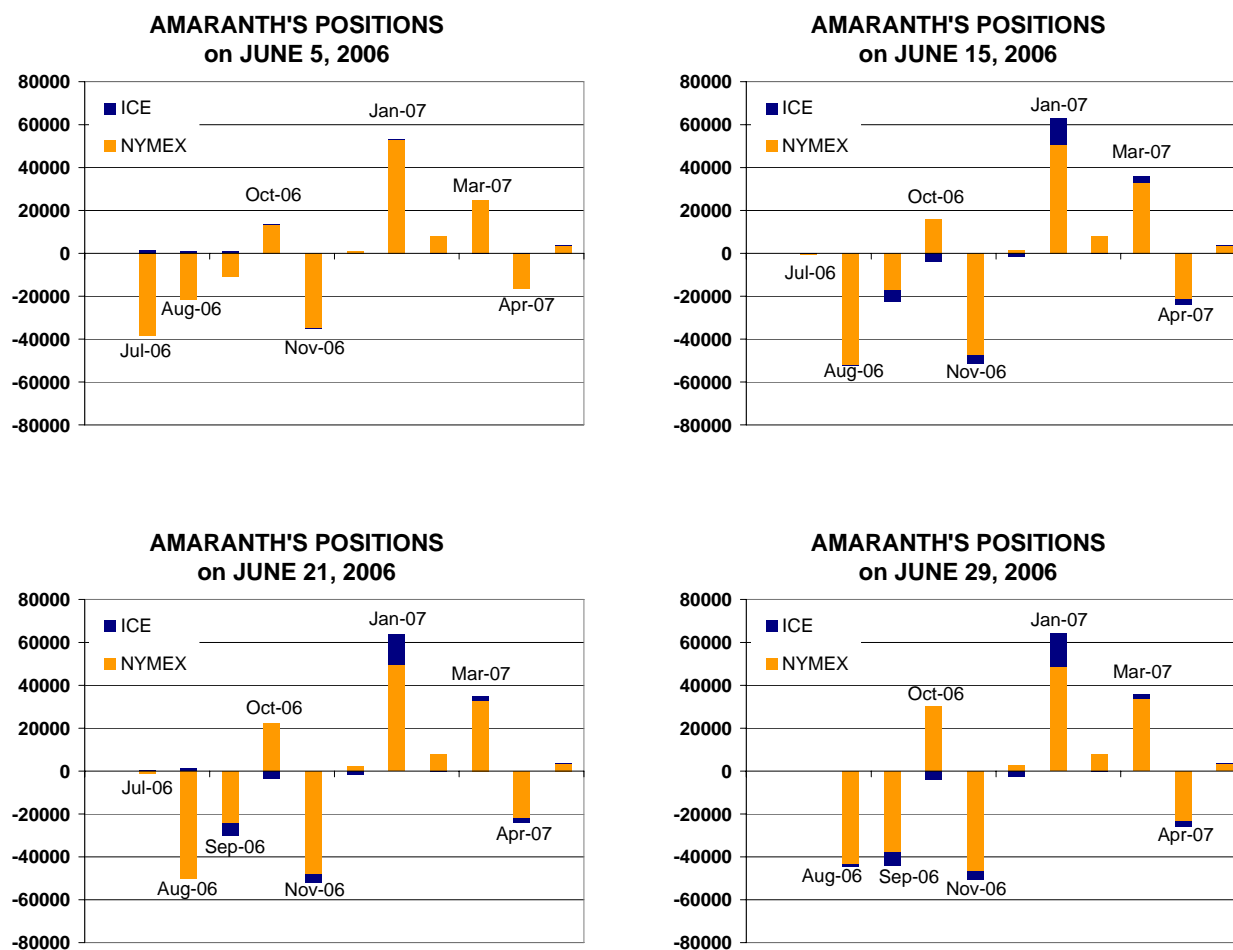


Fig. 36. In June 2006, Amaranth continued to increase the size of its position, mostly by trading on ICE.

Amaranth continued to build these positions throughout July. By the end of July, for example, Amaranth had increased its long position for January 2007 to nearly 80,000 contracts. The amount of natural gas represented by a position size of 80,000 natural gas contracts for January 2007 is nearly equal to the entire amount of natural gas that was actually used by U.S. residential consumers nationwide during January 2007. It was an extraordinary large position in a single futures month.

Figure 37

## Amaranth Positions in July 2006

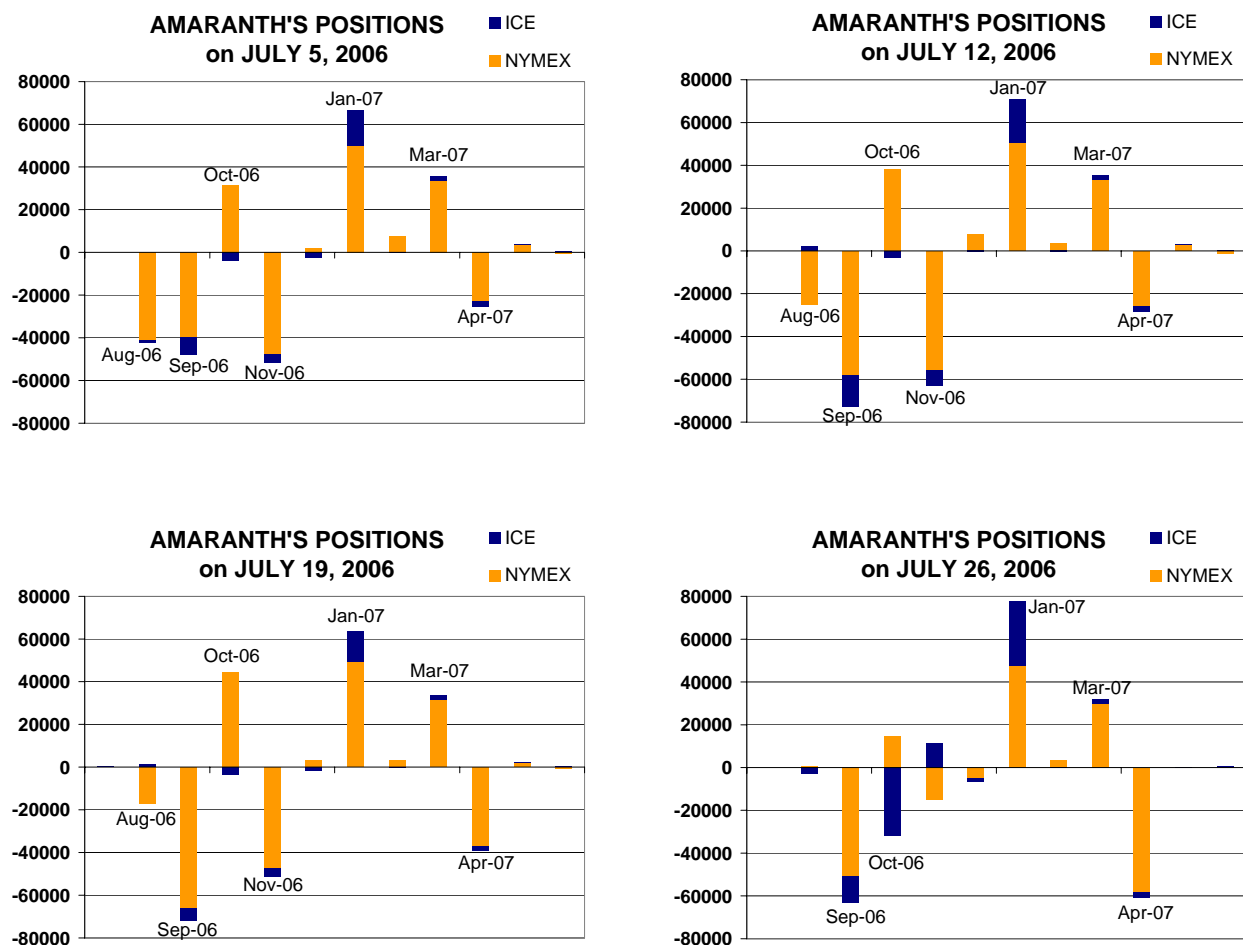


Fig. 37. Amaranth continued to increase the size of its position during July 2006, ending the month with 80,000 contracts for January 2007, approximately the amount of natural gas that was eventually used by U.S. residential consumers nationwide in January 2007.

In addition to building its long position for the winter months, Amaranth added to its short position for the upcoming summer and fall months. For example, Amaranth rolled short positions in the August contract that was expiring into the contract for the following month of September.<sup>101</sup> By the end of July, Amaranth held a short position for September of about 63,000 contracts.

<sup>101</sup> "Rolling" a position consists of shifting a position from one month to the next. Rolling a short position requires purchasing futures contracts for the first month and then selling an equivalent number of contracts for the second month, thereby finishing with no net position for the first month and a net short position in the second month. Rolling a long position requires selling futures contracts for the first month and then buying an equivalent number of contracts for the second month, effectively shifting the long position from the first month to the second month.

## (2) March/April Price Spread

Throughout June and July, Amaranth added to another spread position as well, this time between two consecutive months, March 2007 and April 2007. By the end of July, Amaranth was long approximately 59,000 contracts for March, and short about 80,000 contracts for April. By any measure, both positions were substantial.

Natural gas futures prices for two consecutive months are normally similar, since the two months are likely to share similar weather and be subject to similar supply and demand trends. The months of March and April, however, are an exception. March is the last month of the winter heating season, when natural gas supplies are low but gas is still being withdrawn from storage, and April is considered the first month of the summer season, when gas storage facilities begin to be refilled. The price difference between March and April contracts, therefore, is one of the most volatile natural gas price spreads. As a result of this unpredictability, taking a position in the March/April spread is sometimes referred to as “the widowmaker” bet.<sup>102</sup>

Amaranth’s pattern of trading with respect to the March and April contracts differed from its trading pattern with respect to the January and November contracts. Amaranth steadily built its positions in the January/November spread over the course of a number of weeks, and the price spread steadily rose over a similar period of time. (Figure 29b). In contrast, the March/April spread already was at a relatively high level when Amaranth began taking positions in those contracts. On several specific dates, Amaranth increased its positions in both contracts by huge amounts, which significantly boosted the price spread on those dates. These spikes not only resulted in higher prices on the specific dates on which Amaranth made large purchases, but also resulted in higher prices than otherwise would have been the case in the days following those spikes. These price spikes, which all traders could see had been driven by large scale trading, deterred some traders from pursuing their view that prices should fall. Traders feared that additional price spikes resulting from this large-scale trading would prevent prices from falling, despite market fundamentals.

Trading data show that Amaranth’s purchases of the March/April 2007 spread significantly affected the price of the spread. On two dates in particular, May 26 and July 31, Amaranth purchased very large amounts of this spread. On these dates, the price spread increased significantly as a direct result of Amaranth’s trading.

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<sup>102</sup> Davis, Hedge Fund Hardball, supra note 83.

**Table 11  
Amaranth Purchases  
of March/April 2007 Spread Positions  
on May 26, 2006**

		<b>Mar 07</b>	<b>Apr 07</b>
<b>NYMEX NG</b>	Total volume	5,423	4,816
	Amaranth volume	+2,599	-2,605
	Amaranth volume (% of total)	48%	54%
	Amaranth open interest (% of total)	27%	14%
<b>Clearport NN</b>	Total volume	5,444	6,161
	Amaranth volume	+4,900	-4,900
	Amaranth volume (% of total)	90%	80%
	Amaranth open interest (% of total)	4%	21%
<b>ICE Electronic</b>	Total volume	14,051	11,738
	Amaranth volume	+8,347	-8,284
	Amaranth volume (% of total)	59%	71%
<b>ICE OTC</b>	Amaranth volume	+125	-125

On May 26, Amaranth's purchases of the March 2007 NYMEX natural gas futures contract accounted for nearly 50% of the total volume of the March 2007 contract on that date. On the same date, Amaranth's sales of the April 2007 futures contract accounted for just over 50% of the volume of the NYMEX April contract. As Table 11 indicates, Amaranth also accounted for the vast majority of trading in natural gas swap contracts for March 2007 and April 2007 on ICE and on NYMEX Clearport.

Amaranth's large trades were a major factor in the 25-cent increase in the price spread that occurred on that date. As reflected in Figure 35, this was the third-largest increase in this price spread during 2006.

Figure 38

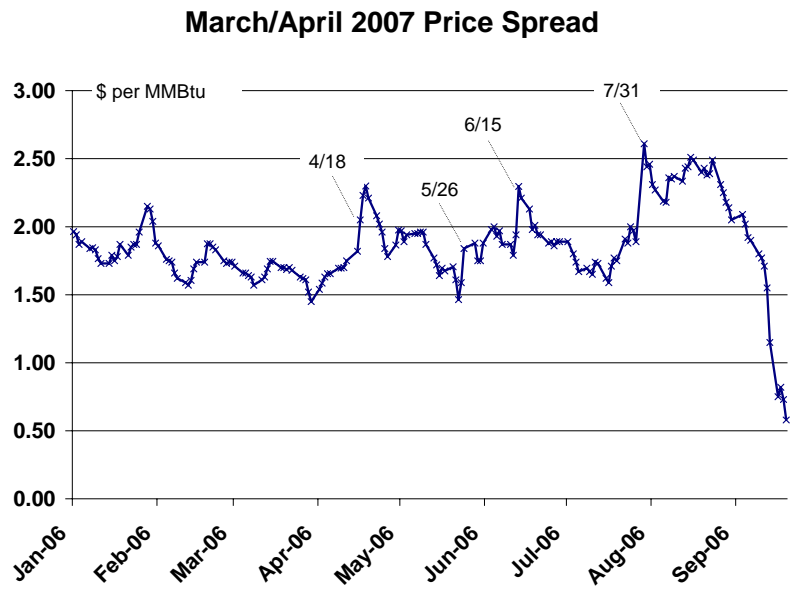


Fig. 38. From January through August, the March/April spread for 2007 ranged between \$1.50 and \$2.50. The price curve of this spread was punctuated by several price spikes. Data source: NYMEX.

Figure 39

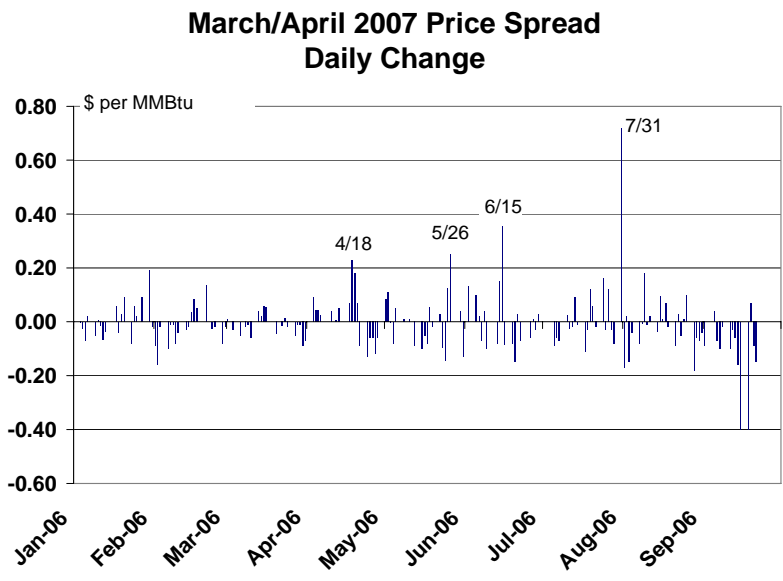


Fig. 39. Three of the four largest spikes in the March/April 2007 price spread occurred on days of large-scale trading by Amaranth. Data sources: Amaranth, NYMEX, and ICE.

As Figure 39 shows, another spike in the price spread between the March and April contracts occurred on June 14 and 15. Over the course of these two dates, the price spread between these contracts increased by 51 cents. This increase is also, in large part, attributable to Amaranth's large trading on these dates.

**Table 12**  
**Amaranth Purchases**  
**of March/April 2007 Spread Positions**  
**on June 14 and 15, 2006**

		June 14		June 15	
		Mar 07	Apr 07	Mar 07	Apr 07
<b>NYMEX NG</b>	Total volume	6,281	6,140	4,271	2,731
	Amaranth volume	+3,699	-3,699	+2,325	-200
	Amaranth volume (% of total)	59%	60%	54%	7%
	Amaranth open interest (% of total)	42%	25%	44%	24%
<b>Clearport NN</b>	Total volume	823	426	2,312	1,414
	Amaranth volume	-16	0	+1,169	-30
	Amaranth volume (% of total)	0%	0%	51%	2%
	Amaranth open interest (% of total)	32%	40%	36%	40%
<b>ICE Electronic</b>	Total volume	4,705	4,540	3,156	2,896
	Amaranth volume	+1,217	-841	+752	-376
	Amaranth volume (% of total)	26%	19%	24%	13%
<b>ICE OTC</b>	Amaranth volume	--	--	--	--

Amaranth's trades on July 31 had a significant effect upon the March/April spread price. These purchases followed a record-setting heat wave in July that caused the first-ever summertime withdrawal of natural gas from storage. From mid- through late-July, intense heat waves in the West, Midwest, and East led to a large spike in the demand for electricity for air conditioning, prompting a surge in demand for natural gas. "Conditions seen last week were the most extreme in many years, shattering previous records for U.S. electricity production and power sector consumption of natural gas," one analyst noted.<sup>103</sup> "For the first time in the weekly

<sup>103</sup> Energy Trader, "Cooling demand prompts first-ever drawdown of gas in storage during summer months: EIA," July 28, 2006.

data for the warmer months of May through September from 1994 to the present,” DOE’s EIA reported, “[last week’s data] showed a net withdrawal of 7 Bcf [Billion cubic feet] for the week, contrasting sharply with the 5-year average net injection of 65 Bcf and last year’s net injection of 41 Bcf. This week’s net withdrawal was driven largely by higher temperatures and price incentives prevailing during much of the week.”<sup>104</sup>

Figure 40

### Amaranth’s Purchases of the March/April 2007 Spread on July 31, 2007

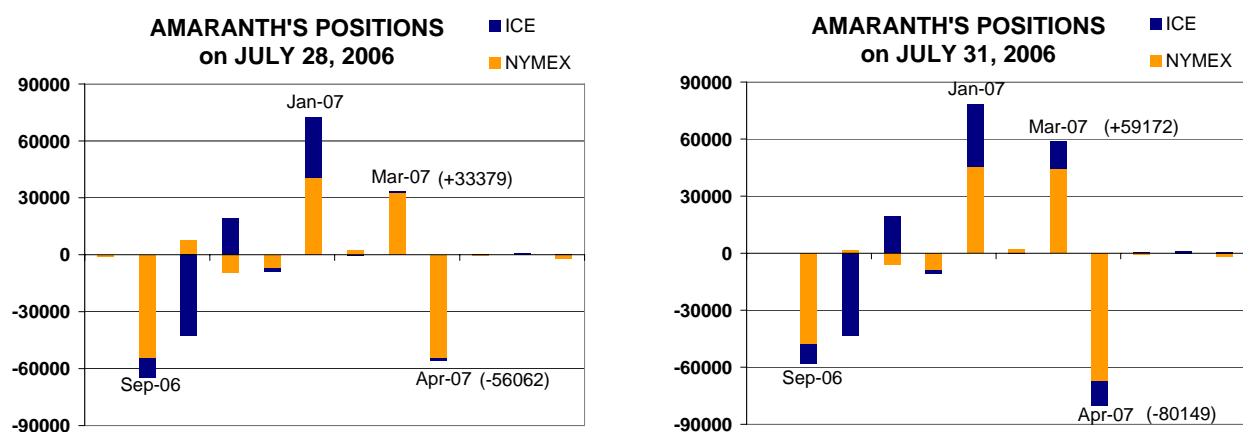


Fig. 40. On July 31, Amaranth bought nearly 26,000 natural gas contracts for March 2007 and sold about 24,000 contracts for April 2007.

<sup>104</sup> EIA, Natural Gas Weekly Update, July 27, 2006.



