ICE OTC™

Natural Gas

IntercontinentalExchange® (ICE®) operates regulated global futures exchanges and over-the-counter (OTC) markets through a globally distributed electronic platform and offers trading in thousands of OTC contracts covering a broad range of energy-related products and contract types. ICE OTC® market participants include many of the world's largest energy companies, leading financial institutions and proprietary trading firms, as well as natural gas distribution companies and utilities.

Founded in 2000 as an OTC energy marketplace, ICE now serves several broad segments of the derivatives market, including energy, agriculture and soft commodities, credit derivatives, foreign exchange and equity indexes.

ICE OVER-THE-COUNTER MARKETS

Futures contracts are characterized by standard grades or differentials to marker grades (such as Brent and WTI), standard delivery points or cash settlement procedures, standard sizes and fixed delivery schedules. Despite their widespread acceptance and proven successes, however, futures markets have one critical limitation compared to OTC markets: standardization. While this is extremely useful for price discovery and establishing trade bases for futures contracts, standardization also requires a commonality of cash market practices and behaviors that may not exist for all traded products.

OTC markets can be customized by size, location, grade, and time and place of delivery or cash settlement. They allow for a wide variety of contract customization in terms of swaps, differential and spread trades and options. Many of these are so-called "exotic options" - such as average-price or Asian options, barrier options, spread options and swing options - and conform far more closely to the needs of cash market players than American- and European-style options commonly traded on exchanges.

Historically, OTC markets presented two drawbacks compared to futures markets: central clearing and transparency. Central clearing, in which a clearing house such as ICE Clear Europe® takes the opposite side of each trader's position and guarantees the trade, reduces counterparty credit risk of a centrally cleared market to the credit protection offered by the clearing house. Transparency, or the ability of interested parties to see what transactions have been executed at a given price, is a vital information-signaling mechanism essential for attracting liquidity to a market. Markets with central clearing and price transparency seldom are abandoned in a crisis; the same cannot be said for OTC markets without these attributes.

Experienced traders, both commercial and financial, learn quickly that the differences between futures markets and OTC markets are not an either-or proposition. Each enhances the other. Whether the market is for interest rate contracts, currencies or physical commodities such as natural gas, traders can create combinations of futures and OTC positions to fix prices paid or received, float prices paid or received, or convert fixed prices or rates into floating prices or rates (or vice-versa).

The massive depth and liquidity of the natural gas and power markets would not exist in a futures-only or OTC-only world. It is the blending of both that makes futures and OTC markets a powerful and useful combination for commercial and financial traders.

Today, non-commercial or financial players participate in OTC markets without a physical position. This is a major benefit, as financial traders were historically confined to the single-market world of exchange-traded futures. Attributes of OTC markets on ICE include:

- **Open participation.** ICE's trading screens are distributed worldwide. Participants include energy companies, financial institutions, utilities, refiners and chemical and transportation companies. This is a balanced mix of commercial and noncommercial traders and of liquidity providers and takers with long- and short-side price risks.

Unlike traditional open-outcry futures exchanges, ICE OTC markets are not restricted to members only. Parties qualified as exempt commercial entities are eligible to participate. Eligibility is based on asset levels, ability to absorb risk or ability to make or take delivery of a given commodity. Financial institutions that provide risk-management or hedging services to commercial participants in the industry may qualify to participate. Registered traders and local participants with floor or electronic trading privileges on any regulated U.S. futures exchange qualify as exempt commercial entities. Before making a transaction, applicants must execute ICE's standard Participant Agreement, which governs the terms and conditions of the participant's relationship with ICE and grants a non-exclusive, non-transferable, revocable license to access the ICE platform.

- **Transparency.** All posted quotes are live, firm and anonymous ICE offers numerous features to assist participants with managing order and trade books, such as holding and resuming orders, canceling, custom sorts and modification with fast in-line trading. Each transaction is encrypted. Completed trades are archived and protected by the system firewall.

The credit management system allows credit and risk managers from all registered companies to specify and pre-clear credit for trading. This system is one of the exchange's most robust and sophisticated facilities. In addition to bilateral credit, it supports clearing for more than 120 contracts through ICE Clear Europe. In conjunction with ICE's comprehensive credit risk management system, traders can manage bilateral and cleared credit settings, including:

- Manage bilateral credit settings by market type or company
- Track all credit changes via a change log
- Single-click account request for all clearing firms on ICE
- Detailed view of accounts
- Simple assignment of accounts to traders with detailed account views
- Retrieval and export of current-day and historical settlement reports for all ICE cleared products

- **OTC Cleared.** Cleared OTC trading reduces bilateral credit exposure while improving capital efficiency and increasing market liquidity. The safety and security of a central clearing house is combined with the flexibility of the ICE platform. Cleared OTC contracts can be traded in one of two ways: matching directly through the ICE matching engine, or through a broker via the ICEBlock® application.

