

## The Way She Moves - A Deep Dive into the Process, Quirks and Idiosyncrasies of U.S. Natural Gas Pricing

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If you're going to be involved in any aspect of U.S. natural gas, it's critically important to understand how physical, futures, and forward gas markets work and how pricing is determined. That reality was emphasized almost exactly a year ago when physical spot prices for U.S. natural gas had their most volatile and bizarre weeks ever as Winter Storm Uri sent a blast of bitter-cold, icy weather down the middle of the country, wreaking havoc on gas infrastructure just when heating demand was at its highest. Prices in the Northeast, which normally see winter spikes, barely reacted, while prices across the Midcontinent and Texas rocketed to record-shattering levels, above \$1,000/MMBtu. The events of the Deep Freeze of February 2021 have since brought renewed scrutiny to the various aspects of the gas and power markets, and a need among legislators, regulators and everyone who deals with energy commodity markets to understand how gas is traded in the U.S. and how prices are set. We're here to help. So, in today's RBN blog, we begin a deep dive into the process, quirks and idiosyncrasies of U.S. gas pricing.

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During Uri last February, on the same day that physical next-day (spot) prices at some gas trading locations tracked **over \$1,000/MMBtu** (<https://rbnenergy.com/east-is-east-west-is-west-us-natural-gas-spot-prices-race-to-600-as-midcon-runs-out-of-gas>), spot price settlements at the national benchmark Henry Hub went only as high as around \$23/MMBtu, according to pricing data from our good friends at Natural Gas Intelligence (NGI). The exchange-traded futures market for next-month gas barely reacted, settling at a little over \$3/MMBtu. Over-the-counter forward prices for regional hubs rose somewhat but were also relatively muted. By the time the market was scheduling physical gas for March, the panic had dissipated, and month-ahead prices were nowhere near the lofty levels seen for those few days in mid-February. These stark differences in prices have to do with what factors drive the various pricing mechanisms, their respective settlement or delivery periods, and when and how they are traded and used in the gas market. We will get to describing those in the next part of this deep dive. But before going there, we'll take a trip in the way-back machine to see how these pricing systems even came to be in the U.S. gas market in the first place.

The U.S. natural gas market is one of the most transparent, liquid, and efficient commodity markets in the world. Physical and financial trades are done directly between counterparties through one-on-one bilateral, negotiated transactions and also via open and transparent trading on organized/regulated exchanges like the Chicago Mercantile Exchange (CME) and the Intercontinental Exchange (ICE). Physical trading is anchored by thousands of miles of gathering, interstate and intrastate transport, distribution pipeline networks, and well over 100 distinct trading locations across North America with location-specific price indices. A subset of the physical trades is reported to price reporting agencies (PRAs) like Natural Gas Intelligence (NGI), Platts and Argus, which then publish indices on a daily basis, and there are tough Federal Energy Regulatory Commission ([FERC](https://rbnenergy.com/call-me-naesb-standards-organizations-base-contract-central-to-winter-storm-uri-litigation)) rules around how prices get reported to those PRAs. Additionally, just about every company involved in the business of buying and selling physical natural gas is required to report their transaction volumes and pricing mechanisms in some detail to the FERC.

The dynamic physical market is matched by an equally vigorous natural gas futures market. The highly liquid, standardized Henry Hub Natural Gas Futures contract was [conceived](https://rbnenergy.com/henry-the-hub-i-am-i-am-the-evolution-of-the-natural-gas-benchmark) in the early 1990s on the New York Mercantile Exchange (NYMEX) and now trades on the CME after CME acquired NYMEX in 2008. ICE also provides a trading platform for “look-alike” gas futures contracts — basically, financial contracts that are cash-settled based on the settlement price of the NYMEX/CME Henry Hub futures contract. Besides the Henry Hub futures contract, there’s also a forwards market for regional gas hubs, that is primarily transacted via voice brokers or on ICE.

It's been this way for years now, and in many ways, for a commodity, the level of liquidity, price discovery, and transparency in the U.S. natural gas market is unparalleled. However, gas pricing wasn't always this transparent or reliable.

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Until the mid-1980s, both wellhead prices and the actual pricing to pipeline customers were under FERC's direct control — first under the Natural Gas Policy Act of 1938 (NGA) and then under Natural Gas Act of 1978 (NGPA). (See our [Different Strokes for Different Folks](https://rbnenergy.com/Different-strokes-for-different-folks-part-2-how-the-ferc-sets-oil-and-gas-pipeline-rates) blog series for a detailed history of oil and gas regulation in the U.S.)