**Table 13**  
**Amaranth Purchases**  
**of March/April 2007 Spread Positions**  
**on July 31, 2006**

		Mar 07	Apr 07
NYMEX NG	Total volume	15,594	15,541
	Amaranth volume	+10,670	-10,613
	Amaranth volume (% of total)	68%	68%
	Amaranth open interest (% of total)	58%	47%
Clearport NN	Total volume	2,836	1,943
	Amaranth volume	+541	-478
	Amaranth volume (% of total)	19%	25%
	Amaranth open interest (% of total)	16%	52%
ICE Electronic	Total volume	22,087	21,265
	Amaranth volume	+13,000	-10,931
	Amaranth volume (% of total)	59%	51%
ICE OTC	Amaranth volume	+562	-560

As Table 13 shows, Amaranth's purchases of the March/April contracts on July 31 dominated the trading of both natural gas contracts on NYMEX and ICE for that date. On July 31, the difference in the prices of the March and April contracts increased by 72 cents, an extraordinarily large jump in the price spread between these two contracts.<sup>105</sup>

Figure 41 shows how Amaranth's purchases of the March contract increased its share of the open interest in that contract to about 60%. Figure 42 shows how Amaranth's sales of the April contract increased its share of the short open interest in that contract to nearly 50% of the open interest in the April contract.

<sup>105</sup> Statistically, the 72-cent increase on July 31 was a seven-standard deviation event, in relation to the changes in the price of this spread between January 3 and August 31, 2006. If the market were truly an efficient market, in which price movements were random and no single trader had the ability to move the price, a daily price change of seven-standard deviations would be expected once every several hundred million years. Several market experts told the Subcommittee, however, that the natural gas market does not conform to any simple statistical model. One trader said, "Seven-standard deviations events happen all the time in this market."

Figure 41

### Amaranth Open Interest, NYMEX Natural Gas Futures Contract for March 2007

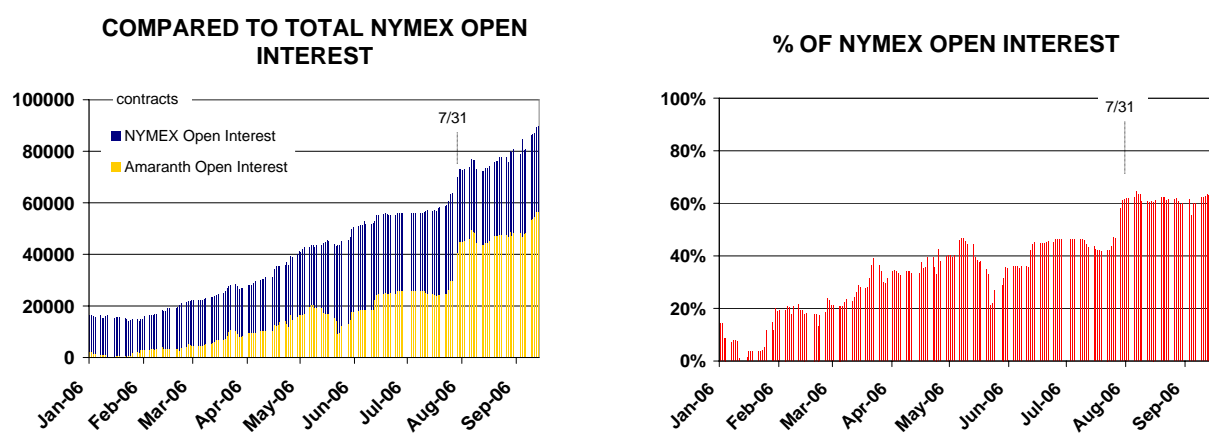


Fig. 41. By July 31, Amaranth held around 60% of the open interest in the March 2007 contract. Data source: NYMEX.

Figure 42

### Amaranth Open Interest, NYMEX Natural Gas Futures Contract for April 2007

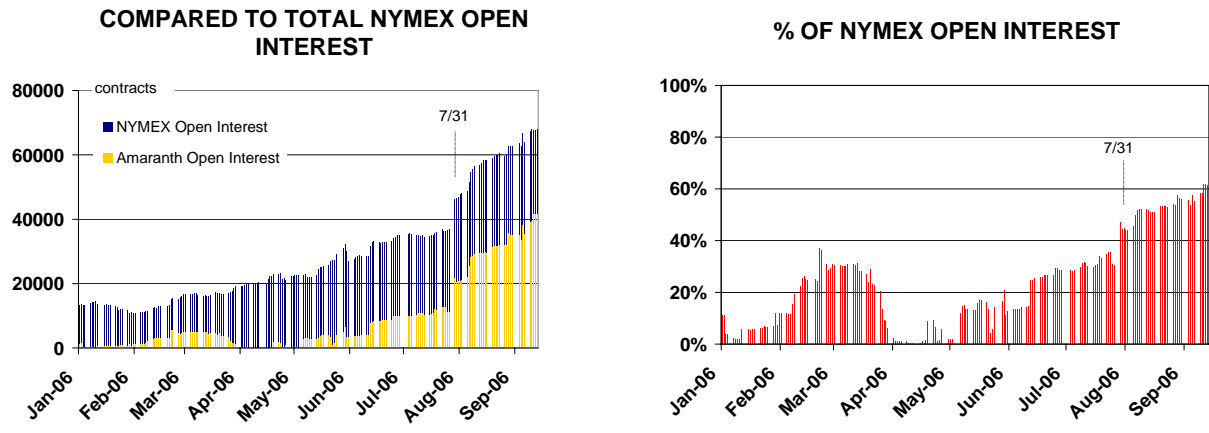


Fig. 42. By July 31, Amaranth held nearly 50% of the open interest in the April 2007 contract. Data source: NYMEX.

The clearest explanation for the extreme magnitude of the price spread increase on July 31 is Amaranth's large volume of trading in the March and April contracts. Amaranth was the largest trader on both NYMEX and ICE.<sup>106</sup> Figure 43 shows the relationship between Amaranth's long positions in March 2007 natural gas futures contracts on NYMEX and corresponding ICE natural gas swaps. Figure 43 shows how the large increases in the March/April price spread during the summer of 2006 tracks the changes in Amaranth's position in that spread

Figure 43

### Amaranth's Purchases of March 2007 Contracts and March/April Spread Prices

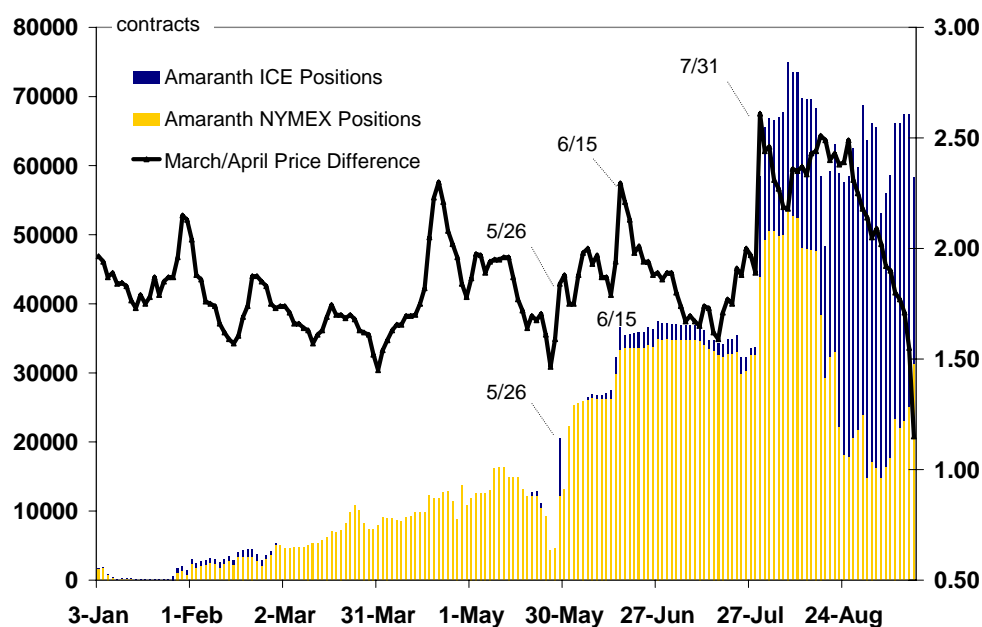


Fig. 43. Amaranth's large purchases of the March and April 2007 contracts on May 26, June 14-15, and July 31, 2006, were a major cause of the price spread increases on those dates. Data Sources: NYMEX and ICE.

The trade publication *Inside FERC* interviewed several traders who explained the price rise at the end of July as being driven by speculation rather than market fundamentals. One analyst was quoted: “You don’t move \$1 in a day without the hedge funds in it. You just don’t. No change in weather can take credit for a \$1 change in pricing.”<sup>107</sup>

<sup>106</sup> In instant message obtained by the Subcommittee, a trader wrote Brian Hunter on the afternoon of July 31, 2006: “Brian, u busy...what the hell is going on out there, rumour is you are getting even more rich!!!! ...I heard March April swap spd [spread?] you made a killing... so according to the market you are brilliant!!!!!! Can do no wrong... ever!” Message obtained by Subcommittee from Amaranth, Bates No. AALLC\_0627973.

<sup>107</sup> *Inside FERC, Hedge fund headed by ex-NYMEX chief folds amid sizeable gas market losses*, Gas Market Report, August 11, 2006.

By the end of July, Amaranth was short nearly 60,000 contracts for September, 42,000 contracts for October, and 80,000 contracts for April 2007; it was long 80,000 contracts for January 2007, 60,000 contracts for March 2007, and 29,000 contracts for December 2007. Amaranth held about 40% of the total open interest in the NYMEX natural gas market for all of the winter months (October 2006 through March 2007).

### **G. Early August 2006: NYMEX Limits Amaranth; Amaranth Moves to ICE**

*“It is obviously better in every way for a stock to be held by a thousand people than by one man—better for the market in it.”*

*--Reminiscences of a Stock Operator, p. 245.*

During 2006, NYMEX repeatedly reviewed Amaranth’s natural gas holdings to determine whether they exceeded NYMEX’s established position limits or accountability levels. On several occasions, Amaranth traded large numbers of contracts near their expiration date, triggering NYMEX notices that the firm had violated NYMEX position limits; a CFTC investigation of one of these instances is still ongoing.

In August 2006, NYMEX took more forceful action to limit Amaranth’s trading, directing Amaranth to reduce its positions in the NYMEX futures contracts not just for the September contracts that were about to expire, but also for its contracts in the following month of October. In response, Amaranth reduced its positions in those contracts on NYMEX, but at the same time increased its positions in the corresponding contracts on ICE. The end result was that Amaranth maintained and even increased its positions in contracts for September and October and preserved its ability to engage in large-scale trading as the September contract neared expiration. In fact, Amaranth’s move enhanced its ability to conduct large-scale trading near the contract expiration, because, under current law, no market surveillance or position limits apply to trading on ICE.

#### **1. Position Limits and Accountability Levels**

As explained earlier, NYMEX officials are responsible for conducting day-to-day oversight of the exchange to ensure orderly trading and prevent fraud, manipulation, and excessive speculation. The CFTC is also responsible for reviewing the trading on regulated exchanges to prevent trading abuses, but it relies on the exchanges themselves to be the first line of defense against misconduct and to alert them to any concerns.

As part of its monitoring efforts, NYMEX compliance officials routinely review the positions of NYMEX traders to ensure they fall within NYMEX position limits and accountability levels. With respect to energy commodities, NYMEX has established a fixed position limit that applies during the last three days of trading of a futures contract. The NYMEX rule states: “No person may own or control a net long position or a net short position in the expiration or current delivery month in excess of [1,000 contracts].”<sup>108</sup>

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<sup>108</sup> NYMEX Exchange Rulebook, 9.27 and Chapter 9, Appendix A.

For all months other than the expiration month, neither the CFTC nor NYMEX has chosen to establish any fixed position limits. Instead, for energy commodities, the CFTC has directed approved exchanges to establish “accountability levels” which, when exceeded, require a trader, upon request of the exchange, to provide information about its positions and, if ordered by the exchange, to reduce those positions. NYMEX has established three accountability levels for positions held by natural gas traders: (1) a net position of 12,000 natural gas contracts in a single month (called the “Any One Month Accountability” level);<sup>109</sup> (2) a net position of 12,000 natural gas contracts across all months (called the “All Month Accountability” level);<sup>110</sup> and (3) a net position of 1,000 NYMEX natural gas swaps within the last three trading days of the related physically settled futures contract (called the “Expiration Position Accountability” level).<sup>111</sup>

Traders are not prohibited from exceeding the NYMEX accountability levels, but NYMEX has the authority to require traders who exceed the levels to reduce those positions. Alternatively, NYMEX can temporarily increase the accountability levels for a particular trader if NYMEX concludes the trader’s overall position in the market is not excessively concentrated in a particular commodity or contract. In making the determination of whether a trader’s position is excessively concentrated, NYMEX considers only the trader’s positions on the NYMEX exchange. NYMEX has no legal authority to place trading limits on another exchange, particularly an exempt commercial market like ICE.<sup>112</sup>

NYMEX surveillance officials routinely review the positions of NYMEX traders in relation to the accountability levels. Once a trader’s futures contracts exceed an accountability level, NYMEX will review the trader’s position in relation to the overall open interest in the contract to determine whether to allow the trader to maintain or increase its position, or whether to direct the trader to reduce its position.

Evaluating a trader’s positions in relation to the NYMEX accountability levels may entail a detailed analysis of the trader’s positions and the size of the market in a variety of related contracts. CFTC and NYMEX rules provide, for example, that, in addition to reviewing a trader’s long and short futures contracts, NYMEX may consider the trader’s positions in related NYMEX options and swaps. For example, if a trader has more than 12,000 futures contracts in one month, but also holds an offsetting position in NYMEX options for the same month, NYMEX may—and probably will—permit that trader to continue to hold that number of futures contracts, since the trader’s overall position in the market is neutral. Another key factor in the NYMEX analysis is the trader’s position relative to the whole market. A position of 12,000 contracts may be of extreme concern if the contract is near expiration and the total open interest in the contract is fewer than 20,000 contracts—in that instance, the trader’s position is dominant relative to the rest of the market. On the other hand, a position of 12,000 contracts when expiration is several months away and the total open interest is over 100,000 contracts will be of

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<sup>109</sup> NYMEX Exchange Rulebook, 9.26 and Chapter 9, Appendix A.

<sup>110</sup> *Id.*

<sup>111</sup> NYMEX Exchange Rulebook, 9.27A and Chapter 9, Appendix A. The trader’s net position is determined by adding up all the long positions and subtracting all the short positions.

<sup>112</sup> Section 2(h)(3) of the CEA specifically states that “nothing in this Act shall apply to an agreement, contract, or transaction in an exempt commodity” entered into on an electronic trading facility, other than specifically provided in the following paragraph. Section 2(h)(4) does not confer any authority, or authorize the CFTC to delegate any authority, to a designated contract market over trading on an exempt commercial market.

much less concern. It is also not unusual for futures contracts that will not expire for several years to have contracts held by only a handful of traders, and therefore some will hold a high percentage of the open interest. In many cases, NYMEX will determine that these traders' holdings do not constitute excessive market concentration.

After conducting this market analysis, NYMEX has frequently permitted individual traders to trade in excess of the Any and All position accountability levels set forth in its rules. In doing so, NYMEX has concluded, in effect, that these traders' holdings do not pose a sufficient risk of excessive speculation to harm the market. NYMEX accountability levels thus function, not as bright lines that no one may cross, but as triggers for further review.

Given the importance of the individualized market analysis that NYMEX performs in deciding how to apply its accountability limits to a particular trader, it is important to note that, when evaluating that trader's positions, NYMEX compliance personnel cannot obtain a complete view of the market and are forced to act with incomplete information. In particular, NYMEX personnel have no routine access to trading data on ICE, the other leading U.S. commodities market whose swaps and options have a direct impact on NYMEX prices.<sup>113</sup> This lack of access means that NYMEX personnel have no information on the trader's positions on ICE and no information on how those positions relate to the rest of the natural gas financial market. Despite the fact that many energy traders use both NYMEX and ICE, current law places NYMEX and the CFTC in the untenable position of having to evaluate traders' positions based upon their holdings on NYMEX, while blind to their holdings on ICE. Furthermore, even if the CFTC were to obtain information about a trader's positions on both exchanges showing that the trader's aggregate positions were excessive, under current law the CFTC has no authority to limit that trader's positions on ICE.

## **2. NYMEX Reviews of Amaranth's Positions**

In 2006, Amaranth exceeded the NYMEX position limit for natural gas contracts on several occasions and repeatedly exceeded its natural gas accountability limits. During the year, NYMEX sent two warning letters to Amaranth regarding specific position limit violations, and repeatedly considered whether to require Amaranth to reduce its positions. As a result of information produced from NYMEX surveillance, the CFTC initiated an investigation into one incident involving Amaranth's trading near the expiration of the May 2006 contract. Apart from

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<sup>113</sup> Recently, in an effort to strengthen the enforceability of its position limit during the contract expiration month, NYMEX issued a new policy that requires any trader seeking an exemption from the position limit to disclose all of its positions over 1,000 contracts, including on other exchanges. NYMEX Compliance Advisory #01-07 – Policy Statement Related to Exemptions from Position Limits in NYMEX Natural Gas (NG) Futures Contracts, Notice No. 07-91, February 16, 2007. This policy, however, does not apply to any of NYMEX's accountability levels and so will not provide NYMEX with the information about a trader's positions that are not on NYMEX when evaluating whether to increase a trader's accountability levels. As of June 19, 2006, NYMEX has received only two applications for a position limit exemption in which a trader has disclosed positions outside of NYMEX. NYMEX's experience to date with its new policy suggests that absent a legal obligation upon a trader to disclose all of its positions to an exchange or to the CFTC, an exchange like NYMEX may, in fact, have no practical ability to obtain such information. Moreover, it is possible that additional NYMEX disclosure requirements may simply lead traders to increase their trading on other venues where such disclosure is not requested.

attempting to limit Amaranth's positions in contracts that were about to expire, however, NYMEX did not attempt to limit Amaranth's overall speculative size.

Amaranth first attracted the attention of NYMEX compliance personnel in 2005, when it exceeded the NYMEX accountability levels several times. Each time NYMEX became aware of Amaranth's large holdings in a particular contract, it reviewed Amaranth's position and determined that the size of the position in relation to the overall open interest on the contract was acceptable. NYMEX accordingly temporarily increased the firm's accountability level on several occasions.

This pattern continued into 2006. Virtually every month Amaranth exceeded the NYMEX accountability levels, triggering a NYMEX review of its positions. NYMEX records indicate that Amaranth was one of many traders who exceeded the NYMEX accountability levels during this period. During the first few months of 2006, NYMEX did not take any action to limit Amaranth. By the end of the spring, however, following several violations of the expiration position limits, and as Amaranth's size kept growing larger, NYMEX began to scrutinize Amaranth's positions more closely.

Amaranth's first position limit violation occurred at the end of February 2006. On March 13, NYMEX cited Amaranth for violating the expiration position limit on trading near the expiration of the March contract. In a letter of violation sent to Amaranth, NYMEX wrote: "At the close of business on February 23, 2006, Amaranth maintained an open commitment of 3,646 short contracts, 1,146 contracts over its spot month hedge exempt position limit. . . . Owing to your firm's violation of the spot month NG position limit, and in accordance with the provisions of Exchange Rule 9.36, this letter shall constitute a warning to your firm."<sup>114</sup>

Several weeks later, on April 7, 2006, NYMEX personnel reviewed Amaranth's short position of about 32,000 May contracts, which exceeded the elevated accountability level of 25,000 contracts that NYMEX had previously granted to Amaranth. The NYMEX compliance officer determined that Amaranth should not be allowed to increase its position in the expiring May contract. "I do not think that Amaranth ANY month level should be increased any further in this case because May06 is the front month contract," the NYMEX compliance officer wrote.<sup>115</sup> He recommended contacting Amaranth or its clearing firm to reduce Amaranth's position. Trading records indicate that Amaranth began reducing its position in the May futures contract after the NYMEX review.

On April 26, the last day of trading on the May futures contract, Amaranth sold more than 3,000 contracts in the final minutes of trading. As described earlier, this last-minute sale eventually triggered not only a NYMEX letter asking Amaranth to explain its trading, but also an investigation by the CFTC.<sup>116</sup>

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<sup>114</sup> Letter from Nancy M. Minett, Vice President, Compliance Division, NYMEX, to Mike Carrieri, Chief Compliance Officer, Amaranth LLC, March 13, 2006, Bates No. NX-USSEN 081909.

<sup>115</sup> Memo from Corey Traub to Anthony Densieski, April 7, 2006, Bates NX-USSEN 081782.

<sup>116</sup> From NYMEX records, it is unclear when NYMEX first observed Amaranth's violation of the expiration limits on April 26.