Margin rates for ICE OTC Clearing Products are set by the ICE Clear Europe®.

> Current margin rates

Margins can be saved or viewed in Excel format.

- **OTC Bilateral.** OTC bilateral contracts allow participants to manage counterparty credit directly. OTC bilateral contracts include crude oil and refined products, natural gas and power.

ICE's customizable electronic platform enables participants to conveniently manage bilateral credit through a credit-risk management system. Electronic execution of bilateral energy contracts provides the speed, transparency and risk management required to trade in volatile energy markets. More than 90% of Henry Hub-related natural gas transactions are cleared as opposed to bilateral. This is a strong statement about the protection provided by centrally cleared OTC products.

- **NGX Physical Gas and Power Products.** ICE provides the exclusive trading platform for virtually all natural gas and electricity products traded in the Natural Gas Exchange's (NGX) markets. NGX uses the ICE Block® system to accept cleared, voice-brokered transactions for physical gas. Through its alliance with NGX, ICE offers clearing and settlement services for physical OTC natural gas contracts on select U.S. trading hubs.

BROKER DEAL ENTRY CAPABILITY FOR CLEARED PHYSICAL OTC NATURAL GAS

ICE and NGX customers may designate specific brokerage firms to enter physical transactions for clearing through NGX utilizing ICE Block. Brokerage firms interested in physically cleared OTC natural gas contracts must execute an ICE Broker Agreement in order to qualify and be registered with ICE as an enabled broker.

> Cleared physical delivery hubs
> More information
> Contact

- **Brokered Markets.** Chatham Energy, LLC, is a leading over-the-counter (OTC) voice brokerage firm based in New York City and

is a wholly-owned subsidiary of ICE. Chatham offers transparency to both front-month and long-dated swap and options contracts through its diverse customer base and associated trading volume.

Products brokered include all aspects of the OTC market across dozens of natural gas hubs, including live and hedged contracts, spreads, calendar spread options, swaptions, and exotic option structures.

> More information
> Contact

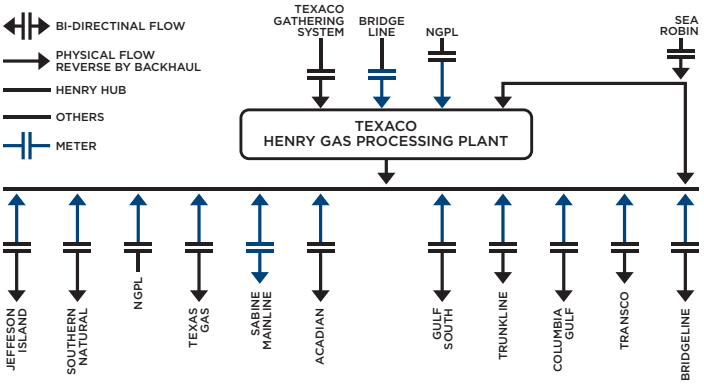
EVOLUTION OF OTC NATURAL GAS MARKETS

The principal natural gas trading hub in the North American market is, for historic and geographic reasons, Henry Hub in Louisiana. Natural gas had a long and contentious political history in the U.S. Few issues produced more regional strife than the 1954 Phillips decision (347 U.S. 672), which gave the Federal Energy Regulatory Commission's (FERC) predecessor, the Federal Power Commission, authority to regulate the wellhead price of natural gas sold in interstate commerce. This bifurcated market structure remained intact until the Natural Gas Policy Act of 1978 began the eventual rationalization of the U.S. natural gas market.

The intrastate market remained unregulated. As a result, both producers and pipelines had every incentive to serve large industrial and utility buyers in states such as Texas and Louisiana before sending supplies into interstate commerce. Prior to the mid-1970s was its abundance. Most natural gas was produced in association with crude oil, and it was considered something of a waste product to be sold to electric utilities in the region - their generators were literally fired by flare stacks - or to petrochemical firms to be converted into value-added products. The two intrastate pipeline systems - in Louisiana and Texas - by definition could not cross the state lines. The border between Texas and Louisiana near the Gulf Coast is formed by the Sabine River. The two networks of intrastate pipelines near the border begged to be connected once the artificial distinction between inter- and intrastate natural gas disappeared, and that is indeed what happened.