Most natural gas was sold by producers under long-term, life-of-lease contracts to pipelines at regulated prices. Prices were transparent in that the pipelines had to file purchased-gas-adjustment reports that detailed their gas costs, but no one other than the pipelines could do much to select supplies by price. However, in 1985, that started to change with FERC Order 436, which created “open access” on pipelines — in effect allowing others besides the pipelines to ship gas. That, in turn, stoked the beginnings of a burgeoning spot market. Trade publications (those PRAs) started to track prices at a variety of locations around the country, and for the first time there was some meaningful price transparency in the market, allowing ultimate buyers and producers to communicate directly without the pipeline being the

middleman. But it was still a very primitive market tangled up with legacy contracts and vestiges of price controls, and the data available to the PRAs was largely informal and anecdotal. Nevertheless, by the late 1980s natural gas started to be traded actively in 40-50 locations — mostly on a monthly basis during that magical period at the end of each month called “bidweek,” typically the last five business days of each month, when all traders had to give up both golf and sleep.

Around this time, two Texaco executives, Jagjit Yadav and Bill English, also [helped](https://rbnenergy.com/henry-the-hub-i-am-i-am-the-evolution-of-the-natural-gas-benchmark) (<https://rbnenergy.com/henry-the-hub-i-am-i-am-the-evolution-of-the-natural-gas-benchmark>) facilitate the creation of the Henry Hub natural gas futures contract, to be traded on NYMEX, with standardized terms and prices settled on a daily basis until the end of the contract. While most futures contracts don’t go to delivery, a physical commodity futures contract needs a physical delivery location for settlement, preferably an industry-accepted benchmark and a location with ample access to supply and pipeline connectivity for gas to change hands. Back then, there was no single location that stood out in this regard. In fact, physical trading at Henry Hub was languishing at the time due to a decline in the offshore gas production volumes that fed Texaco’s big Henry gas processing plant. However, the two Texaco execs devised ways to increase physical liquidity there — at least on paper, if not actual molecules — with the aim of making Henry Hub highly marketable to the NYMEX team as a delivery point for the futures contract (see [Henry Hub I Am I Am](https://rbnenergy.com/henry-the-hub-i-am-i-am-the-evolution-of-the-natural-gas-benchmark) (<https://rbnenergy.com/henry-the-hub-i-am-i-am-the-evolution-of-the-natural-gas-benchmark>) for the full origin story). It worked, and the Henry Hub gas futures contract launched in April 1990 (contracts for crude oil and heating oil had already been around for years by then). Since then, the Henry Hub contract has gone on to become the third most-traded commodity futures contract, behind WTI crude oil and Corn.

Getting back to the physical market, the Natural Gas Decontrol Act finally wiped away the last vestiges of price controls in 1989, and in 1993, FERC Order 636 brought about a restructuring of the pipeline industry, taking pipelines completely out of the gas buying-and-selling business, and removing marketers from price regulation (again, see the [Different Strokes](https://rbnenergy.com/Different-strokes-for-different-folks-part-2-how-the-ferc-sets-oil-and-gas-pipeline-rates) (<https://rbnenergy.com/Different-strokes-for-different-folks-part-2-how-the-ferc-sets-oil-and-gas-pipeline-rates>) blog for more detailed history). After these two changes, the gas commodity market had little regulatory oversight until the early 2000s — and the Enron meltdown.

For many years, the PRAs were the only ones conducting price discovery and dissemination. However, in the early 2000s, the price reporting process ran into serious manipulation issues. In the wake of the Enron fiasco, a number of companies and individual traders were charged with intentionally reporting fictitious data to trade publications or cherry-picking the prices they reported with the aim of influencing the published price indices in their favor. Fines were levied. A few traders went to jail. Some market participants simply stopped reporting their trades to publications to eliminate any risk of being sucked into the morass. That created another huge problem: a lot fewer deals being reported for calculating the index prices, raising questions about whether the PRA-published index prices were really representative of the market — a very big deal since so many transactions are based on these indices, including just about all purchases by gas utilities and power generators, and many companies use these indices as the underlying price in the derivative/paper markets. Something needed to be done.

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That's when FERC stepped into the world of commodity index pricing. FERC's 2003 Policy Statement on Natural Gas and Electric Price Indices put a program in place that required

companies that choose to report their trades to trade publications and PRAs to follow a strict set of price-reporting guidelines, including the establishment of a formal code of conduct, assigning non-trading individuals to report the trades, and reporting all trades, not just a self-selected subset.