In May, NYMEX sought to limit Amaranth's trading at the expiration of the June contract. In this instance, after reviewing Amaranth's positions in the June contract, NYMEX contacted Amaranth's clearing firm, JPMorgan Chase, to remind it that Amaranth needed to comply with its expiration position limits. After receiving this message from NYMEX, one JPMorgan Chase official wrote to another, "Would you please remind Amaranth that they need to be at/below their NYMEX Nat Gas exempt level COB May 23."<sup>117</sup>

Amaranth did not heed these instructions. On May 31, following the expiration of the June contract, NYMEX sent a second warning letter to Amaranth. NYMEX wrote:

The records of the Exchange show that Amaranth, LLC ("Amaranth") exceeded its current delivery month ("spot month") hedge exempt position limit of 2,500 contracts on two trade dates. At the close of business of May 23 and May 26, 2006, Amaranth maintained open commitments of 8,488 short and 3,363 long contracts, respectively. These open commitments exceeded your firm's spot month hedge exempt position limit by 5,988 and 863 contracts, respectively.

Owing to your firm's violations of the spot month NG position limit, and in accordance with the provisions of Exchange Rule 9.36, this letter shall constitute a warning to your firm. Please note that a previous violation of this rule was addressed in a warning letter issued to your firm on March 13, 2006. Any further violation of the Exchange's position limit rules will be handled pursuant to Rule 9.36 and may ultimately result in extraordinary sanctions as specified by this rule.<sup>118</sup>

The next day, June 1, Amaranth yet again appeared on the list of traders exceeding NYMEX accountability levels. On this occasion, the reviewing official recommended increasing Amaranth's All Month Accountability levels which, at this time were fixed at 23,000 long contracts and 35,000 short contracts. Specifically, the reviewing official recommended that Amaranth's accountability level be increased from 23,000 to 40,000 for long contracts, while

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<sup>117</sup> E-mail from Vincent J. Leale to Aldo J. Solares, May 19, 2006, Bates # NX-USSEN 028552.

<sup>118</sup> Letter from Nancy M. Minett, Vice President, Compliance Division, NYMEX, to Mike Carrieri, Chief Compliance Officer, Amaranth LLC, May 31, 2006, Bates No. NX-USSEN 081734. In issuing these two warning letters, NYMEX was acting pursuant to the procedures specified in the rules of the exchange for violations of position limits. NYMEX Rule 9.36(B) provides that a first violation "will not be deemed a rule violation, however, it will result in a warning letter being issued by the Compliance Staff to the customer." Rule 9.36(C) states "The occurrence of a second speculative position limit by a customer will subject the customer to a warning letter issued by the Compliance Staff stating that any future violation by the customer of the speculative position limits rules may result in extraordinary sanctions, including, but not limited to, conditioning, limiting, or denying access of such customer to the market." On July 11, 2006, NYMEX rescinded the violation pertaining to trading on May 23, but retained the violation and warning regarding Amaranth's positions on May 26. Letter from Anthony V. Densieski, Senior Director, Market Surveillance, NYMEX, to Mike Carrieri, Chief Compliance Officer, Amaranth LLC, July 11, 2006. Bates # NX-USSEN 081736. See also instant message, Bates. No. AALLC\_REG0595133 (Brian Hunter sends a message to another trader. "thanks for the Nymex/ICE... we were kind of hung...[Amaranth trader Matt] Donohoe messed up." Other trader responds, "what is that about... ar [are] they not the same thing?" Hunter says, "we have exachnge [exchange] limits." Trader: "u got me very confused." Hunter: "on Nymex not on ICE... for June expiry... they settle the same... but Nymex sends out warning letter... which is bad for fund.").



maintaining the limit on short positions at 35,000 contracts. At the time, Amaranth had a net long position of about 34,000 contracts.

The NYMEX official also recommended increasing Amaranth's Any Month Accountability levels to 40,000 contracts, both for long and short positions. In making this determination, the official reviewed Amaranth's large positions in the July 2006, November 2006, January 2007, March 2007, and March 2008 contracts, and compared Amaranth's total position in NYMEX futures, options, and swap contracts to the overall open interest in futures, options, and swaps in those contracts. Although the official recommended a temporary increase for Amaranth in the accountability levels, he also noted: "\*\*\*\*This customer holds a very large percentage of open interest in floor traded NG futures (Not FEQ) in outer months.\*\*\* Please let me know if you want more (Non-FEQ) figures."<sup>119</sup>

A couple weeks later, the NYMEX compliance officer provided senior NYMEX compliance officials with the futures-only data mentioned in his previous e-mail. This data indicated that Amaranth held 46% of the open interest in the August 2006 NYMEX natural gas futures contract, and high percentages of open interest in other futures contracts, ranging from 41% to 79%.<sup>120</sup> (Table 14). However, when NYMEX again compared all of Amaranth's natural gas positions, including NYMEX options and swaps, to the entire market open interest in those contracts, Amaranth's share of the market appeared less. NYMEX therefore did not take any action to require Amaranth to reduce its positions.

**Table 14**  
**NYMEX Review of Amaranth Market Concentration**  
**June 13, 2006**

Contract Month	Amaranth's Futures Contracts as % of NYMEX Open Interest, Futures Contracts Only	Amaranth's Total NYMEX Position (Futures, Options, and Swaps) as % of NYMEX Open Interest, All NYMEX Contracts
August 2006	46%	22%
November 2006	57%	23%
January 2007	52%	26%
March 2007	41%	16%
March 2008	79%	39%

<sup>119</sup> Memo from Corey Traub to Anthony Densieski, June 1, 2006. Bates No. NX-USSEN 081586. NG is an abbreviation for natural gas. FEQ is an abbreviation for "Futures Equivalent." Positions in options and swaps can be represented by an "equivalent" number of futures positions, so these positions can be measured against each other.

<sup>120</sup> Memo from Corey Traub to Anthony Densieski, June 14, 2006, Bates No. NX-USSEN 081583. This memo does not indicate, other than for August 2006, to which futures months the open interest data applies. Comparing this data to the Subcommittee's data, it appears that the months are the same months that are referenced in the previous memo—November 2006, January 2007, March 2007, and March 2008.

In mid-July, Amaranth's increasing size triggered still another NYMEX review. NYMEX compliance officials conducted another analysis of Amaranth's share of the open interest in several NYMEX futures contracts and another analysis of Amaranth's share of the total open interest in all NYMEX futures, options, and swaps for that contract month. The results of this analysis are shown in Table 15.

**Table 15**  
**NYMEX Review of Amaranth Market Concentration**  
**July 24, 2006**

Contract Month	Amaranth's Futures Contracts as % of NYMEX Open Interest, Futures Contracts Only	Amaranth's Total NYMEX Position (Futures, Options, and Swaps) as % of NYMEX Open Interest, All NYMEX Contracts
September 2006	41%	15%
October 2006	22%	7%
January 2007	50%	21%
March 2007	48%	16%
April 2007	41%	30%
December 2007	81%	41%

When NYMEX performed its market analysis of Amaranth's positions in June and July, however, it did not have a complete view of Amaranth's positions in the natural gas financial market. NYMEX officials reviewed and addressed only Amaranth's positions on NYMEX. As shown in Table 16 and Figure 44, Amaranth also had extensive positions on ICE, which were significant components of Amaranth's total positions in the contract months addressed by NYMEX, but NYMEX officials did not have access to this data. NYMEX's analysis and determinations were based upon incomplete information.

**Table 16**  
**Amaranth Positions**  
**NYMEX, ICE, and Total**  
**on July 24, 2006**

Contract	Amaranth Positions		
	NYMEX	ICE	Total
Sep06	-54074	-16879	-70953
Oct06	24136	-21881	2255
Jan07	48692	25605	74297
Mar07	32549	2459	35008
Apr07	-46210	-4047	-48893

Figure 44

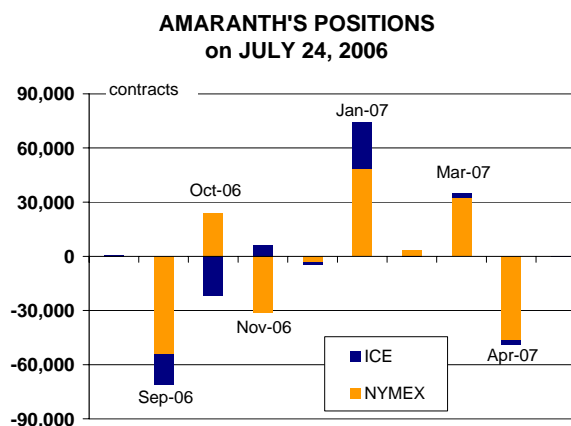


Table 16 and Figure 44. On July 24, when NYMEX reviewed Amaranth's positions, it did not have a complete view of Amaranth's market size. Data sources: NYMEX and ICE.

About ten days later, on August 4, NYMEX examined Amaranth's positions once again, and calculated that Amaranth then held about 51% of the open interest in the September natural gas futures contract, which would expire at the end of the month. (See Figure 45). NYMEX determined that this level of open interest in an expiring contract was too large and decided to tell Amaranth to reduce its positions.

**Table 17**  
**NYMEX Review of Amaranth Market Concentration**  
**August 4, 2006**

Contract Month	Amaranth's Futures Contracts as % of NYMEX Open Interest, Futures Contracts Only	Amaranth's Total NYMEX Position (Futures, Options, and Swaps) as % of NYMEX Open Interest, All NYMEX Contracts
September 2006	51%	18%
December 2006	16%	18%
January 2007	48%	21%
March 2007	64%	19%
April 2007	49%	29%

Figure 45

### Amaranth Open Interest, NYMEX Natural Gas Futures Contract for September 2006

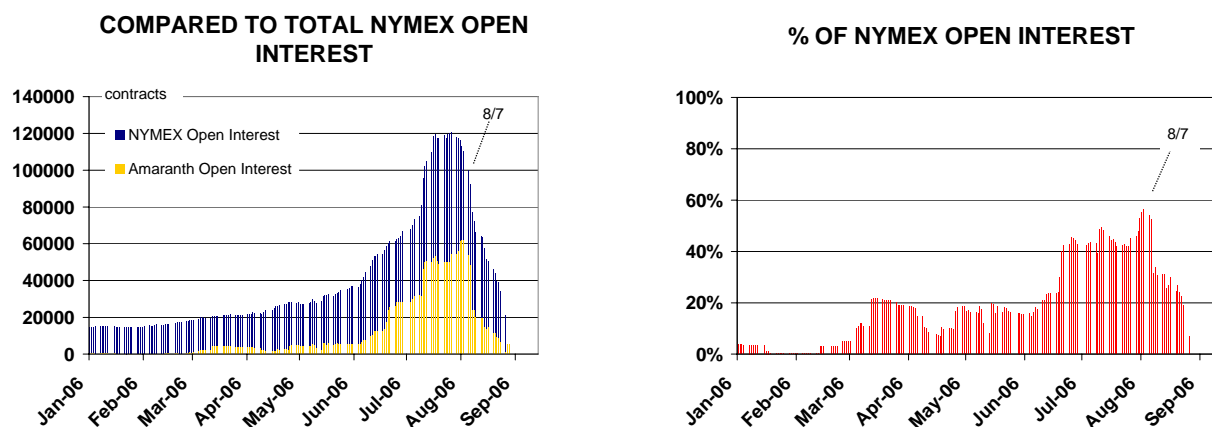


Fig. 45. On August 9, Amaranth had a short position of more than 60,000 futures contracts in the expiration month. This represented nearly 60% of the expiring contract. As a result, NYMEX directed Amaranth to reduce these positions. Data source: NYMEX.

On August 8, NYMEX compliance officials told Amaranth “of the Exchange’s concern with their % of September open interest and outright Natural Gas futures positions of -49,616, specifically its potential weight in the marketplace based on 44.95% of open interest.”<sup>121</sup> A NYMEX official wrote a contemporaneous account of this telephone conversation with Amaranth’s compliance officer, Mr. Carrieri. According to this account:

[NYMEX] accentuated the fact that we expect him to begin bringing the position down in a commercially reasonable manner to a more comfortable figure below his current percentage. Told him that we are generally comfortable with a customer not exceeding about 1/3 of the market, and expect trading to be orderly.<sup>122</sup>

The next day, August 9, NYMEX held two conference calls with Amaranth. During the first call, at 9:15 a.m., Mr. Tom LaSala, NYMEX’s Chief Regulatory Officer told Mr. Michael Carrieri, Amaranth’s Chief Risk Officer, that he was “extremely uncomfortable with September position of -44,285 Natural Gas futures and current 44.34% of open interest. . . . Tom accentuated his extreme concern with the percentage portion of the front month position, specifically in the natural gas futures, and informed Amaranth of our general comfort levels between the 30-40% of open interest range.” NYMEX directed Amaranth to be “mindful that it is carrying weight in the marketplace and to trade in an orderly fashion.”

During a second call on August 9, NYMEX cautioned Amaranth that it should not reduce its September position simply by shifting those positions into October contracts. It told Amaranth that their October position “represented 51.87% of open interest in that natural gas futures, was too large, and we were concerned that as he brought down the September position, Amaranth would further increase the October position.”

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<sup>121</sup> Memo to Files From Bonnie Yerga, Re: Amaranth LLC September 2006 and October 2006 Natural Gas Open Positions, Bates No. NX-USSEN 081835-37.

<sup>122</sup> *Id.*

Figure 46

### Amaranth Open Interest, NYMEX Natural Gas Futures Contract for October 2006

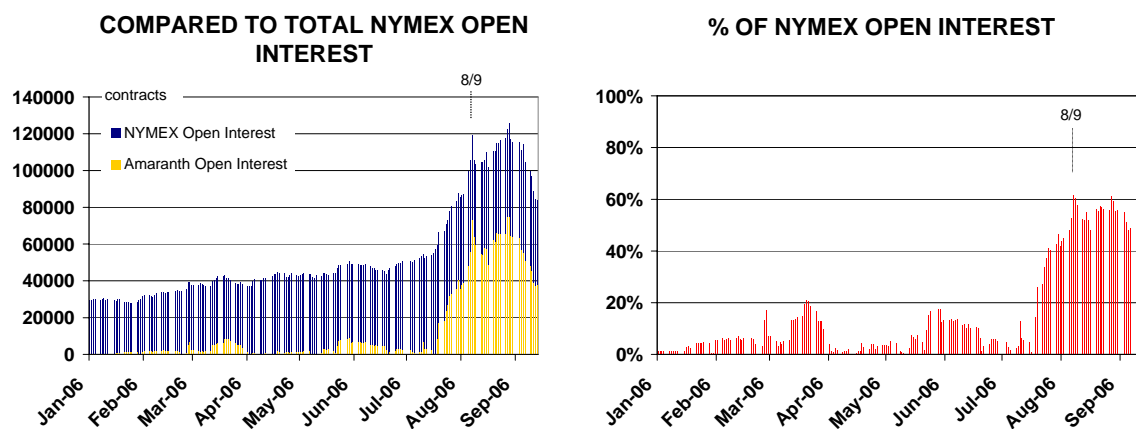


Fig. 46. In early August 2006, Amaranth held 40-60% of the open interest (short) in the October 2006 NYMEX futures contract. As a result, NYMEX directed Amaranth to reduce these positions. Data source: NYMEX.

Amaranth told NYMEX it had “understood [NYMEX’s] concern to be the spot month only,” and so had “brought its September 2006 position down through rolls into the October [contract], so that its October position is higher at this point.” Amaranth also told NYMEX that it was “almost net-flat insofar as risk.” Mr. LaSala “informed [Mr. Carrieri] that the outright natural gas future position of -51,615 was a concern in addition to the earlier stated September position.”<sup>123</sup>

**Table 18**  
**Amaranth: NYMEX**  
**Natural Gas Futures**

	Sep 06	Oct 06
8/7	-53,979	-47,995
8/8	-48,600	-55,650
8/9	-24,290	-73,210
8/10	-24,277	-63,994

On August 10, Mr. LaSala told Mr. Carrieri of his “alarm at Amaranth’s position of -66,837 natural gas futures in the October 2006 contract, 63.47% of open interest. Mike was informed that this percentage was unacceptable and that it must begin bringing the position down immediately. Once again, Tom stressed commercially reasonable trading manner.” Mr. Carrieri replied that Amaranth would comply with NYMEX’s directives, noting that “the increase in the October position was due to traders rolling the September position to bring the percentage of September positions into line and that those trades occurred prior to our midday conversation on August 9.”<sup>124</sup>

On August 11, Mr. LaSala and Mr. Carrieri again spoke. Based on Amaranth’s reduction to a short position of about 22,000 natural gas futures contracts for September 2006, which represented about 29% of the NYMEX open interest, and an overall short position on NYMEX of about 14,000 contracts, NYMEX told Amaranth its revised position “was a comfortable percentage of open interest.” Mr. LaSala cautioned Amaranth “to be mindful of his open

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

interest percentage as the spot open interest begins dropping and to manage his position accordingly in line with the figures of 30-40% of open interest as discussed with Tom”<sup>125</sup>

Amaranth complied with NYMEX’s directions and reduced its positions on NYMEX in the September and October futures contracts. At the same time, however, Amaranth increased its positions in the corresponding September and October swaps on ICE. Although NYMEX succeeded in reducing Amaranth’s positions in the expiring natural gas futures contract, Amaranth maintained a comparable number of positions in the expiring ICE swaps. Soon afterwards, Amaranth even increased those positions on ICE. By switching its positions to ICE, Amaranth preserved its ability to trade large volumes of an expiring contract near the expiration of that contract.

Indeed, it is clear from Amaranth’s records that Mr. Hunter viewed the absence of position limits as a major reason to trade on ICE rather than on NYMEX. In an instant message conversation on April 25, 2006—the day prior to the expiration of the May contract—another trader wrote to Mr. Hunter, “everyone is high on ICE these days. You think its had its day or more to go?” Mr. Hunter replied: “one thing that’s nice is there are no expiration limits like Nymex clearing.”<sup>126</sup>

Figure 47

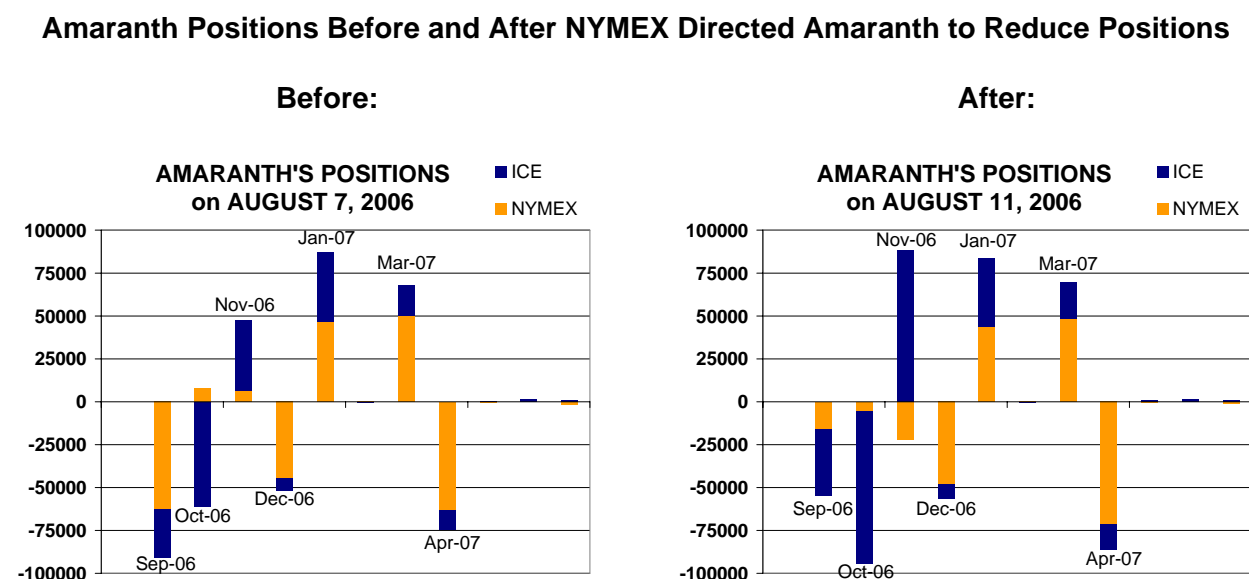


Fig. 47. On August 8, NYMEX instructed Amaranth to reduce its NYMEX positions in the September and October futures contracts. Amaranth complied with the NYMEX order but increased its positions in the related ICE swap contracts, thereby maintaining—and even increasing—its position and risk profile for those months. Data sources: NYMEX and ICE.

<sup>125</sup> *Id.*

<sup>126</sup> Instant Message between Brian Hunter and another trader, April 25, 2006, Bates No. AALLC\_REG0592988.