Sabine Pipe Line LLC, now owned by Chevron (as part of its acquisition of Texaco), connects nine interstate and four intrastate pipelines at its Henry gas processing plant in Louisiana. The ability to have bi-directional flows and switches between various pipeline systems makes Henry Hub a physical trading center as well as the basis for the flagship natural gas futures contract. Pipelines can make and take physical delivery and balance their systems at Henry Hub. The pipelines collectively serve the U.S. Midwest, Northeast, Southeast and Gulf Coast markets.

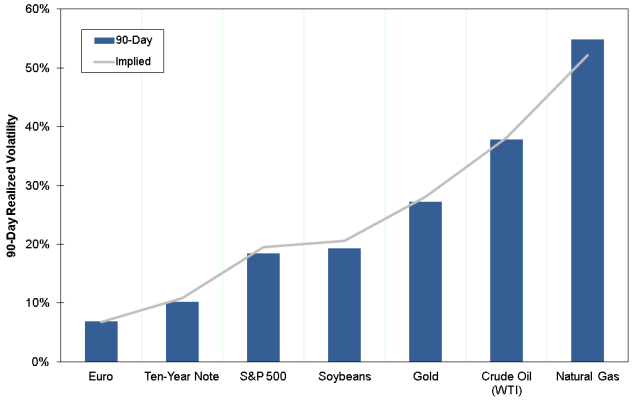
SABINE PIPE LINE LLC HENRY HUB



U.S. Department of Energy

The primacy of Henry Hub was cemented further by its selection as the delivery point for the natural gas futures market. With the advent of futures, financial traders, such as commodity trading advisors and hedge funds who had no intention of making or taking delivery of natural gas, could participate in what had been a fairly closed cash market system - one where producers sold to pipelines, who in turn owned the natural gas and sold it to local distribution companies. Natural gas has always been a volatile commodity, by virtue of inelastic supply and demand curves, but its volatility had been reflected in physical flows and not in price. The same observation could be made for electricity: its volatility was managed by utilities adding or dropping generation at the margin while selling power at fixed or near-fixed prices. Natural gas volatility, both realized and implied, is consistently among the highest of all exchange-traded futures.

AVERAGE VOLATILITIES OF SELECTED MARKETS 2003-2012

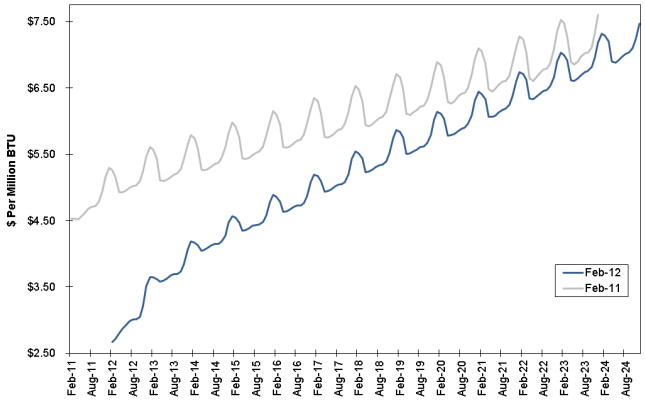


Source: Bloomberg

Not only is natural gas extremely volatile in its absolute price structure, its seasonal demand and storage cycles produce highly volatile intermonth spreads. The forward curve of natural gas futures peaks in the winter and bottoms in the summer, with the "shoulder" months of late spring and early autumn having the weakest expected

prices. However, just as yield curve shifts in interest rate markets seldom are parallel, neither are shifts in natural gas futures. A comparative snapshot of early February forward curves in 2011 and 2012 demonstrates a non-parallel shift created by an abundance of natural gas for delivery in early 2012.