That was followed by the Energy Policy Act of 2005 (EPAAct 2005), Section 23(a)(1), which directed FERC “to facilitate price transparency in markets for the sale or transportation of physical natural gas in interstate commerce.” It also provided both FERC and the Commodity Futures Trading Commission (CFTC) with broad new enforcement power to police any gas-market manipulation in current transactions (FERC) or futures transactions (CFTC).

In 2007, FERC Order 704 enacted regulations requiring natural gas market participants of any size to file Form 552 annually starting in 2009. That dataset provides aggregated volumes of natural gas purchases and sales, with quantities split out by types of pricing mechanism, including fixed-price and index deals for next-day and next-month delivery, as well as physical basis trades. The purpose of Form 552, which was implemented in 2009, was not to collect every single deal happening in the market, but instead to hone in on the deals that are either impacted by index prices (the index-priced deals) or are eligible to be included in the index — essentially, fixed-price deals done in the spot market, for delivery of physical natural gas the next day, or in “bidweek” for delivery of gas in the month-ahead period. There are also other types of deals collected under Form 552, such as NYMEX trigger transactions which are contingent on a futures contract. At the same time, there are also fixed-price deals that it does not collect, namely long-term deals. [If you don’t know what all those deal types are, don’t fret — we’ll be talking about them in more detail in a future installment of this series.] Nevertheless, FERC’s 552 data is the most comprehensive and publicly available dataset on U.S. natural gas transactions that either impact or are impacted by PRA indices. (We’ll take a look at the latest 552 data later in the series. In the meantime, you can find our previous analysis of the data in [Price Tag! \(https://rbnenergy.com/price-tag-price-reporting-agencies-and-the-shrinking-world-of-fixed-price-deals\)](https://rbnenergy.com/price-tag-price-reporting-agencies-and-the-shrinking-world-of-fixed-price-deals).)

The big difference between PRAs and FERC is that Order 704 requires pricing data to be submitted from all companies meeting a size threshold that conduct these types of PRA-eligible deals, not just the ones who elect to participate in PRA indices. FERC capped reporting at companies who buy or sell a minimum of 2.2 trillion British thermal units (TBtu) or 2.2 million MMBtu of natural gas in the reporting year. That’s about 6,000 MMBtu per day, a relatively low threshold for most of the market participants doing the majority of these deals. In 2020, Form 552 showed that 653 individual companies filed these reports with FERC. The FERC 552 data can tell us a lot about which companies are doing what, how the market is evolving and what it means for the future of natural gas pricing. We’ll come back to that data later in the series. In the next part of this series, we’ll continue our deep dive with a closer look at the primary gas pricing mechanisms used in the U.S. gas market.

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"Something in the Way She Moves" was written by James Taylor and appears as the sixth song on side one of James Taylor's debut studio album, *James Taylor*. The song was covered by Tom Rush, who released a single of it in April 1968, where it garnered airplay for Rush in the New England area. The song has been covered by other artists such as Bobbie Gentry, Harry Belafonte, and Ian Matthews. "Something in the Way She Moves" was played by Taylor for George Harrison and Paul McCartney at his audition for Apple Records. Harrison liked the title so much that he used it as the opening line to his song, "Something," that appeared on The Beatles Abbey Road album, and reached #1 on the charts when released as a single in 1969. Personnel on the record were: James Taylor (lead, backing vocals, acoustic guitars) and an uncredited musician (steel guitar).

*James Taylor* was the first album by a non-British act released on The Beatles' record label, Apple Records. It would be Taylor's only release with that label. It was recorded between July-October 1968 at Trident Studios in London, in the room where The Beatles were working on what would be referred to as the "White Album." It was produced by Peter Asher, who was one half of the British pop duo Peter and Gordon, and the head of A&R at Apple Records. Released in the U.S. in February 1969, the LP received good reviews, but failed to enter the Billboard Top 200 Albums chart.

James Taylor is an American singer, songwriter, musician, and actor. He has sold more than 100 million records worldwide. He has released 20 studio albums, four live albums, seven compilation albums, one EP, and 40 singles. He has won seven Grammy Awards and is a member of the Rock and Roll Hall of Fame and the Songwriters Hall of Fame. He is a recipient of a George and Irma Gershwin Award, the Presidential Medal of Freedom, and a Kennedy Center Honor. Taylor played the lead role in Monte Hellman's 1971 hit cult film about street racing, *Two-Lane Blacktop*. He still records and tours and will begin his James Taylor and his All-Star Band Tour in April 2022.