Looking back upon the series of NYMEX reviews of Amaranth's positions, it is possible to conclude, with hindsight, that NYMEX should have acted sooner to reduce Amaranth's huge natural gas positions. Certainly, by the end of May NYMEX officials recognized that Amaranth had very large concentrations in multiple natural gas futures contracts, holding tens of thousands of contracts and controlling up to 40% of the open interest in a variety of months. These concentration levels alone provided sufficient justification for NYMEX to require Amaranth to reduce its positions. Instead, after reviewing Amaranth's positions on NYMEX, NYMEX repeatedly raised Amaranth's accountability levels and chose not to limit Amaranth's overall speculative position except in contracts nearing expiration. It is important to acknowledge, however, that, in making these decisions, NYMEX never had an accurate view of Amaranth's overall positions and, due to the limitations in the law, never had the legal authority to obtain the information necessary to acquire a complete view of the market and of Amaranth's holdings. NYMEX was required to make significant decisions based upon incomplete information.

The Amaranth case history demonstrates that, for regulators to make informed decisions to protect energy markets against trading abuses and unfair pricing, they need comprehensive information about trader positions. It is not reasonable to expect NYMEX or the CFTC to make sound regulatory judgments based upon incomplete and potentially misleading information about a trader's positions. Unless comprehensive data on trader positions is made available, the regulated exchanges and the CFTC will continue to be unable to prevent excessive speculation from causing unreasonable changes in the price of energy commodities.

## **H. Late August 2006: The Market Turns Against Amaranth**

*"OCTOBER. This is one of the peculiarly dangerous months to speculate in stocks in. The others are July, January, September, April, November, May, March, June, December, August, and February."*

--Mark Twain, *Pudd'nhead Wilson's Calendar* (1893).

By late August, the resolution of Amaranth's dilemma—how to trade out of its large, high-priced spread positions without causing the price of those spreads to fall—could not be postponed for much longer. In previous months, Amaranth had rolled its short positions into the next month, hoping that market conditions would change and enable it to unload its positions. There were now no more summer months into which it could roll these positions. By late August, with hurricane season almost over and natural gas supplies plentiful, it appeared likely there would be adequate supplies for the winter. The market fundamentals were strongly indicating that there the winter/summer price spreads should fall. This would be particularly disastrous for Amaranth, which was still holding large positions that it had obtained when these spread prices were high.

Another problem for Amaranth was its increasing margin requirements. In mid-August, Amaranth's margin requirements reached \$2 billion. This huge sum caused Amaranth's clearing firm, JPMorgan Chase, to become alarmed about the size of Amaranth's positions, the attendant risks to Amaranth's solvency, and JPMorgan Chase's own potential obligations, if the market

turned against Amaranth. The clearing firm concluded, on August 23, that “a more senior level discussion with Amaranth about their energy risk position is needed.”<sup>127</sup>

Amaranth’s traders told the Subcommittee that, as the last day for trading on the September contract approached, Amaranth’s trading strategy was to: (1) let some of its September contracts, which were now all ICE swaps, expire; and (2) use ICE to sell more September contracts, while buying more October contracts to offset its short position in that month. By selling September contracts and buying October contracts, Amaranth was in effect betting that the September contract price would fall faster than the price of the October contract.

Amaranth’s overall positions in the week leading up to the expiration of the September 2006 contract are shown in Figure 48. During this week Amaranth increased its short position in the September contract and decreased its short position in the October contract.<sup>128</sup>

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<sup>127</sup> Time line summarizing JPMorgan Chase’s interactions with Amaranth through September 21, 2006; Bates No. JPM-PSI 00006031.

<sup>128</sup> Amaranth also had sold a large number of put options on the October 2006 futures contract which, upon their expiration on August 28, 2006, substantially reduced Amaranth’s short position in the October contract. A put option gives the option holder the option to sell the underlying futures contract to the seller, at the strike price specified in the option. Because this option to sell, when exercised by the buyer of the option, in effect results in the seller of the option receiving a futures contract, for risk management purposes selling a put option is akin to the holding of a long position in the underlying futures contract, and is calculated as such in determining a trader’s overall position.



Figure 48

## Amaranth's Positions on August 24-29, 2006

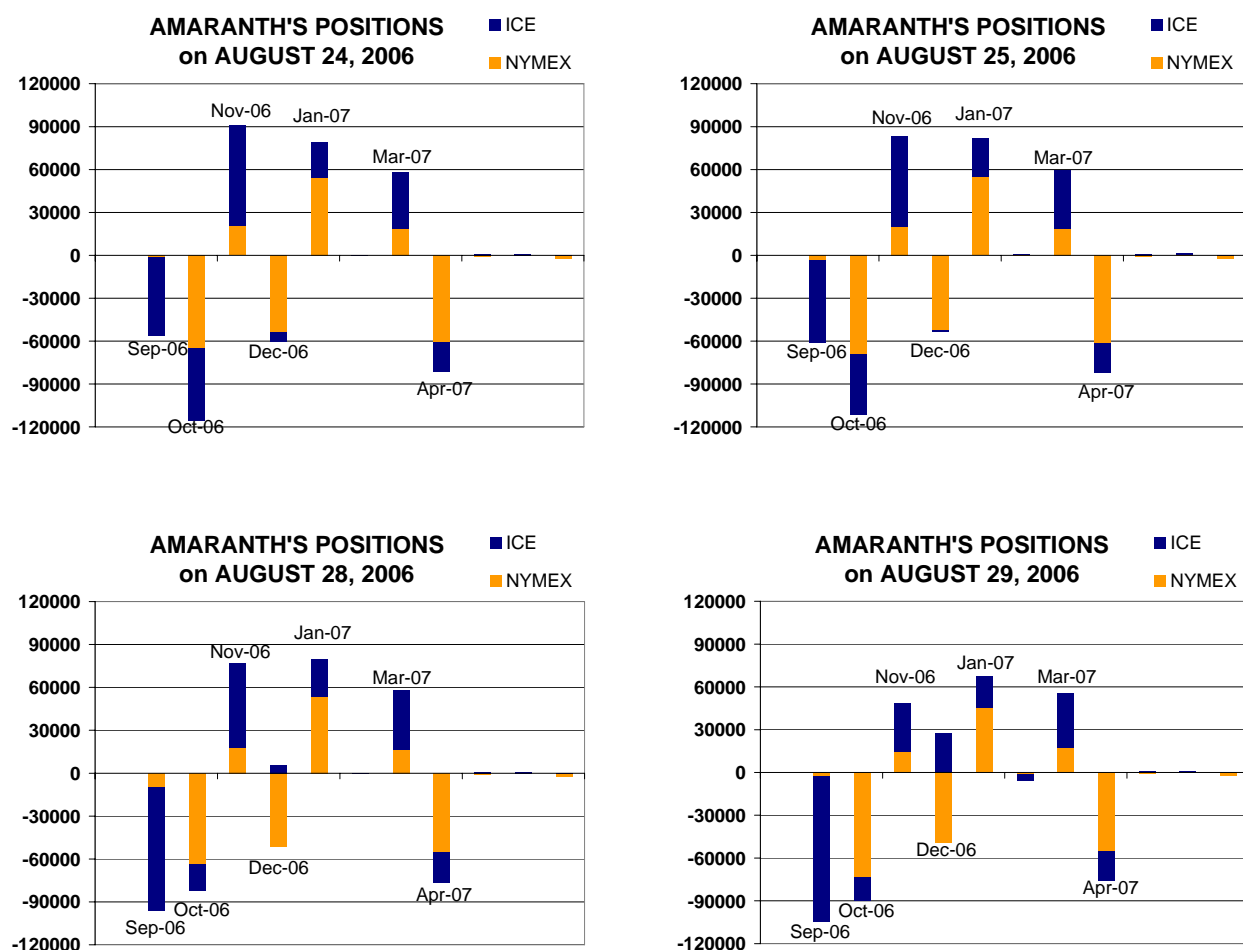


Fig. 48. In late August, Amaranth increased its short position in the September contract and decreased its short position in the October contract. Data source: NYMEX and ICE.

As can be seen in Table 19, the volume of Amaranth's trading in the September contract was a significant share of the overall volume of trading on ICE during the last week in August. In particular, on August 28, the day before the September contract expired, Amaranth sold over 37,000 September contracts on the ICE electronic exchange, accounting for over 40% of the total exchange-traded volume on ICE on that date, and over 25% of the entire volume of exchange traded futures and swaps on NYMEX and on ICE on that date. Amaranth also traded large amounts of the October contract (Table 20). Figure 49 presents the total volumes on NYMEX and ICE traded on these dates.

**Table 19**  
**Amaranth Trading Volumes on August 21-29**  
**Natural Gas Contract for September 2006**

	Trading Volumes				Net Position
	ICE Electronic Exchange	NYMEX Futures	OTC ICE Cleared	OTC NYMEX Cleared	NYMEX + ICE
8/21	-8,580	3,870	--	-2,500	-56,423
8/22	-5,940	-450	--	--	-60,573
8/23	-7,260	2,300	2,500	13,750	-55,394
8/24	-2,048	670	1,830	-2,620	-56,487
8/25	-6,458	2,350	3,470	-600	-60,992
8/27	-3,825	--	--	--	-64,817
8/28	-37,275	4,989	12,711	-7,564	-96,403
8/29	-15,893	6,721	--	-4,008	-104,707

**Table 20**  
**Amaranth Trading Volumes on August 21-29**  
**Natural Gas Contract for October 2006**

	Trading Volumes				Net Position
	ICE Electronic Exchange	NYMEX Futures	OTC ICE Cleared	OTC NYMEX Cleared	NYMEX + ICE
8/21	-3,317	-13,548	11,650	-9,050	-113,451
8/22	4,348	1,025	200	-200	-111,639
8/23	2,666	-4,609	15,000	-17,200	-112,991
8/24	-628	539	250	-850	-116,105
8/25	1,402	53	7,000	-2,000	-111,651
8/27	2,689	--	--	--	-114,340
8/28	-10,680	-423	100	650	-82,164
8/29	-11,317	-9,055	--	-4,008	-90,232

Figure 49

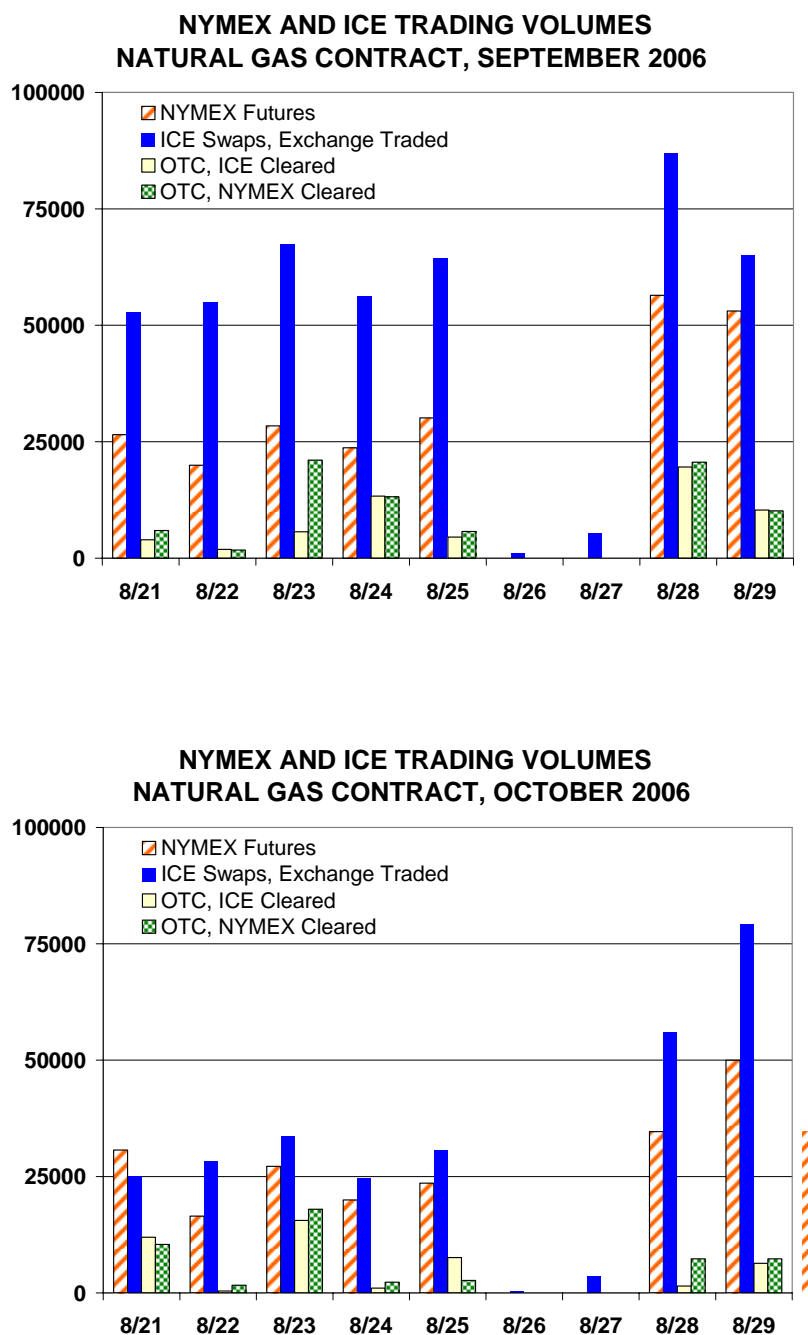
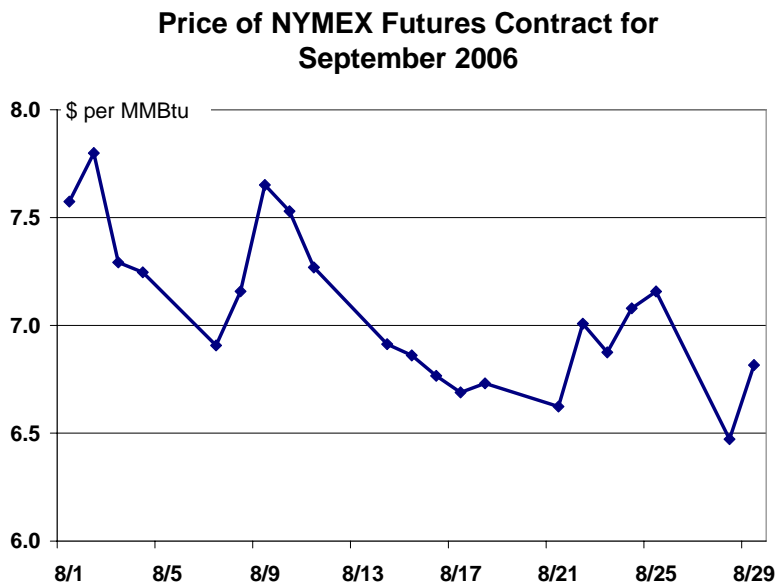


Fig. 49. During the last week in trading of the September contract, daily volumes for the September and October ICE swaps were greater than the daily volumes in the corresponding NYMEX futures contracts. Data sources: NYMEX and ICE.

In the last week of August, the price of the September contract fell from nearly \$8 per MMBtu to less than \$7, a substantial drop. The precise extent to which Amaranth's large-scale selling of the September contract contributed to the decline in the contract's price cannot be determined, because the price in the physical market for natural gas for September delivery was

also declining during this period. At the very least, because Amaranth's large-scale selling represented a significant share of the overall volume on ICE and NYMEX during this period, it would have been a significant contributing factor to the price's decline.

Figure 50



*Fig. 50. Due to an abundance of natural gas in storage and diminishing concern regarding potential hurricanes, the price of the September futures contract fell during August 2006. Data source: NYMEX.*

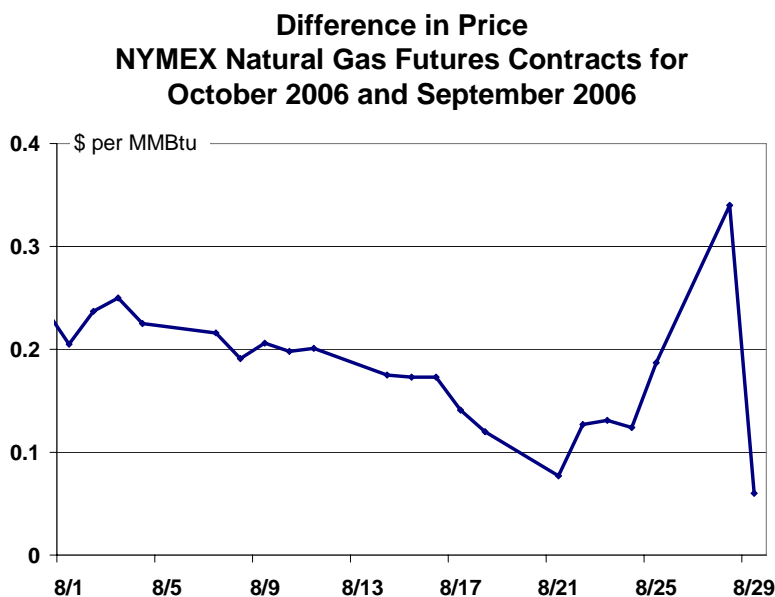
The decline in the price of the September contract during the very last trading days of the month was particularly striking when compared to the price of the October contract. Typically, these contracts trade within 7 or 8 cents of each other.<sup>129</sup> Throughout the summer of 2006, however, this spread had been much more volatile than in previous years, widening to about 50 cents on several occasions. During the last week of August, the price spread had returned to a level in accordance with the norm of prior years. But on August 28 -- the date when Amaranth's September contract sales represented a major portion of the trading volume in that contract -- the spread dramatically widened again to more than 35 cents.

Traders interviewed by the Subcommittee stated they did not know why the spread in price between the October and September contracts widened so suddenly at the end of August. These traders said that they believed the widening of the spread to such a large degree was not in accordance with market fundamentals, and they believed the spread had to narrow as the contract neared expiration.<sup>130</sup> Several of these traders took positions in accordance with this belief. These positions were directly opposite to the positions taken by Amaranth.

<sup>129</sup> NYMEX data. In 2003, the price of the September contract rose 20 cents above the price of the October contract at the expiration of the September contract; in 2004, the spread widened to about 15 cents on a couple of trading dates. *Id.*

<sup>130</sup> In addition to the 35-cent spread between the October and September contracts, traders stated there were significant yet inexplicable increases in the price of an ICE-traded contract called the "Hub combo," and a

Figure 51



*Fig. 51. The price of the October/September spread spiked to about 34 cents on August 28, the date before expiration of the September contract. Data source: NYMEX.*

On the last day of trading in the September 2006 contract, August 29, Amaranth sold nearly 16,000 contracts on ICE. Most of these September contracts were linked to purchases of ICE swaps for October 2006; in other words Amaranth was buying the price spread between the October and September contracts and betting that the October price would be higher. Amaranth dominated the buying of this spread on ICE on August 29, accounting for about 45% of the volume of the trading on that date.

The largest of the traders that took a position opposite Amaranth was Centaurus, another hedge fund. Centaurus sold nearly 12,000 October/September spreads on the last day of trading, August 29. According to Centaurus traders interviewed by the Subcommittee, Centaurus believed the October/September price spread was overpriced, that the September contract was out of line with prices in the physical market, and that the difference in price between the September contract and the October contract would narrow.

Both Amaranth and Centaurus traded primarily on ICE, though both also traded some contracts on NYMEX. For most of the day on August 29<sup>th</sup>, the total volume of trading in September natural gas contracts on ICE was greater than for the corresponding September contract on NYMEX. In fact, the volume of trading on ICE exceeded the volume on NYMEX until the final twenty minutes.

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significant yet inexplicable increase in the price of over-the-counter exchanges of futures for swaps. According to these traders, these anomalies indicated that natural gas futures were under-priced, and arbitrage trades between the under-priced futures market and the physical market would cause the price of the futures contract to rise prior to expiration. This explanation offers yet another example of how the price of contracts traded on ICE can have a material effect upon the trading of the related NYMEX futures contract.