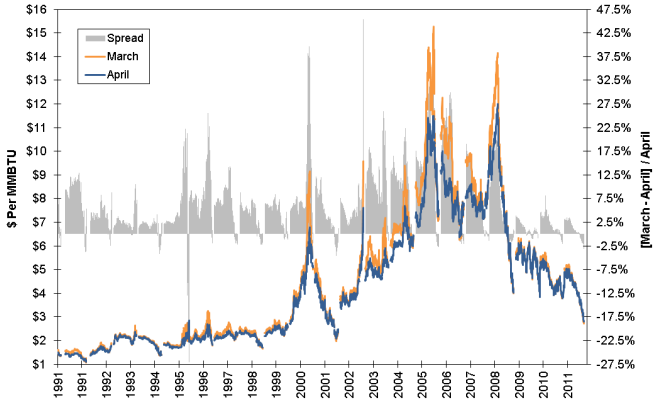
YEAR-OVER-YEAR CHANGE IN THE NATURAL GAS FORWARD CURVE



Source: Bloomberg

The most violent shifts in intermonth spreads for natural gas occur in the spread between March and April. This is because of late-winter depletion of storage in gas-consuming areas and the vagaries of weather at that time of year. This spread has been dubbed "the widowmaker" because it has brought ruin to more than one trader. The normalized spread, [March-April] / April, can spike higher and can move to negative values, depending on the market environment at the time.

THE MARCH - APRIL "WIDOWMAKER" TRADE



Source: CRB-Infotech CD-ROM

NATURAL GAS STRIPS AND SWAPS

The combination of absolute price and intermonth spread volatility, and the non-seasonal demands of many industrial natural gas consumers, naturally led to trading of strips of futures. These strips could then serve as the fixed leg of various swaps. Floating legs could be based on industry price reporting services such as Platt's Gas Daily, Natural Gas Intelligence® or Inside FERC's Gas Market Report. Common natural gas strip markets include 6, 12 and 18-month calendar strips, calendar year strips and winter and summer seasonal strips. Winter is defined as November to the following year's March; summer is defined as April-October within a calendar year.

Natural gas futures settle at the end of one month for ratable delivery at a fixed price over the succeeding month. For example, a November future whose last trade date may be October 29 will go to delivery at the last day settlement price in 1/30th increments for each day in November. The cash index prices reported each day during November will build the floating leg of the swap, with financial settlement made at the end of the period.

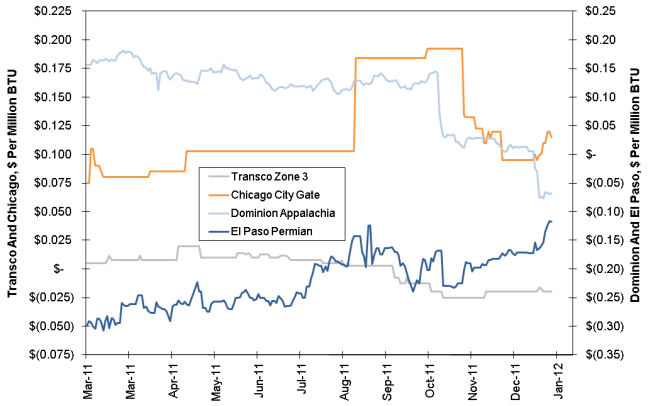
One of the most common swap types is the basis swap. This is used to hedge the difference between natural gas at, typically, Henry Hub, and a given geographic location such as a city gate pipeline terminus over a monthly period. The gas seller might receive a fixed price based on the last day of futures trading, or LD1, or some other day or combination of days, plus or minus a negotiated differential, and pay the gas buyer the published index at that location. As can be expected given the extensive nature of the North American natural gas pipeline network, the number of physical natural gas delivery hubs is quite large.

> ICE OTC delivery points and available index prices

Basis swaps differ widely from location to location. Consider how four representative swaps for winter 2011-2012 moved during the natural gas bear market of 2011. The spread into Chicago, a market served by a number of pipelines, remained steady, while the spread into Dominion Appalachia, a market not served by a large number of pipelines, remained declined. Each market is separate and must be traded as such.

A basis trader who sees low seasonal storage levels in a given market, or who believes weather-related demand may increase more than the market's consensus, might want to pay the fixed price and receive the floating price in that market. The opposite is true as well.

SAMPLE WINTER 2011-2012 BASIS SWAPS



Source: Bloomberg

Another common swap is the swing swap. This represents the exchange of a fixed price for a published daily index price. Swing swaps often are associated with volumetric risk management by utilities or large industrial users who may need the option to buy or sell additional gas at an inopportune time in the market. The most common natural gas swap traded on ICE OTC is the Financial Fixed Price Swap for LD1 (FP for LD1), a specified value in exchange for the last day NYMEX futures settlement price as determined by NYMEX.