Figure 52

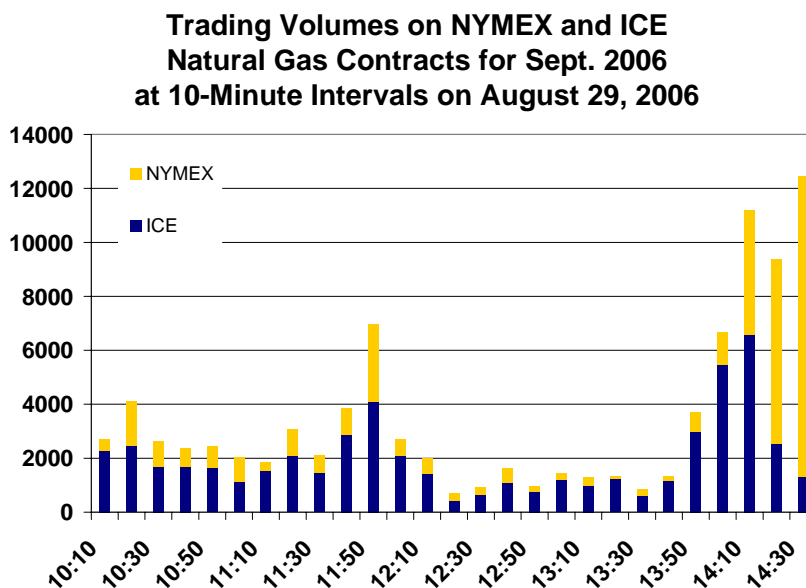


Fig. 52. Prior to the last twenty minutes of trading, the majority of trading on the final settlement day for the September futures contract occurred on ICE. Data sources: NYMEX and ICE.

Figure 53

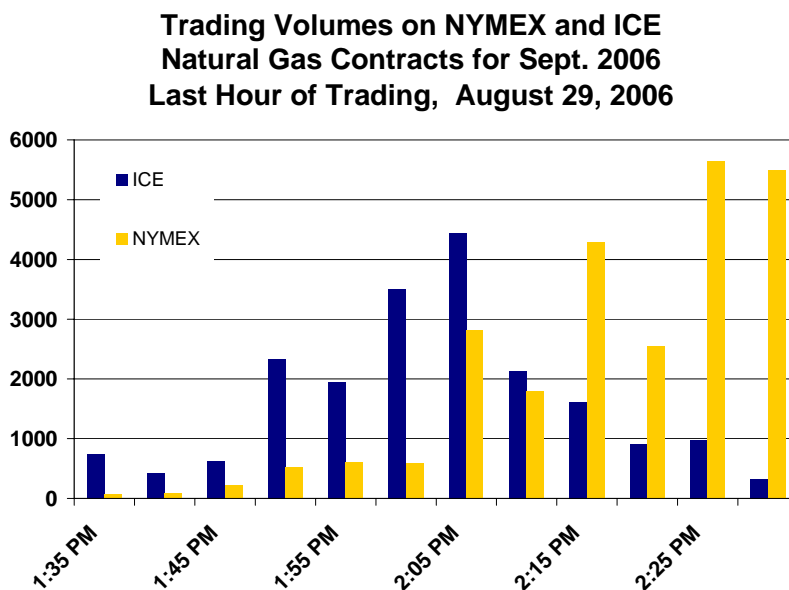


Fig. 53. From 1:30 to 2:05 pm on August 29—which is the half hour before the settlement period—the volume of trading of ICE swaps was significantly greater than the volume of trading of NYMEX futures contracts. Data sources: NYMEX and ICE.

As the final day of trading approached for the September contract, NYMEX officials had become concerned that Amaranth might conduct a large volume of trading during the last half hour of trading, in the same manner it had on several occasions in the spring. The last half hour of trading is called the final settlement period because, as explained earlier, NYMEX uses the prices paid during that final half hour to calculate the expiring contract's final price. At approximately 11 a.m. on August 29, NYMEX compliance officials telephoned Amaranth's compliance officer, Mr. Carrieri, and informed him that Amaranth should trade in an orderly manner throughout the trading session, especially during the final half hour. According to NYMEX officials, they informed Amaranth that they did not want Amaranth to conduct a large volume of trading within the final settlement period in order to avoid distortions in the final settlement price. Mr. Carrieri relayed these instructions to the Amaranth traders.

In accordance with NYMEX's instructions, Amaranth concluded its trading on NYMEX around 1:15 p.m. Shortly afterwards, Amaranth concluded its trading on ICE. Amaranth traders explained to the Subcommittee that it considers its positions on NYMEX and ICE as components of an overall position, and hence, to keep its overall portfolio balanced, it needed to conclude the bulk of its trading on ICE at the same time as it concluded its trading on NYMEX. Amaranth explained that when it exited trading on NYMEX, it had largely achieved the risk profile it had sought for the day, and did not contemplate additional trading on ICE. As the September contract price and the September-October price spread had remained within satisfactory parameters from Amaranth's perspective during the trading prior to 1:15 p.m., it did not believe it was at significant risk by completing its trading at that time.

Shortly after Amaranth exited the market -- around 1:40 p.m. -- the price of the September contract began to rise, and the price difference between the September and October contracts began to narrow. During this period, most of the trading was still taking place on ICE. ICE trading records indicate that for most of the day, there was one very large seller (Amaranth) and one very large buyer (Centaurus) of September contracts. Amaranth believed the price of the September contract would fall; Centaurus believed the price would rise. For most of the day, the buying pressure from Centaurus had been matched up against the selling pressure from Amaranth, and vice versa. The price of the September contract stayed relatively flat during this period. Centaurus intended to keep on buying as long as the difference in price between the October contract and the September contract was unusually wide. This could not happen while Amaranth was selling, as Amaranth's selling helped keep the spread wide. After Amaranth finished its selling, however, Centaurus's bidding for more September contracts was no longer matched by Amaranth's selling, and the price of the September contract began to rise. The rising price of the September contract narrowed the spread between the October and September contract.

In the last 45 minutes of trading on August 29, Centaurus bought nearly 10,000 September contracts on ICE and about 3,000 on NYMEX, including approximately 9,000 contracts between 1:40 and 2:10 p.m. Centaurus's buys represented a significant share of the total volume traded on both exchanges during that period for the September contract, including nearly 50% of the trading volume in the last hour of trading on ICE. As Figure 55 shows, just prior to the final half hour of trading, Centaurus's volume of buying was approximately equal to the total volume generated by all of the other buyers on NYMEX and ICE *combined*.

Figure 54

**Amaranth and Centaurus: Trading Volumes  
ICE Natural Gas Swap for September 2006  
on August 29, 2006**

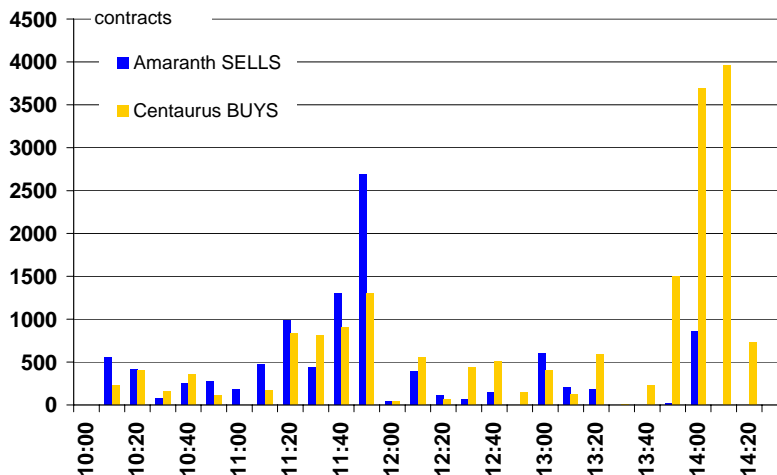


Fig. 54. Amaranth and Centaurus trading volumes in the September 2006 ICE natural gas swap, by 10-minute intervals, on the date of expiration of the contract. Data source: ICE.

Figure 55

**Centaurus Trading Volume on ICE & NYMEX  
Natural Gas Contracts for September 2006  
Last Hour of Trading on August 29, 2006**

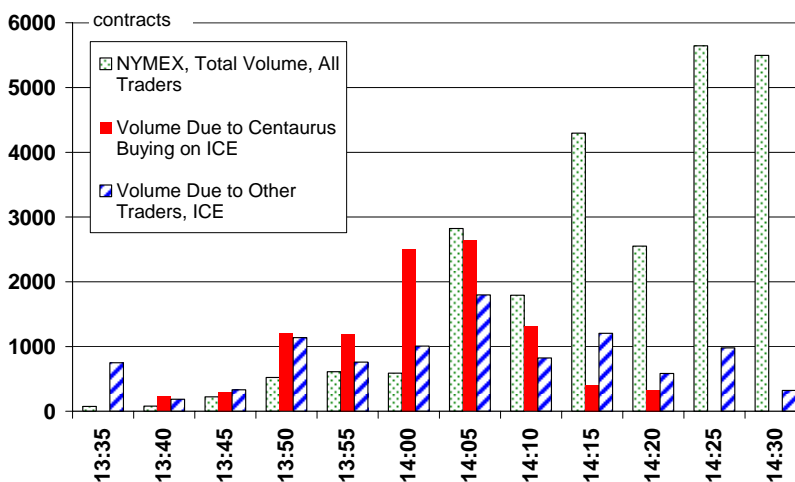


Fig. 55. From about 1:30 p.m. until about 2:00 p.m., the volume of trading on ICE in the expiring September 2006 contract due to Centaurus exceeded the volume generated by all of the other traders on ICE. Data source: ICE and NYMEX.



Figure 56

**Price of ICE Henry Hub Natural Gas Swap  
for September 2006, on August 29, 2006**

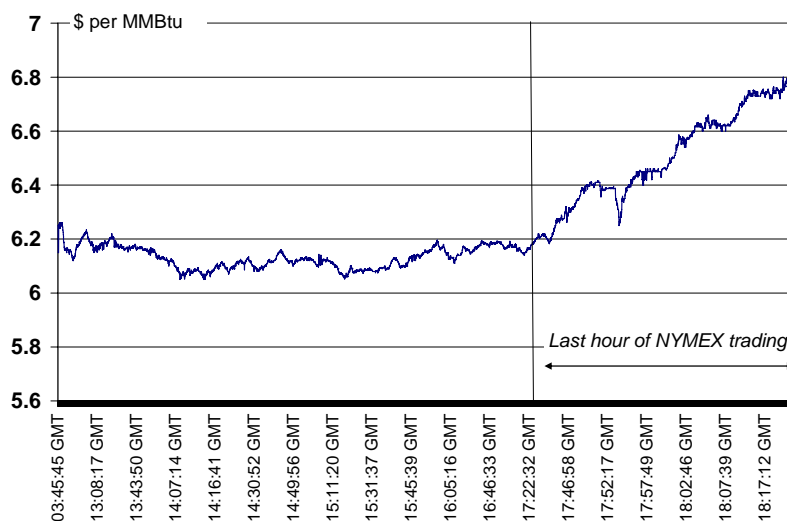


Fig. 56. The price of the ICE natural gas swap contract for September began to rise steeply around 1:45 p.m. on August 29. Times are expressed in Greenwich Mean Time (GMT) as a result of the manner in which trade times are recorded and expressed in the ICE database. In August, Daylight Savings Time (DST) is four hours earlier than GMT. Data source: ICE.

Figure 57

**Price Difference Between ICE Natural Gas Swaps  
for September and October  
on August 29, 2006**

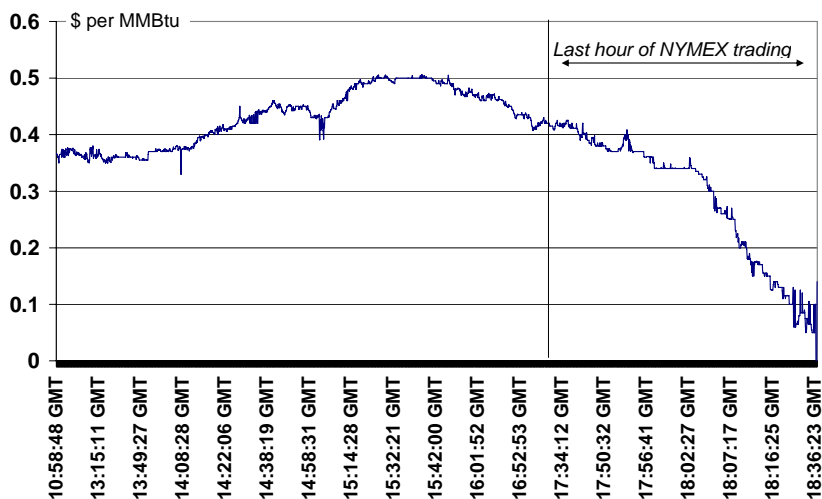


Fig. 57. The price of the October/September spread began to fall sharply at the same time the price of the September contract began to rise sharply. Data source: ICE.

The price data underlying Figure 57 indicates that the price of the October/September spread opened at 36 cents, and fifteen minutes later began to rise. In just about an hour, from about 10:10 a.m. to 11:23 a.m., the price of the spread jumped from about 37 cents to 50 cents. This period, in which the price of the spread rose significantly, was the same time period in which Amaranth's buying of the spread was most heavily concentrated. At the end of the day, after Amaranth's buying had stopped, the price of the spread fell dramatically – about 40 cents in one hour. Similarly, during the final hour of trading, the price of the September contract jumped by about 60 cents – an increase of nearly 10%.

The day after trading concluded on the September contract, Amaranth charged that it had been the victim of apparent price manipulation and requested an investigation by market regulators. In a letter sent to NYMEX dated August 30, 2006, Amaranth wrote:

As you are no doubt aware, during the last 60 minutes of trading in the September NG [natural gas] contract, the price of the September NG contract spiked up by approximately 10%. We believe that such price movements did not reflect bona fide supply and demand market forces. . . . We also believe that the trading that caused the price movements during the closing range of the September NG contract was motivated by the desire by one or more market participants to affect the settlement price of the September NG contract, which the public relies on as a key price benchmark for physical and financial contracts involving natural gas.<sup>131</sup>

Amaranth noted that “as a responsible market participant we abided by your request” not to execute any large orders during the last half hour of trading, and had “completely liquidated our September NG position by approximately 1:15 pm.” “It is apparent to us,” Amaranth contended, “that certain market participants are not trading in a responsible manner.” Amaranth requested that NYMEX “immediately initiate an investigation into the trades and traders that caused yesterday’s artificial price spike.”

The Subcommittee interviewed NYMEX officials and numerous traders who were active in the natural gas market on August 29 about the events of that date and the reasons for the price spike. Based on these interviews, Amaranth's perception that the price spike towards the end of trading was “artificial” appears to be correct. There were no changes in the underlying fundamentals of supply and demand that suddenly emerged in the last hour of trading to precipitate the price spike. Rather, this volatility appears to have been caused in large part by the pattern of trading between the two largest traders in the natural gas market. Amaranth's complaint that the September price spike in the final hour reflected the effects of large-scale trading rather than market forces is an observation that could equally be applied to its own trading earlier in the day.

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<sup>131</sup> Letter from Michael Carrieri, Compliance Director, Amaranth, LLC, to Anthony Densieski, Senior Director, Market Surveillance, NYMEX, August 30, 2006, Bates No. Amaranth\_Senate012546.

In an instant message conversation with another trader right after the close of trading on August 29, Amaranth's top energy trader, Brian Hunter, complained about the trading activity during settlement:

Brian Hunter: classic pump and dump boy I bet you see some CFTC inquiries for the last two days

crummertd: until they monitor swaps no big deal its all swaps now

Brian Hunter: any time there is a 70 cent rally in 40 minutes on no fundamental event ... it will get investigated ... for sure<sup>132</sup>

Although Mr. Hunter expressed certainty about a CFTC inquiry into the trading on August 29, the other trader seemed to dismiss any CFTC investigation as "no big deal," because the CFTC had no authority to monitor trading on ICE, where most of the trades had taken place. His observation underscores the reality that exempting ICE from CFTC oversight harms not only that unregulated market, but also NYMEX, a fully regulated market, by making both more vulnerable to market manipulation, excessive speculation, and unfair pricing.

### I. September 2006: Amaranth Collapses

*"The combination of precise formulas with highly imprecise assumptions can be used to establish, or rather to justify, practically any value one wishes . . . Calculus . . . [gives] speculation the deceptive guise of investment."*  
--Benjamin Graham, 1949<sup>133</sup>

The 60-cent increase in the price of the September contract and the associated drop in the price of the October/September spread caused a huge loss for Amaranth. On August 29, its daily profit and loss statements recorded a loss in the value of its natural gas holdings of nearly \$600 million. Despite this enormous one-day loss, Amaranth still finished August with a net gain of \$631 million for the month.

More ominous for Amaranth's long-term survival, however, were the increased margin calls and requirements that followed. Because its natural gas holdings had lost value, on August 30, Amaranth's margin requirements increased by \$944 million. According to an internal memorandum from JPMorgan Chase, Amaranth's clearing firm, this margin call "resulted from Amaranth's activity on the ICE yesterday."<sup>134</sup> On August 31, Amaranth's margin requirements on ICE and NYMEX exceeded \$2.5 billion; by September 8 they had surpassed \$3 billion.

<sup>132</sup> Amaranth Instant Message, Bates No. AALLC\_REG0650031.

<sup>133</sup> Benjamin Graham, *The Intelligent Investor*, 4th ed. (New York, 1973), at pp. 315-321.

<sup>134</sup> Time line summarizing JPMorgan Chase's interactions with Amaranth through September 21, 2006; Bates No. JPM-PSI 00006032.

During the first week of September, from Amaranth's perspective, more bad news arrived. Other natural gas prices began falling. Two spreads of particular concern to Amaranth were the March/April 2007 price spread and the January 2007/October 2006 price spread. The March/April spread had begun a free fall, dropping nearly 25%, from \$2.49 on August 25 to \$2.05 on September 1. The falling March/April spread increased Amaranth's margin woes. During the first two weeks in September, the January/October spread also went into a steep decline, falling from \$4.68 on September 1 to \$4.15 on September 11, to \$3.52 on September 15.

During the summer, Amaranth had viewed falling prices as an opportunity to increase its positions in those contracts. Its large-scale buying had the effect of propping up the prices—either preventing them from falling further or actually boosting them higher. A number of traders told the Subcommittee that they believe the winter/summer price spreads remained overpriced during the summer for so long for two major reasons: (1) traders were aware that someone had taken a very large position in the spreads – some knew it was Amaranth – and, in their view, that person had kept making large purchases to keep the prices up; and (2) traders were concerned that one or more hurricanes could increase prices as well, as had happened after Hurricanes Katrina and Rita the previous year. In light of Amaranth's demonstrated ability to push up the spread prices, smaller traders were reluctant to take the opposite position, even if they viewed the spreads as overpriced from the standpoint of market fundamentals.<sup>135</sup>

In early September, however, faced with margin requirements of several billion dollars, Amaranth no longer had the capital to add to any of its positions, as it had done several during the spring and summer. As prices fell, it could only stand by and watch. In an attempt to reduce its market risk, in early September Amaranth bought MotherRock's position from ABN Amro, MotherRock's clearing firm, which had assumed MotherRock's portfolio. MotherRock's offsetting positions helped to reduce Amaranth's risk.

As hurricane season neared an end, however, and natural gas supplies remained plentiful, more and more traders viewed the winter/summer price spreads as overpriced. This analysis precipitated more selling, and prices began to collapse. Amaranth's positions went into free fall.

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<sup>135</sup> An increase in the price of the spread would be harmful to a trader who had taken the opposite position because it would result in an increase in margin requirements.

Figure 58

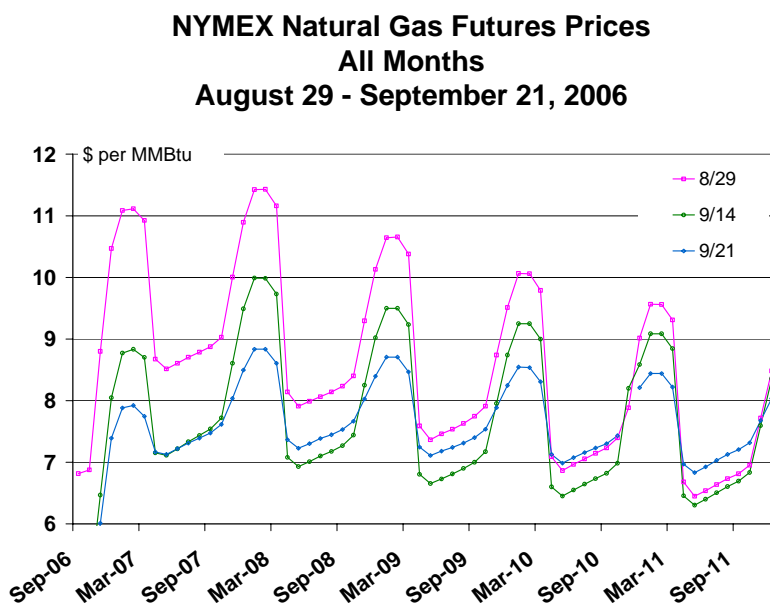


Fig. 58. From August 29 through September 21, the forward curve for natural gas futures contracts fell significantly. Although market fundamentals were largely unchanged between the end of August and the latter part of September, absolute price levels fell by 25% or more and winter/summer price spreads fell by as much as 75%. Data source: NYMEX.

By September 15, as Amaranth's natural gas positions continued to deteriorate and its cash position weakened considerably, Amaranth began to seek a counterparty to buy its energy book. One of the counterparties Amaranth approached was Centaurus. Late on Saturday, September 16, Amaranth's senior energy trader Brian Hunter asked John Arnold, Centaurus CEO, whether the hedge fund would like to make a bid for some of Amaranth's positions. Early the next morning, Mr. Arnold offered a bid after making the following observations:

I was not in the office on Friday but I understand you were selling h/j [March/April]. The market is now loaded up on recent, bad purchases that they will probably try to be spitting out on Monday if there is a lower opening given that spread has been in free fall. ***In my opinion, fundamentally, that spread is still a long way from fundamental value.***

Over the past couple years the market has put a big risk premium into that spread yet it has paid out on expiry once in ten years. We'll be at all time high storage levels with mediocre s/d [supply and demand] and an el nino. ***Even though that spread has collapsed over the past 2 weeks, the only reason it's still \$1 is because of your position.*** Historically, that spread would be well below \$1 at this point given the scenario.<sup>136</sup>

<sup>136</sup>Email from John Arnold to Brian Hunter, Sept. 17, 2006, Bates No. AALLC\_REG0251227-28 (Emphasis added).

Mr. Arnold gave Mr. Hunter two price quotes for the March/April spread: 45-60 cents for the March/April 2007 spread which had closed the previous trading day at \$1.15; and \$1.00-\$1.20 for the March/April spread in 2008 and beyond, which had closed the previous day at between \$2.10 and \$2.20. Mr. Hunter declined Mr. Arnold's offer. Mr. Arnold's prediction of the behavior of these spreads, however, turned out to be remarkably accurate. On September 21, the last day of Amaranth's trading in the natural gas market, the March/April 2007 spread stood at 58 cents, and the March/April spreads for 2008 and beyond ranged from \$1.18 to \$1.25.

After several days of frantic negotiations with several brokerages and banks, on September 20<sup>th</sup>, Amaranth formally sold its energy book to its clearing firm, JPMorgan Chase, and Citadel, another hedge fund. To meet its margin calls and satisfy client requests, Amaranth liquidated the remainder of its \$8 billion portfolio.

### **J. Amaranth's Market Impact**

Until its September collapse, Amaranth dominated trading in the 2006 U.S. natural gas market. It bought and sold thousands of natural gas contracts on a daily basis. It frequently held 40% or more of the open interest in natural gas futures in a particular contract month. At some points during the year, it held more than 100,000 natural gas contracts. Its trading moved prices and increased price volatility.

Amaranth's trading did not take place in a vacuum; its largely unregulated trading and price distortions harmed other market participants. Some natural gas end users were forced to purchase natural gas at inflated prices. Others were unable to hedge their natural gas expenses due to the unpredictability and volatility of the market. Still others suffered large losses.

**Inflated Natural Gas Prices.** Some natural gas distributors and end users told the Subcommittee that, due to the higher than normal price spreads during the spring and summer of 2006, they were forced to purchase contracts to deliver natural gas in the winter months at prices that were disproportionately high when compared to the plentiful supplies in the market.

The American Public Gas Association told the Subcommittee, for example, that many local gas distributors were forced to pass on high natural gas prices to their customers, including residents, schools, hospitals, small businesses, and local electrical plants powered by natural gas. One of its members, the Minnesota Municipal Utilities Association, complained of being locked into unfairly high prices in a 2007 letter to the House Committee on Agriculture: "Many natural gas distributors locked in prices prior to and during the period Amaranth collapsed that in hindsight were distorted due to Amaranth's accumulation of an extremely large position. The lack of transparency in the over-the counter (OTC) market for natural gas and the extreme price swings surrounding the fallout of Amaranth have, in their wake, left bona fide hedgers reluctant to participate in the markets for fear of locking in prices that may be artificial."<sup>137</sup>

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<sup>137</sup> Letter from the Minnesota Municipal Utilities Association to U.S. House of Representatives Committee on Agriculture, March 22, 2007, [http://www.apga.org/Peterson%20CFTC%20Letter\\_3.22.07.pdf](http://www.apga.org/Peterson%20CFTC%20Letter_3.22.07.pdf).

The Municipal Gas Authority of Georgia (MGAG) told the Subcommittee that to reduce volatility and mitigate additional price spikes on supplies of natural gas for the 2006-07 winter, its hedging procedures required it to hedge part of its winter natural gas in the spring and summer of 2006. MGAG officials explained that they knew natural gas prices were still extremely high, but they could not “roll the dice” and hope prices would eventually drop, so they hedged half of their winter gas prior to September 2006. By hedging earlier in 2006 when natural gas prices were high, MGAG told the Subcommittee that its customers incurred hedging losses of \$18 million over the actual market prices during the winter of 2006-07. MGAG officials characterized the extra \$18 million, which resulted in higher natural gas bills for their customers, as a “premium” forced on them by excess speculation in the market by Amaranth and others. MGAG officials also told the Subcommittee that, due to unexplained price swings and price spikes in natural gas prices during the year, their members had lost confidence that the market would fairly reflect natural gas costs. MGAG member and industrial customer hedge volumes to-date during 2007 are down sharply from 2006, which they believe is attributable to the lack of confidence in the forward market. MGAG’s risk manager indicated that last winter’s hedging was very expensive, but now the lack of hedging by its members leaves its customers exposed to price spikes in the future. MGAG concluded by telling the Subcommittee that, contrary to reports that no one was hurt by Amaranth’s trading practices, their customers were forced to pay millions of dollars in extra natural gas costs unrelated to fundamental supply and demand.

The New England Fuel Institute framed the issue this way: “Unnecessary volatility in the energy markets leads to unexpectedly high heating costs .... When gas and diesel prices are driven up by adverse market forces, people will simply drive less. But when the prices of heating fuels are set by market players looking for a quick buck, people are left out in the cold.”<sup>138</sup>

American industry was also affected. The Industrial Energy Consumers of America, a nonprofit association that represents manufacturers powered by natural gas, wrote: “Wall Street type trading companies are making enormous profits trading energy. While we have nothing against generating an honest profit, those profits must be paid for by someone through higher prices or more volatile markets.”<sup>139</sup> At a 2007 business conference on natural gas issues, panelists condemned high natural gas prices and price volatility in the United States.<sup>140</sup> For example, the natural gas manager for steel giant Arcelor Mittal noted that, in 2006 alone, his company spent \$1 billion on natural gas. “Our biggest concern as an end user is price,” the panelist said. “Our second concern is price and our third concern is price.” A panelist from Tyson Foods stated: “Natural gas at \$4 may not have a big impact on earnings, but \$15 gas has an impact.” A panelist from chemical manufacturer FMC Corporation added: “The pricing impact of natural gas impacts our global competitiveness.”

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<sup>138</sup> Sean Cota, President, New England Fuel Institute, statement before the Senate Democratic Policy Committee, May 8, 2006.

<sup>139</sup> Industrial Energy Consumers of America letter to U.S. Senate Committee on Agriculture, April 5, 2006.

<sup>140</sup> “Natural gas price a concern for US business – panel,” Reuters, May 11, 2007. All panelist quotations are taken from this article reporting on the conference panel.

**Unpredictable Prices.** Other natural gas distributors and users told the Subcommittee that the wide price spreads and extreme price volatility in the 2006 natural gas market made it difficult for them to hedge risks and protect against adverse price changes. Some told the Subcommittee that the influx of speculative trading from hedge funds had exacerbated market volatility to the extent that small players felt uncomfortable entering the market. One public utility expressed to the Subcommittee a lack of confidence in its ability to effectively hedge against large and unpredictable swings in natural gas prices.

At the same 2007 business conference on natural gas issues, a seminar was held on “Managing Price Risk in a \$5 - \$10/MMbtu World,” with panelists offering a variety of trading strategies to try to deal with the extreme price volatility in the market.<sup>141</sup> One energy trader from Cargill Risk Management, after presenting a chart showing volatile natural gas prices in 2006, asked the audience “Did you watch in disbelief trying to decide when to enter the market?”<sup>142</sup> He also offered this warning from John Keynes: “Markets can remain irrational longer than you can remain solvent.”

Industrial Energy Consumers of America has stated: “[O]ver the last five years U.S. natural gas prices have been the most volatile commodity in the world.”<sup>143</sup> A group of four Attorneys General from the Midwest issued a lengthy 2006 report that described U.S. natural gas prices as “whacky,” unrelated to supply and demand, and subject to “irrational swings.” The report noted a “striking correlation between large increases in trading and increases in the volatility and level of natural gas prices.” The American Public Gas Association has concluded that the problem worsened in 2006: “The unwinding of Amaranth’s excessively large natural gas positions in the OTC led to even greater price volatility in an already volatile regulated market. Because of the lack of transparency of the OTC market, the full effect of Amaranth’s trading on natural gas prices may never be fully determined, and the American public likely will continue to feel the effects of Amaranth’s trading for a substantial period of time.”<sup>144</sup>

**Trading Losses.** It was not just local gas distributors, municipalities, industry, and small businesses that expressed concern about the 2006 natural gas market, the Subcommittee also heard from traders angry at the ability of a single hedge fund to distort market prices. One trader told the Subcommittee that many traders were reluctant to take positions opposite Amaranth, regardless of their view on market fundamentals, due to Amaranth’s demonstrated ability to affect natural gas prices through large trades.

Other traders told of large losses incurred in response to sudden price movements attributed to Amaranth’s trading. One dramatic example involves MotherRock LP, a \$300 million hedge fund that was headed by the former NYMEX chairman Bo Collins and was heavily invested in natural gas futures. Part of MotherRock’s trading strategy was based upon its view that natural gas prices and spreads for the upcoming winter were overvalued in light of plentiful supplies and moderate demand. It bet that futures prices for winter contracts would fall

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<sup>141</sup> “Managing Price Risk in a \$5-\$10/MMbtu World.” GasMart 2007 conference. Chicago, IL: May 10, 2007.

<sup>142</sup> Jerry Afdahl, Cargill, “Managing Price Risk in a \$5-\$10/MMbtu World.” GasMart 2007 conference. Chicago, IL: May 10, 2007.

<sup>143</sup> Industrial Energy Consumers of America letter to U.S. Senate Committee on Agriculture, April 5, 2006.

<sup>144</sup> American Public Gas Association letter to the Federal Reserve Board of Governors, February 22, 2007.



in relation to the summer prices; it sold a significant number of futures contracts for March 2007 and bought contracts for April 2007. This position was directly opposite Amaranth's position.

As Amaranth's large positions and trades continued to push up winter contract prices, MotherRock's positions lost value, especially its position in the March/April price spread. On July 31, 2006, when Amaranth's trading caused a sudden 72 cent jump in the March/April price spread, a number of MotherRock's positions were directly affected, and MotherRock was unable to meet its margin call. Shortly afterwards, MotherRock announced that, due to losses it had suffered in the natural gas market over the summer, it no longer had sufficient funds to continue operations. The hedge fund folded soon after.

At the time, a number of traders and analysts stated publicly that market conditions did not justify the extreme price movements on July 31. "What's distressing is that this move in natural gas prices that took MotherRock out, and will ultimately wind up taking others out as well, wasn't really the effect of record-breaking heat or hurricanes," one natural gas trader said. The trader explained:

This move was less about the real fundamental drivers, and more about other funds triggering a massive short covering rally, which inflicted big financial pain on all of those traders who were positioned for more of a downside move. Because let's face it, even with record breaking heat, there's not one real rational reason why we should see nearly \$9 gas, when we all know we're going to end the refill season with more gas than we know what to do with.<sup>145</sup>

When asked by the Subcommittee, another trader described Amaranth's effect on MotherRock as follows: "Bo [Collins, CEO of MotherRock] opposed Brian [Hunter, Amaranth's senior energy trader] on March/April and on October/January. Bo thought March/April was overpriced. Brian came in with another tranche [of buying March and selling April contracts at the end of July] and killed Bo."

This trader described Amaranth's senior energy trader, Mr. Hunter, as "doing so much action [trading] on the exchange that he was a one-man industry." This trader said it was "a lopsided game," in which it was nearly impossible to take a position opposite Amaranth, regardless of market fundamentals. "You could take either of two positions," the trader said. "You could either jump on the bandwagon and go with the strong hand or oppose that position and endure months and months of pain for a moment of instantaneous gratification when Amaranth imploded. There are only a few people in this market who can endure that kind of pain."

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<sup>145</sup> Alan Lammey, *Spike in Gas Futures Prices Collapses 'Short' Hedge Fund, Possibly More*, Natural Gas Week, August 7, 2006. See also Gerelyn Terzo, *MotherRock Wont Be Nat Gas' Last Victim; The volatility that undermined this hedge fund shows no sign of slowing*, Investment Dealers Digest, August 14, 2006.

In an email obtained by the Subcommittee, a hedge fund analyst wrote the following to a colleague in early August:

Bo [Collins] is done, Monday [July 31] blew them up. ... Market going nuts with Amaranth the featured FU player, they took it to Mother Rock on Monday in the h/j [March/April] spread.”<sup>146</sup>

Still another trader told the Subcommittee that “everyone in the market knew Amaranth killed MotherRock.”<sup>147</sup>

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<sup>146</sup> E-mail dated August 4, 2006, Re: Collins, Bates No. xxx-PSI-009788. NYMEX futures contracts are generally designated by a two-letter symbol signifying the commodity, followed by the two-digit designation for the year, and a one-letter designation for the month. The letters used to designate months are F, G, H, J, K, M, N, Q, U, V, X, and Z. Thus, NG07F is the NYMEX designation for the natural gas contract for January 2007, whereas a simple combination of letters, such as h/j, refers to the March/April spread.

<sup>147</sup> Interview with Subcommittee staff, May 16, 2006.

## VI. PROTECTING U.S. ENERGY AND ECONOMIC SECURITY

The health of the U.S. economy depends in part upon well-functioning capital markets, including the commodity markets that now play such a large part in determining U.S. energy prices. Since the 1930s, federal law has prohibited market fraud, manipulation, and excessive speculation to protect the vibrancy and efficiency of U.S. capital markets.<sup>148</sup> Federal agencies like the SEC, CFTC, and FERC have built a system of checks and balances, including market surveillance capabilities, trade analysis, regulatory actions, and criminal prosecutions, to detect, prevent, and punish persons who attempt to interfere with the free and fair functioning of U.S. capital markets. But those systems are inadequate when it comes to energy trading.

In 2006, Amaranth's massive trading distorted natural gas prices and increased price volatility. Other market participants have complained of unfair market practices and unfair prices. Some have lost confidence in the ability of the futures market to provide a fair price, and are therefore reluctant to invest in the natural gas market, hedge their price risks in these markets, and participate in the trading that produces a market consensus on correct pricing. Discredited markets, reluctant market participants, and ineffective pricing do nothing but harm U.S. economic and energy security interests.

Three key steps would help protect our energy markets, reduce trading abuses, and better ensure fair pricing. First, Congress should make energy exchanges that are currently exempt from the CFTC's regulatory system, such as ICE, subject to the same statutory and regulatory requirements as the regulated exchanges, such as NYMEX. Second, the CFTC and the exchanges should reinvalidate the statutory prohibition against excessive speculation. Third, the Congress should increase funding for the CFTC and authorize it to collect user fees from the commodity markets.

### A. Close the Enron Loophole.

The key law establishing government oversight and regulation of U.S. commodity markets is the CEA. Right now, the CEA is burdened with complex exemptions, exclusions, and limitations that make it extremely difficult to ensure U.S. energy markets operate in a fair, transparent, and efficient manner.

The primary problem is Section 2(h)(3) of the CEA, which exempts energy commodities traded on electronic energy exchanges by large traders from routine government oversight. Section 2(g) also excludes energy swaps from the law. Both provisions were added to the CEA in 2000, at the request of Enron and others, creating the "Enron loophole," that exempts key energy commodities from government oversight. These provisions have resulted in the irrational situation in which one key U.S. energy exchange, the NYMEX, is subject to extensive regulatory oversight and obligations to ensure fair and orderly trading and to prevent excessive speculation, while another key energy exchange, ICE, operates with no regulatory oversight, no obligation to ensure its products are traded in a fair and orderly manner, and no obligation to prevent excessive speculation. The Amaranth case history demonstrates that trading in both markets

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<sup>148</sup> See, e.g., Securities and Exchange Act of 1934, 15 U.S.C. § 78a et seq.; Grain Futures Act of 1922, later amended to become part of the Commodity Exchange Act, 7 U.S.C. § 1 et seq.

affects energy prices, that trading in each market affects prices in the other market, and that traders view futures contracts and swaps to be equivalent financial instruments for risk-management and speculation. The existing provisions in the law that exempt energy contracts traded on ICE from regulatory oversight make no economic sense.

The Amaranth case history also shows that when a regulated market such as NYMEX takes steps to prevent price manipulation or excessive speculation, a trader can still trade without limitation simply by replacing its futures contracts on NYMEX with swaps on ICE. After NYMEX directed Amaranth to reduce its natural gas positions in August 2006, Amaranth moved those positions to ICE. The net result was that the action by the regulated exchange, pursuant to the CFTC's requirements, did nothing to reduce Amaranth's size in the marketplace; it simply caused trading to move from a regulated market to an unregulated market. Natural gas prices were not protected from Amaranth's subsequent large-scale trading.

The Amaranth case history also illustrates the stumbling blocks thrown up by the current system that impede market regulators from making informed decisions. Right now, energy market regulators have direct, routine access only to trading data from regulated exchanges and not from the unregulated exchanges. In the Amaranth case, for example, NYMEX officials reviewing Amaranth's trading positions were able to examine only Amaranth's trades on NYMEX, missing highly relevant information about equivalent trades on ICE. The result was that NYMEX officials were forced to make significant regulatory decisions regarding market manipulation and excessive speculation based upon incomplete and possibly misleading trading data. A regulator denied critical trading information cannot make informed decisions to protect the integrity of U.S. energy markets.

Eliminating the Enron loophole would level the regulatory playing field between the NYMEX and ICE exchanges, increase energy price transparency, and strengthen the ability of the CFTC to analyze market transactions and police U.S. energy commodity markets. It is time to put the cop back on the beat in all U.S. energy markets.

## **B. Reinvigorate the Prohibition Against Excessive Speculation**

In addition to closing the Enron loophole, the CFTC and energy exchanges need to reinvigorate the CEA's prohibition against excessive speculation. Amaranth's trading demonstrates that excessive speculation can distort futures prices not only in the next month or two, but for many months into the future. Currently, the major focus of the CFTC and the exchanges is to prevent excessive speculation from disrupting orderly trading of a contract near the expiration of that contract. The CFTC and the exchanges need to be vigilant to ensure that traders' speculative positions in futures contracts several seasons, or even several years, in advance are not distorting prices. Regulators should obtain and analyze aggregate position and trading data for large traders and develop flexible criteria for when to require reductions in large positions. Presently the only factor that is identified for consideration in whether a trader's position is excessive is the aggregate position size. Other factors could include, for example, market concentration relative to total open interest, relationships between positions in different months such as spread positions, and past trading patterns.

Again, however, these tasks cannot be accomplished unless the CFTC and the exchanges have more comprehensive information about traders' positions. It is unreasonable to expect the CFTC to prevent excessive speculation if the CFTC cannot see all of the market or lacks the authority to limit a trader's positions on the unregulated exchanges.

Amaranth's positions and trades in futures contracts expiring months or even years later had a real-time affect on energy prices, forced some natural gas distributors and users to lock in future delivery contracts at high prices, and drove at least one competitor out of business. Yet NYMEX regulators monitoring Amaranth's trades weighed in only when Amaranth's positions appeared likely to affect the prices of futures contracts that were about to expire. Our energy regulators need to have a longer time horizon than the next 60 days.