> ICE OTC swap types and a glossary

Traders accustomed to natural gas futures, which trade in sizes of 10,000 million BTU, need to adjust to "ICE Lots," which are 2,500 MMBTU, or one quarter of the size. A strip of ICE Lots for a 31-day month has a contract and tick size of:

31 days * 2,500 MMBTU/Day * $0.001 = $77.50

The bid-ask spread for these contracts typically ranges between $0.005 and $0.10. Traders involved with winter and summer strips should be aware that the November-March winter strip and the April-October summer strip have 151 and 214 calendar days in non-leap years.

> Representative contract specification for the NYMEX FP for LD1 for Natural Gas Intelligence, Chicago

NATURAL GAS CONTRACT SPECIFICATIONS

In addition to financial gas, ICE offers dozens of hubs and delivery points for fixed price, physical basis and physical index natural gas markets, ranging from next-day through term.

> OTC natural gas contract specifications

WEBICE TRADING PLATFORM

One of the ways traders can access ICE's OTC natural gas markets is through WebICE®, a Java-based electronic trading platform available via the Internet. WebICE features include:

- Single-click order entry and trading functionality
- Seamless integration from Excel formulas into WebICE via ICEMaker® (discussed below)
- Position Keeper, which tracks daily trading activity and provides real-time profit & loss numbers
- A fully configurable trading screen to maximize the desktop area based on each trader's needs and preferences

> WebICE technical specifications and system requirements

ICE Maker allows traders to link their proprietary front end trading strategies in Excel to manage orders on the ICE platform without the need to write complex API code. ICE Maker enables traders to efficiently manage multiple simultaneous orders and complex spread relationships using Excel formulas to integrate real-time data from ICE and third-party data feeds within the browser-based WebICE. ICE Maker allows traders to:

- Manage their order book and execute orders from Excel automatically or manually
- Use proprietary formulas to derive bid and offer prices
- Derive ICE prices based on other external data points
- Simultaneously manage multiple orders
- Build Excel formulas directly within WebICE
- Use sophisticated trading tools on ICE such as "Hold on Hit" function

> ICE Maker User Guide

WebICE is designed with the needs of the trader in mind, which means setting up a trading environment with controls and restrictions outside of the parameters of the trading day. For example, prices can be color-coded as white for "can trade" or red for "cannot trade." A counterparty filter can be established by risk managers and compliance departments, and preferences can be established between bilateral or cleared trades. Trading exposures can be limited by total dollars and by tenor of the trade.

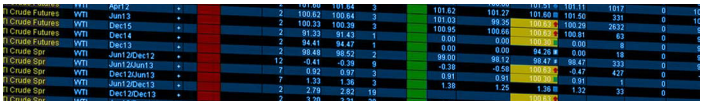
GLOBAL MARKETS IN CLEAR VIEW®

ICE delivers fast, secure trade technology and risk management solutions through a customer-driven, innovation-focused culture.

IntercontinentalExchange (NYSE: ICE) is a leading operator of regulated futures exchanges and over-the-counter markets for agricultural, credit, currency, emissions, energy and equity index contracts. ICE Futures Europe hosts trade in half of the world's crude and refined oil futures. ICE Futures U.S. and ICE Futures Canada list agricultural, currencies and Russell Index markets. ICE is also a leading operator of central clearing services for the futures and over-the-counter markets, with five regulated clearing houses across North America and Europe. ICE serves customers in more than 70 countries: theice.com/about

TRADING & TECHNOLOGY

ICE's electronic trading tools, high-speed connectivity and mobility options provide unparalleled speed and flexibility for executing risk management strategies. > Learn More



WebICE®

Available via an internet browser, WebICE offers powerful trading tools and direct access to ICE Futures and OTC markets.
> Learn More

ICE mobile®

Mobile market access for WebICE users via iPhone, Android and Blackberry. > Learn More

TRAINING FOR SUCCESS

ICE offers training and educational classes as well as on demand resources to suit all levels of market expertise. > Learn More

TRANSPARENT, REGULATED MARKETS

ICE's Over-the-Counter energy market operates as an exempt commercial market under the Commodity Exchange Act and regulations of the CFTC. In accordance with CFTC regulations regarding Significant Price Discovery Contracts, ICE operates as a registered entity and applies futures-style regulation to its cash-settled Henry Hub natural gas swap market.
> Learn More

CONTACT US

Contact: theice.com/contact

Online: theice.com/natgas

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