### **C. Increase CFTC Resources**

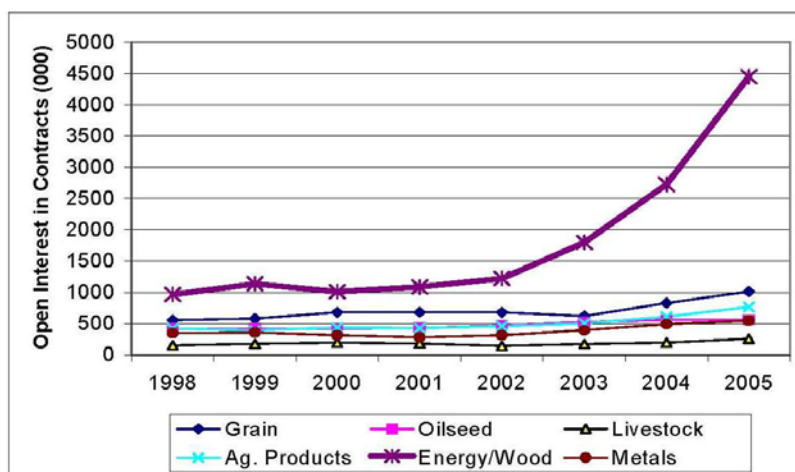
Congress should also provide adequate resources to the CFTC so that it can effectively perform its oversight function, a recommendation discussed in the final section of this Report.

## VII. CFTC RESOURCES TO MONITOR NATURAL GAS MARKETS

Another obstacle to the CFTC's ability to detect or prevent price distortions and excessive speculative trading is the agency's inability to obtain adequate staff, technology, and budget resources.

Over the last ten years, commodities trading has exploded in U.S. markets. Trading volumes have quintupled to 3 billion contracts per year.<sup>149</sup> The number of different futures contracts and options being actively traded has increased nearly sevenfold, from 179 in 1995, to an estimated 970 in 2006, to a projected total of 1,120 in 2008.<sup>150</sup> An entire new energy commodities exchange, ICE, has been established and is now trading hundreds of thousands of contracts daily. Investments in futures commission merchant accounts have quadrupled, increasing from \$33 billion to \$137 billion.<sup>151</sup> Investments in major U.S. commodity indices have grown more than tenfold, climbing from a combined total of less than \$10 billion in investments in 2000 to an estimated \$145 billion in early 2007.<sup>152</sup> Commodity traders have become featured in financial publications as the new market stars pulling in tens or hundreds of millions of dollars in compensation each year.<sup>153</sup>

Figure 59: Commodity Trading of Non-Financial Instruments (Average Month End Open Interest)



Source: Commodity Future Trading Commission, Annual Reports: Futures Statistics by Major Commodity Group.

Fig. 59. Reproduced from: Mark N. Cooper, *The Role of Supply, Demand and Financial Commodity Markets in the Natural Gas Price Spiral*, at p. 11, March 2006.

<sup>149</sup> CFTC FY2008 budget request and briefing documents supplied to the Subcommittee.

<sup>150</sup> *Id.*

<sup>151</sup> *Id.*

<sup>152</sup> These figures are based primarily on the Goldman Sachs Commodity Index (GSCI) and Dow Jones-AIG Commodity Index (DJ-AIGCI). See "Strong Asset Momentum Underpins Metals Markets," *Commodities Now* (March 2006) for commodity investment level in 2000; Goldman Sachs press release stating that the GSCI had \$110 billion in investments in January 2007, available at [http://www2.goldmansachs.com/gsci/articles/gsci\\_061106125458.html](http://www2.goldmansachs.com/gsci/articles/gsci_061106125458.html); and Dow Jones-AIG press release stating that the DJ-AIGCI had an estimated \$35 billion in investments in February 2007, available at <http://www.djindexes.com/mdsidx/index.cfm?event=showAigNews>.

<sup>153</sup> See, e.g., Rich Blake and Andrew Barber with Robert LaFranco, *The Trader Monthly 100; Earn, Baby, Earn*, *Trader Monthly*, April/May 2006.

Despite the overwhelming explosion in commodity trading, the CFTC has experienced declining staff numbers, aging technology systems, and flat budgets. One key problem is that, unlike its sister organizations the SEC and FERC, the CFTC is not funded through user fees, and is instead required to compete against all other governmental functions to secure appropriated funds. Its fiscal year 2007 budget of \$98 million is one-eighth the size of the SEC budget of \$881 million; its current staff of 450 is one-eighth the size of the SEC staff of 3,500. For fiscal year 2008, the CFTC requested a budget increase of \$17.9 million for hiring new staff and technology upgrades.

Without a significant upgrade in staff, technology, and budget resources, the CFTC will continue to be unable to effectively monitor the energy markets, prevent manipulation and excessive speculation, and punish misconduct.

### **A. CFTC Market Surveillance and Enforcement**

The CFTC is an independent regulatory agency created in 1974. Its mission is “to protect market users and the public from fraud, manipulation, and abusive practices related to the sale of commodity and financial futures and options, and to foster open, competitive, and financially sound futures and option markets.”<sup>154</sup>

The CFTC oversees 13 regulated commodity exchanges that meet the requirements for Designated Contract Markets, and 11 registered Derivative Clearing Organizations that meet the requirements for clearing trades on the regulated exchanges. Examples include NYMEX, Chicago Board of Trade, and Chicago Mercantile Exchange. Additional commodity trades take place on 17 Exempt Commercial Markets that operate largely outside of CFTC oversight, but which may affect trading on the regulated exchanges. ICE is the most prominent example of an Exempt Commercial Market.

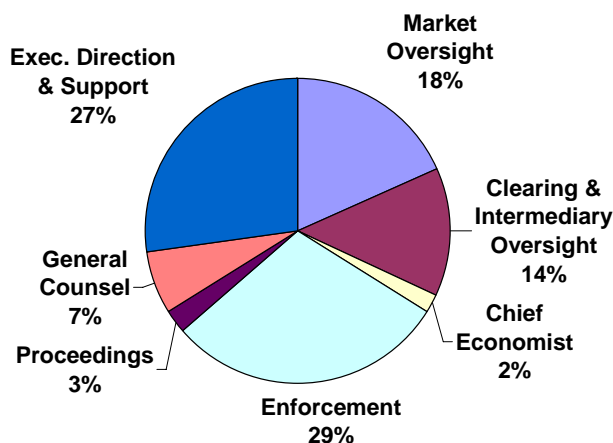
#### **1. CFTC Organization**

To accomplish its mission, CFTC has seven major operating divisions or offices. The Division of Market Oversight and the Division of Clearing and Intermediary Oversight provide market trading and clearing surveillance. The Division of Enforcement investigates and prosecutes violations of the CEA and CFTC regulations. The Office of Chief Economist provides economic analysis; the Office of the General Counsel provides legal advice; the Office of Proceedings handles customer complaints; and the Office of Executive Direction and Support develops and administers CFTC policies and regulations. Figure 60 shows the relative budget allocations among the CFTC operating units.

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<sup>154</sup> Source: CFTC website, at [www.cftc.gov](http://www.cftc.gov). For more information on the history of the CFTC, please see the Subcommittee’s prior report, *U.S. Strategic Petroleum Reserve: Recent Policy Has Increased Costs to Consumers but Not Overall U.S. Energy Security*, U.S. Senate Permanent Subcommittee on Investigations, Washington, DC: March 5, 2003, pp.159-162.

Figure 60

**CFTC FY2007 Budget By Program Division**

*Fig. 60. Resource allocation among CFTC program divisions. Data source: FY2007 Budget and Performance Estimate.*

Three divisions play key roles in preventing fraud, manipulation, and excessive speculation in the commodities markets. They are the Division of Market Oversight, the Division of Clearing & Intermediary Oversight, and the Division of Enforcement.

The Division of Market Oversight is primarily responsible for conducting the CFTC's market surveillance program. Its analysts review trading data to detect suspect price movements and determine whether traders' positions are significant enough to affect commodity prices. This division also reviews actions taken by regulated exchanges to enforce trading rules, such as limits on speculative positions. The Division of Clearing & Intermediary Oversight reviews clearing practices, management of margin accounts, and the settling of accounts between trading parties.

Although investigations into potential misconduct may be initiated by the Market Oversight Division, CFTC's Enforcement Division is responsible for pursuing any such investigations and prosecuting any instances of fraud, manipulation, abusive trading practices, or other violations of the Commodities Exchange Act or CFTC regulations. If the Enforcement Division determines that a violation has occurred and the CFTC Commissioners concur, the CFTC can file civil or administrative injunctions, seek suspensions or revocations of trading registrations, and impose civil monetary penalties.<sup>155</sup>

The CFTC has devoted a sizeable portion, roughly 40%, of its Enforcement staff resources to its New York City office, where CFTC staff confer regularly with NYMEX staff. If NYMEX provides the CFTC with evidence of potential wrongdoing, the CFTC can either pursue the case on its own or return the case to NYMEX for further action.<sup>156</sup> In addition, pursuant to

<sup>155</sup> For criminal cases, the Enforcement program works with the Department of Justice to file and prosecute cases. The CFTC has also filed actions against false or misleading advertising for illegal futures and options.

<sup>156</sup> NYMEX interview, January 23, 2007.



FERC's new responsibility under the Energy Policy Act of 2005 to conduct market oversight to prevent manipulation of energy prices, the CFTC and FERC have entered into information sharing agreements to discuss energy-related cases.<sup>157</sup>

## 2. CFTC Market Surveillance Program

CFTC's market surveillance program is designed to prevent misconduct in the U.S. commodity markets. The CFTC states on its website, "The primary mission of the market surveillance program is to identify situations that could pose a threat of manipulation and to initiate appropriate preventive actions."<sup>158</sup>

CFTC's primary tool for identifying suspect conduct is its "large trader reporting system."<sup>159</sup> Under this system, clearing members of regulated exchanges must submit to the CFTC daily reports with end-of-day positions, including buy or sell volumes and trading activity, for traders holding positions above a certain threshold.<sup>160</sup> These thresholds are set by the CFTC after considering the total open positions in that market, the size of positions held by traders in the market, and CFTC's surveillance history of the market.<sup>161</sup> The reporting threshold in the natural gas market, for example, is any trader that holds 200 or more natural gas contracts. CFTC calls the large trader reporting system the "backbone" of its market surveillance program, and estimates that large trader reports provide it with data on 70-90% of the total open interest in any given market.<sup>162</sup>

In addition to large trader reports, the CFTC requires each regulated exchange to provide it with a daily report containing overall trading information, including such data as the total gross open contracts, trading volumes, and prices (including the lowest and highest price of sales or bids) for each futures and option product by contract.<sup>163</sup> This exchange report must also include open long and short positions, purchases and sales, exchanges of futures for cash, and futures delivery notices. This data enables the CFTC to compare overall exchange data with the large trader reports to identify any discrepancies.<sup>164</sup> It also enables the CFTC to review individual

<sup>157</sup> See CFTC Press Release No. 5127-05, "CFTC Chairman Jeffrey and FERC Chairman Kelliher sign MOU on Information Sharing, Confidentiality," October 12, 2005.

<sup>158</sup> Backgrounder: The CFTC Market Surveillance Program; July 2001.

<sup>159</sup> See CFTC Report: "Backgrounder: The CFTC's Large-Trader Reporting System," available at [www.cftc.gov/opa/backgrounder/opa-ltrs.htm](http://www.cftc.gov/opa/backgrounder/opa-ltrs.htm) (hereinafter "CFTC Backgrounder: Large-Trader Reporting System"). Data from large trader reports are made available to the public in CFTC's "Commitment of Traders" reports. NYMEX told the Subcommittee that it also reviews the large trader reports filed with the CFTC. NYMEX interview, January 23, 2007.

<sup>160</sup> CFTC receives large trader reports from members of clearing organizations, futures commission merchants, and foreign brokers. As described earlier in this report, the buyers and sellers on an exchange do not actually transact with each other directly, but trade through members of the exchange's clearing organization. An individual trader may also use a clearing broker.

<sup>161</sup> For physical-delivery markets, the threshold would also depend upon the volume of deliverable supplies. See CFTC Backgrounder: Large-Trader Reporting System; Commission Reg. 15.03(b).

<sup>162</sup> Testimony of Reuben Jeffrey III, CFTC Chairman, before the US Senate Committee on Banking, Housing, and Urban Affairs, July 25, 2006.

<sup>163</sup> See 17 CFR 16.01.

<sup>164</sup> According to CFTC, a comparison is made if "a) the sum of clearing members' large-trader positions exceeds the members' open cleared positions, or b) a clearing member has a cleared position many times the reporting level for a given market, but reports little or no large trader positions." CFTC Backgrounder: Large-Trader Reporting System.

traders' activities across multiple exchanges. In addition, the data helps the CFTC monitor the enforcement of margin requirements and evaluate whether clearing members have sufficient capital on hand to cover their clients' trading positions.

Besides routine large trader and exchange reports, the Market Oversight Division has the authority to request trading data directly from traders or non-regulated exchanges through issuance of a "special call."<sup>165</sup> A special call may request additional information about a participant's trading and delivery activities, including related over-the-counter (OTC) transactions. The CFTC has used this authority in energy markets.<sup>166</sup>

In addition to collecting and analyzing trading data, the Oversight Market Division conducts market oversight by engaging in discussions with market participants to better understand their trading positions and strategies. In a process CFTC calls "jawboning," CFTC market surveillance staff meets with regulated exchanges like NYMEX and with individual companies and traders to clarify or discuss positions that could potentially disrupt the futures and options markets.<sup>167</sup> The Market Oversight staff presents any issues of concern to CFTC Commissioners on a weekly or more frequent basis.<sup>168</sup>

### 3. Limitations in CFTC Market Surveillance Program

The CFTC's market surveillance system has a number of limitations that prevent the agency from obtaining a comprehensive view of commodity markets and hinder its ability to detect and prevent fraud, manipulation, and excessive speculation.

First, no market data is obtained on a routine basis from key commodity markets, such as ICE, which are exempt from CFTC authority. The absence of this data means that CFTC is unable to obtain a complete picture of these markets. Second, CFTC has limited capability to process and review daily transactional trading data. Third, CFTC has limited capability to integrate trading data across exchanges.

CFTC analyses have typically focused on reviewing end-of-day reports on large trader positions. However, reports on the trader's end-of-day net position—the difference between their open long contracts and open short contracts in any one commodity—do not contain any information about that trader's activity during the trading session. If a trader ends the day with no net position or change in position, that trader would not appear in an end-of-day report, even if the trader had made numerous intraday trades.

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<sup>165</sup> 7 U.S.C. § 6g(d).

<sup>166</sup> Starting in October 2006, for example, in response to a special call, ICE began supplying the CFTC with clearing member position data for contracts that are cash-settled, based upon NYMEX natural gas contract prices. The CFTC emphasizes, however, that "consistent with the regulatory framework governing ECMs set forth in the CEA, [the special call was not] issued in order to conduct regular market surveillance of the ICE contracts themselves." See CFTC letter to Senator Jeff Bingaman, February 22, 2007, pp. 3, 7.

<sup>167</sup> For a more detailed discussion of jawboning, see the Subcommittee's prior report, "*U.S. Strategic Petroleum Reserve: Recent Policy Has Increased Costs to Consumers but Not Overall U.S. Energy Security*," Washington, DC: March 5, 2003, p. 139.

<sup>168</sup> Testimony of James E. Newsome, CFTC Chairman, at Senate Hearing before the Committee on Energy and Natural Resources, "Enron Corporation's Collapse," Senate Hr. 107-458; January 29, 2002, p. 27.

Recently, however, both ICE and NYMEX have voluntarily provided CFTC daily trading data about each transaction taking place on the exchange. Largely as a result of the lessons learned from Amaranth's trading practices, since early this year ICE has been providing daily transactional data to CFTC on a voluntary basis. Similarly, earlier this year NYMEX began providing to CFTC daily transactional reports, which include key data on all transactions, not just the large trader positions. These are much-needed improvements and efforts by both exchanges that will enhance CFTC's oversight capabilities.

CFTC has not yet developed the technological systems to be able to integrate this voluminous amount of incoming data to provide meaningful market analyses without significant effort. Unlike SEC, whose systems integrate trading data from multiple exchanges, a team of CFTC staffers must manually integrate this exchange data each day.<sup>169</sup> Without an automated, consolidated view of trades that can be frequently updated in real-time across exchanges, it will continue to be difficult for CFTC to respond to changing trading patterns and strategies in a timely manner.<sup>170</sup>

A fourth problem is that, unlike SEC's electronic information recall system,<sup>171</sup> CFTC is currently unable to readily match trades to the traders behind them for all exchanges.<sup>172</sup> In order for CFTC to assess how much volume and open interest a trader has in related products, it needs to be able to identify and calculate that trader's aggregate positions across exchanges and with respect to related products.<sup>173</sup> Since traders may use more than one clearing firm, trade on multiple exchanges, and use multiple related products, CFTC analysts currently have to compare multiple reports by hand, identify anomalies, and request trader identification information from each of the relevant clearing members or exchanges. This slow and cumbersome process stands in stark contrast to the technological capabilities of the SEC.

CFTC's current market surveillance systems were developed during an era when trading involved mostly physical commodities and occurred on an exchange floor. Its surveillance tools have not matched the subsequent growth in commodity trading, commodity traders, electronic trading, and speculative trading, especially for energy products. Its systems have become

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<sup>169</sup> Since the 1970s, the securities markets have been consolidating all trades from all exchanges, including those conducted over-the-counter, onto an electronic tape, through a process supervised by the exchanges and monitored by SEC. The electronic tape allows SEC and the exchanges to review real-time prices and trading volume on all trades, which are reported by exchange members or broker dealers. SEC interview, April 12, 2007.

<sup>170</sup> SEC reviews small short-term significant changes in prices, and when surveillance staff suspect manipulation of prices or insider trading, they pull out the tape and make a issue an electronic "blue sheet" to the registered broker find out who the beneficial owner, or actual customer is. As SEC staff described it, the process can take place relatively quickly, allowing a smooth review of trading and highlighting any particular insider trading developments as they occur. SEC interview, April 12, 2007.

<sup>171</sup> The SEC uses an electronic blue sheets system which allows its staff to quickly find out from the registered broker who the beneficial owners or customer is behind a particular trade. The SEC staff said the system allows a smooth review of trading and highlighting any particular insider trading developments as they occur. SEC interview, April 12, 2007.

<sup>172</sup> The ICE trading data clearly identifies each trade both by clearing firm and by customer. Traders on ICE, however, are not permitted to trade through brokers; this prohibition eliminates the difficulty of identifying the ultimate purchaser in brokered trades that other exchanges face when generating this data.

<sup>173</sup> For example, in natural gas, NYMEX staff told the Subcommittee that there are up to 7 trading products which "net out" for a trader's complete natural gas position, such as options linked to futures prices. NYMEX interview, April 12, 2007.

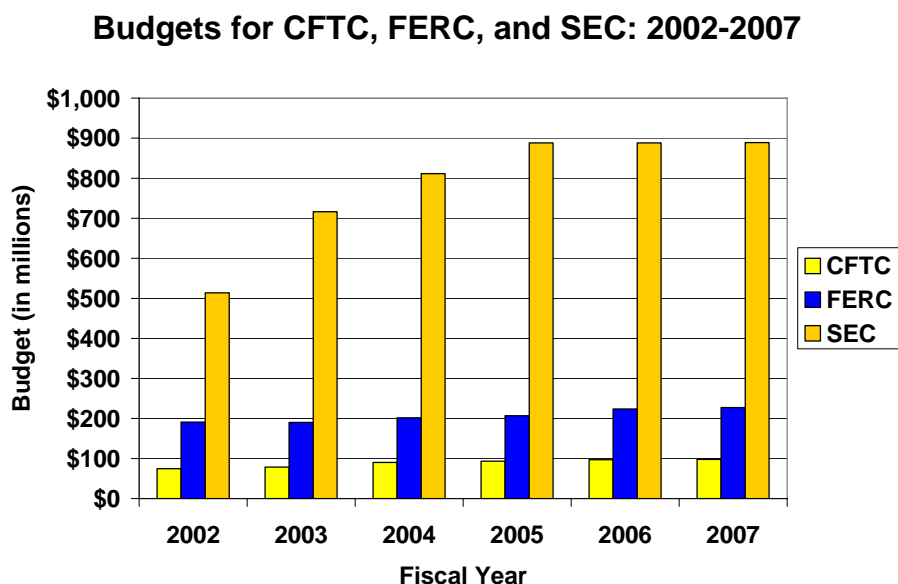
antiquated and are in dire need of upgrading if CFTC is to fulfill its mission of detecting and preventing fraud, manipulation, and excessive speculation.

## B. Limited CFTC Resources

### 1. Limited Funds and Personnel

Since its inception in 1974, CFTC has operated with a modest budget and a relatively small staff, especially compared to the SEC and Federal Energy Regulatory Commission (FERC). In recent years, Congress has dramatically increased the resources of both SEC and FERC which have used their larger budgets to hire more staff and upgrade electronic surveillance of the markets they oversee. In contrast, Congress has failed to provide CFTC with the resources needed to monitor the explosion in commodities trading that has taken place over the past few years.

Figure 61



*Fig. 61. CFTC operates with less than half the budget of FERC and about one-eighth of the budget of SEC. Data source: SEC, FERC, and CFTC Budget Estimates, 2002-2007.*

Figure 62

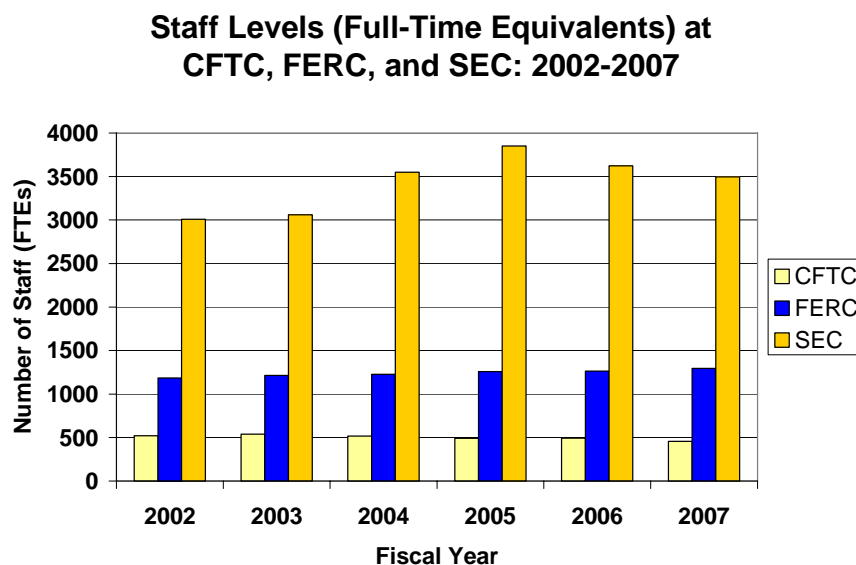


Fig. 62. Since 2002, staff levels at CFTC have decreased while staff levels at SEC and FERC have risen. Data source: SEC, FERC, and CFTC Budget Estimates, 2002-2007.

**SEC Resources.** In 2002, the General Accounting Office (GAO) reported that SEC staff resources were not commensurate with its workload.<sup>174</sup> At the time, the securities markets had undergone enormous change, with more participants and increased complexity in market transactions. GAO pointed out that SEC’s limited resources did not allow SEC to “adequately deal with new and emerging issues” in securities trading, including technology-related changes. In an interview with Subcommittee staff, SEC said that accounting scandals such as those at Enron and Worldcom drew attention to its inability to keep up with increased activity in the securities market.<sup>175</sup>

In response, Congress more than doubled the SEC’s funding, from \$377 million in 2000 to \$881.6 million in 2007. SEC staff told the Subcommittee that the additional funding has been used to increase staffing levels, increase staff pay (implementing pay parity), and upgrade and implement new technology systems. The total number of full time SEC staff increased from 2,936 in 2001, to 3,623 in 2007, with significant increases in staff for the enforcement and examinations programs. Additional funding for staff resources was devoted to pay parity, as employees had cited low pay as a primary reason for leaving SEC. SEC staff told Subcommittee staff that the high staff attrition rates of the mid to late 1990s have dropped to 6% today. Similarly, increases for information technology have improved existing technological systems, such as for filing reports electronically, and new systems used for increased surveillance. For example, SEC has streamlined its monitoring of securities markets so that it receives real-time data from all exchanges as well as OTC markets on a continuous feed. SEC has also made the

<sup>174</sup> U.S. General Accounting Office: *SEC Operations: Increased Workload Creates Challenges* (GAO-02-302) Washington, DC: March 2, 2002.

<sup>175</sup> SEC interview, April 12, 2007.

process by which it identifies the owners of securities entirely electronic, moving from paper “blue sheets” to an electronic blue sheet system.

**FERC Resources.** FERC has also received recent funding increases to strengthen its oversight capabilities. In the Energy Policy Act of 2005, Congress increased FERC’s budget authorization and expanded its authority to conduct market surveillance and oversight to prevent energy price manipulation.<sup>176</sup> FERC’s budget for its market oversight and investigations office, for example, was increased from \$12 million in 2003 to \$18 million in 2007, with an addition of 40 full-time personnel. With additional funding, FERC has also transformed its electronic surveillance of the energy markets, obtaining real-time data from multiple markets. Among other innovations, FERC created automatic alerts based upon the raw data it collects on natural gas and electricity prices to draw analysts’ attention to potential concentrations of market power as they develop.<sup>177</sup>

**NASD Resources.** The National Association of Securities Dealers (NASD) is a private self-regulatory body that, among other duties, monitors over-the-counter securities trading.<sup>178</sup> NASD spends over \$100 million a year on its computer systems, a technology budget that is larger than the CFTC’s entire FY2007 budget of \$98 million.<sup>179</sup> NASD uses its surveillance systems to conduct market oversight.<sup>180</sup> Among other systems, NASD compiles and publicly disseminates corporate bond transactions in real time “in a ticker-like fashion” through its Trader Reporting and Compliance Engine (TRACE).<sup>181</sup> This system averages 22,000 transactions each day, representing more than \$18 million in trading volume. In the OTC securities markets, NASD has worked through several generations of its Securities Observation News Analysis and Regulation (SONAR) program, which allows surveillance staff to electronically recreate the OTC market second by second, using news, market information and data mining to track down possible instances of fraud or insider trading. SONAR stores companies’ financial and news information so that NASD surveillance staff can quickly review a firm’s market share, volume concentrations, and other event scenarios. NASD’s system is considered state-of-the-art in the market surveillance field.

**CFTC Resources.** In contrast to SEC, FERC and NASD, CFTC budgets have not seen dramatic increases commensurate with the increased complexity and volumes of commodity trading. CFTC budget levels have grown slowly, while staffing levels have actually declined over time. When the CFTC was first established in 1974, its began with about 450 full time

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<sup>176</sup> Energy Policy Act of 2005, P.L. 109-58.

<sup>177</sup> See discussion of Market Monitoring Center, Federal Energy Regulatory Commission, *Congressional Performance Budget Request, FY2007*, February 2006, p. 67.

<sup>178</sup> NASD is recognized by SEC as a self-regulator for broker dealers that are not registered with a securities exchange, particularly those who trade in the over-the-counter (OTC) market.

<sup>179</sup> NASD interview; NASD 2005 Annual Financial Report, p. 32. NASD also spends \$172 million a year in compensation and benefits for its 2,492 employees, as of December 31, 2005.

<sup>180</sup> In its 2005 annual report, NASD cites its oversight statistics: it oversaw more than 655,000 individual brokers and 5100 brokerage firms, conducted 6,200 reviews based on its surveillance of market activity covering more than 3,300 issues listed on NASDAQ, 8,200 OTC securities, resulting in 1400 enforcement actions filed by its 115 enforcement attorneys. The NASD report states: “Since we don’t live in a perfect world, there has to be an NASD to keep the rest of the financial marketplace honest.” *Id.*, p. 16.

<sup>181</sup> NASD 2005 Year in Review, p. 8.

staffers, gradually reached a peak of about 560 personnel in 1998, and fell back to about 450 staffers in 2007. Figure 63 depicts CFTC budget and staffing levels over the last decade.

Figure 63

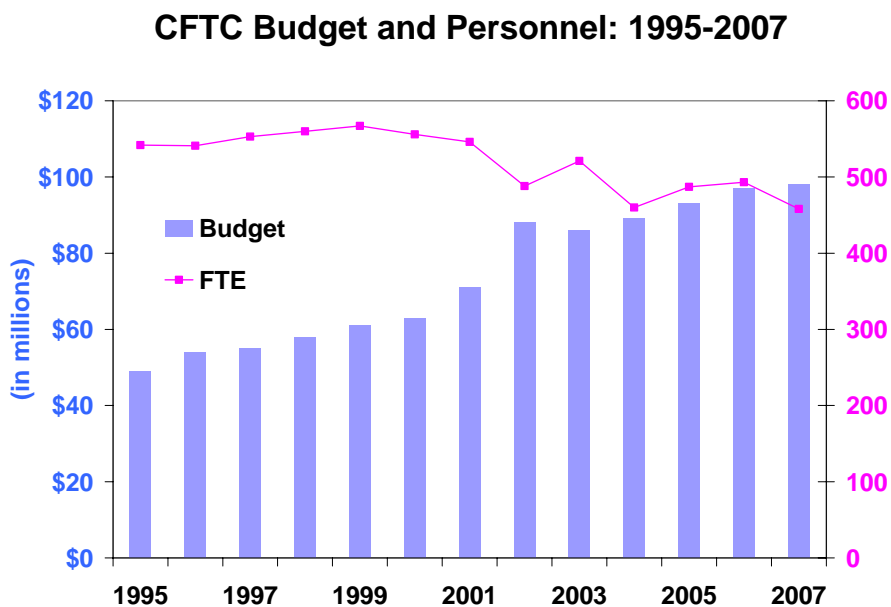


Fig. 63. CFTC staffing levels have declined since reaching their peak in 1998. Data source: President's Budget Requests, 1995-2008.

CFTC officials told the Subcommittee that its current budget level severely constrains its ability to attract and retain key staff, upgrade existing computer systems, and modernize its electronic market surveillance and enforcement tools to adapt to changes in commodities trading.<sup>182</sup>

**Staffing Constraints.** CFTC officials told the Subcommittee that it has had difficulty hiring and retaining staff in part because of limited funding for staff salaries. Although CFTC received the authority to compensate its employees to a similar extent as other federal financial regulators under “pay parity” rules enacted in 2002, CFTC officials told Subcommittee staff that the Commission has not received enough funding to fully implement the pay parity authorization, and CFTC employees currently earn 20% less than other federal financial regulators.<sup>183</sup> CFTC told the Subcommittee that it lost 58 experienced hires in FY2006, and their budget document states that over 30% of their senior managers may retire in the next three years. In addition, CFTC staff told the Subcommittee that the agency instituted a hiring freeze in October 2005, further hindering efforts to improve staffing.

<sup>182</sup> CFTC staff interview, March 26, 2007.

<sup>183</sup> Under the Farm Security and Rural Investment Act of 2002, § 10702, the CFTC was authorized to pay its staff “pay parity” with the banking regulators and SEC.

**Information Technology.** In addition to a staffing crisis, CFTC recognizes its current market surveillance systems are “woefully out of date.”<sup>184</sup> Currently, CFTC has two major information systems to monitor transactions on commodities. Data from clearing members and the exchanges are entered into the Integrated Surveillance System (ISS) and used in the Large Trader Reporting System.<sup>185</sup> CFTC staff told the Subcommittee that because they do not have a standard means of compiling data from clearing members and brokers, a team of 12 staff has to assemble position and financial information into one platform each day for analysis.

CFTC’s second information system is the Exchange Database System (EDBS), which handles clearing member data from CFTC regulated exchanges, to monitor trading abuses such as trading ahead of customers. It was designed for analyzing data traded on the floor, or “pit,” when cards were flung across the trading floor. However, today’s commodities markets have shifted away from pit trading to electronic trading. According to the CFTC, trading volume on NYMEX, Chicago Board of Trade, and Chicago Mercantile exchanges is now about 70-75% screen-based and 25-30% floor-based,<sup>186</sup> with electronic trading at NYMEX having increased over 200% in 2006 alone.<sup>187</sup>

CFTC’s strategic plan calls for a new system called the Trade Surveillance System (TSS), which would allow CFTC staff to integrate data from across exchanges, including floor and electronic trading, to determine inter-exchange violations or price manipulations, all of which the current systems currently cannot process.<sup>188</sup> As a CFTC official described it, to go from EDDBS to TSS would be “like going from the faucet tap to a fire hose” of data.<sup>189</sup> CFTC’s strategic plan for 2004-2009 estimates that TSS would cost \$3.5 to \$4.5 million and take two and a half years to fully implement. CFTC staff told the Subcommittee that its FY2008 budget request includes no funding to start work on the TSS system.

CFTC staff also explained that, in recent years, the agency has had to divert funding from information technology needs to personnel costs. CFTC staff noted that its 2008 request for a budget increase for information technology is simply to bring its existing systems into compliance with general federal government information technology requirements, and not to upgrade or introduce new CFTC-specific surveillance or enforcement systems.<sup>190</sup> CFTC estimates that its investment in technology development as a percentage of its annual appropriations has dropped from about 10% to less than 7% over the past five years.<sup>191</sup> Furthermore, given its limited budgetary resources, CFTC has not yet begun to allocate funds towards re-engineering its systems.

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<sup>184</sup> CFTC, FY2004-FY2009 Strategic Plan, p. 12. In its strategic plan, CFTC lists several priorities related to the development of new trade surveillance systems that will remain “effective and robust” as trading becomes increasingly screen based.

<sup>185</sup> CFTC interview, March 26, 2007.

<sup>186</sup> CFTC’s FY2008 OMB Budget & Performance Estimate, at p. 21; CFTC interview, 3/26/07.

<sup>187</sup> NYMEX website. *NYMEX Holdings, Inc. Reports Record Fourth Quarter and Full Year 2006 Results*, 1/31/07, at [http://www.nymex.com/press\\_releas.aspx?id=pr20070131a](http://www.nymex.com/press_releas.aspx?id=pr20070131a).

<sup>188</sup> Commodity Futures Trading Commission: FY2004-2009 Strategic Plan, p. 12.

<sup>189</sup> CFTC interview, March 26, 2007.

<sup>190</sup> CFTC interview, March 26, 2007.

<sup>191</sup> Reuben Jeffery III, CFTC Chairman, testimony before the U.S. Senate Subcommittee on Financial Services and General Government Committee on Appropriations, March 9, 2007; p. 8.



**Enforcement.** More staff and greater budgetary resources would also help improve CFTC's enforcement efforts, which are currently strained. According to testimony and budget documents, in the past three years, CFTC's enforcement program has filed more actions than in any other time in the program's history. CFTC enforcement division reports typically list over 100 investigations open at any one time.<sup>192</sup> Many of the recent enforcement actions have been against traders in the natural gas markets. From 2002-2006, CFTC filed 34 cases and charged 54 persons for violations related to energy markets.<sup>193</sup>

CFTC states that the increase in litigated cases without a subsequent increase in funding has diverted CFTC staff from opening and pursuing new cases. The division has lost 11% of its staff in the past two years and due to the hiring freeze has not been able to hire additional personnel.<sup>194</sup> Technology also poses challenges for enforcement staff. CFTC's fiscal year 2008 budget request cites: "the dramatic increase in electronic trading poses additional challenges to the Enforcement program in terms of potential novel violations (or adaptations of traditional trade practice violations) and potential audit trail gaps. These challenges will require additional resources not only for investigation and prosecution but also for Enforcement staff training."<sup>195</sup>

CFTC has found that investigating alleged abuses in the energy markets requires its staff to analyze volumes of trading data, hire experts, and review activities across multiple energy markets. Without additional resources, as CFTC's budget request states, "there is a substantial risk that abusive trading in energy futures markets will go undetected, potentially costing American consumers hundreds of millions of dollars in additional energy costs."<sup>196</sup>

## 2. Increased Funding Through User Fees

Under the current funding system, the CFTC is funded through general appropriations and must compete against all other government functions to secure resources. A more effective approach, already used to fund all other federal financial regulators, including the SEC, FERC, Federal Reserve, Office of the Comptroller of the Currency, and Federal Deposit Insurance Agency, would allow the CFTC to obtain funding through user fees imposed on the markets it regulates; here the commodity markets. A 2007 Congressional Research Service report notes that "every President since Ronald Reagan" has asked Congress to authorize such fees, including the Bush Administration.<sup>197</sup> The President's 2008 budget states that the "CFTC is the only Federal financial regulator that does not derive its funding from the specialized entities it regulates."<sup>198</sup>

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<sup>192</sup> CFTC FY 2008 OMB Budget and Performance Estimate, p. 13.

<sup>193</sup> *Id.*, p. 5.

<sup>194</sup> CFTC, FY2006 Performance and Accountability Report, November 2006, p. 19.

<sup>195</sup> CFTC, FY2008 OMB Budget & Performance Estimate, p. 59.

<sup>196</sup> *Id.*, p. 49. See also "Algo trading raises stakes for market regulators," Reuters, June 5, 2007 (describing regulatory review issues related to electronically placed trade orders by "hyper-fast computer programs").

<sup>197</sup> See Congressional Research Service report, "Proposed Transaction Fee on Futures Contracts," Report No. RS22415, p. 1. CFTC's FY2008 budget includes a proposal to collect a "new transaction fee on commodity futures and option contracts traded on approved exchanges."

<sup>198</sup> The Budget for Fiscal Year 2008, Appendix, p. 1041.

User fees would ensure that the persons who benefit from well regulated commodity markets contribute to the cost of policing such markets. While it is often suggested that the fee apply only to commodities traded on regulated exchanges, a better approach would be to apply the fee to both regulated and exempt exchanges, since a more broad-based fee would reduce the costs per trade and would ensure that regulated exchanges are not placed at a competitive disadvantage compared to exempt exchanges. In other words, any CFTC user fee should apply to trades not only on NYMEX, but also on ICE, since both markets play key roles in energy pricing and both markets require policing to detect, prevent, and punish misconduct. In addition, while the President's budget proposes fees to cover CFTC's current funding levels, the better approach would be to collect sufficient funds to enable the CFTC to modernize its antiquated technological systems, meet its staffing needs, and strengthen its oversight and enforcement functions.

## VIII. ADDITIONAL MINORITY STAFF VIEWS ON THE REPORT

This Report represents the culmination of the Subcommittee's extensive investigation into the impact of speculative trading on U.S. energy markets. This inquiry stems from the Subcommittee's bipartisan staff report entitled, *The Role of Market Speculation in Rising Oil and Gas Prices: A Need to Put the Cop Back on the Beat*, which was issued in June 2006. This investigation has been a bipartisan effort from its inception and we applaud the Majority's tireless dedication throughout this process. The recommendations in this Report comport with those of the Subcommittee's June 2006 report and, to that extent, we join with the Majority on a bipartisan basis to make these recommendations.

While we join with the Majority in making these recommendations, we are unable to reach some of the same factual findings with the same degree of certitude. For instance, although a number of facts presented in the report support the conclusion that Amaranth's trading activity was the primary cause of the large differences between winter and summer futures prices that prevailed throughout 2006, other facts seem to indicate the opposite – that market fundamentals and price changes influenced Amaranth's positions. These facts suggest that, at least at times, Amaranth was responding to the market, rather than driving it. For example, although the price of natural gas declined substantially after Amaranth's demise, this alone does not prove Amaranth's ability to elevate prices above supply and demand fundamentals; rather, the market may have simply reevaluated those fundamentals in light of the hurricane season ending without a major event and the prediction of a warm winter. It is clear that different conclusions can be drawn from the same set of facts.

To be sure, the factual findings presented by the Majority regarding Amaranth's impact on natural gas prices are compelling and raise valid concerns that demonstrate the need for greater transparency in our energy markets. Moreover, factual findings regarding the degree to which Amaranth affected prices are not necessary to justify the recommendations articulated in this report. We make these recommendations because they will better preserve the integrity of U.S. energy markets. As an increasing amount of U.S. energy trades occurs on unregulated, over-the-counter electronic exchanges, the CFTC's large trading reporting system becomes less accurate, trading data becomes less useful, and market surveillance becomes less comprehensive. The structure, pricing, and trading of energy futures contracts and standardized, cleared energy swaps traded on electronic, over-the-counter exchanges are functionally equivalent, and the primary markets on which the two instruments are traded should receive equivalent regulatory treatment.

Any implementation of these recommendations must be clearly defined and targeted to preserve the integrity of our energy markets. As a threshold matter, regulators need to develop a clear definition of "excessive speculation." Without a clear, unequivocal definition of that term, the CFTC and regulated exchanges will continue to have difficulty monitoring and preventing price distortions. More important, we must ensure that any proposed cure is not worse than the disease. If we extend CFTC oversight and regulation to electronic, over-the-counter exchanges, we must avoid unintended consequences – namely, creating incentives for traders to shift their business to the far less transparent and unregulated bilateral, voice-brokered markets.

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