



# The Evolution of the United States Natural Gas Market

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# Session Overview

- Natural gas market structure
- Impacts of the Natural Gas Policy Act of 1978
- The beginning of the natural gas spot market
- Voluntary restructuring
- Mandatory restructuring and impacts
- Role of regulators
- Gas markets and risk



# Gas Industry Structure

- Prior to 1980s, structure of the market was linear
  - Producers explored and drilled for natural gas, sold to transportation pipelines
  - Pipelines transported and sold to local distribution companies (LDC)
  - LDCs sold to end-users
- Regulation focused on prices
  - Producer and pipeline prices were federally regulated (FERC)
  - LDC prices were state regulated



# ‘Take or Pay’ Contracts

- U.S. experienced natural gas shortages in the early 1970s, so pipeline operators sold all the gas they could buy
- Created multi-year ‘take or pay’ contract incentives for producers
  - Pipeline operators agreed to pay for a portion (80% on average) of natural gas, regardless of whether that gas was needed
  - Producers received stable revenues
  - Pipeline operators saw little risk due to gas shortage



# Natural Gas Policy Act of 1978

- Established escalating price ceilings for certain types of natural gas (in general, “old” gas)
- Phased out price ceilings for other types of natural gas (in general, “new” gas)
- Resulted in increased production of natural gas
- But demand had decreased due to conservation and switching to coal and oil
- By 1983, many pipeline companies’ obligations exceeded their sales



# Natural Gas Spot Market

- New market emerged in 1983 as a cooperative effort between producers and pipeline companies
- Pipeline operator would allow producer to contract with customer, and take a credit against ‘take or pay’ charges
  - Customer receives favorable price
  - Producer can’t lose, and might gain a new gas customer
  - Pipeline operator gets a delivery charge and mitigation of ‘take or pay’ charges





# FERC Order 436

- Issued in 1985, changed the way that interstate pipelines were regulated
- Established voluntary framework where interstate pipelines function only as transporters
  - Volumetric and reservation charges allowed
  - Pipeline operators allowed to include ‘take or pay’ charges in cost of service, but must demonstrate prudence
- Offer transportation service to customers who request them on a first come-first served basis
  - Allow customers to phase out contract demand over five years
- Non-discriminatory access
- Pipeline companies moved more towards transportation companies, rather than providing bundled service



# Enron – The Beginning

- Demonized now, but people forget that Enron was once one of the most highly-touted companies in the world
- Formed in 1985 by the merger of Houston Natural Gas and InterNorth
- Main asset was network of natural gas pipelines (largest in the U.S.) that distributed to LDCs
- Began to buy futures from producers and sell futures to LDCs to arbitrage the ‘spread’
- Henry Hub in the U.S. was not established until 1988, and gas trading on the NYMEX did not begin until 1990





# FERC Order 636

- Issued in 1992
- Moved beyond Order 436 by making unbundling mandatory
- All natural gas sellers have equal access to transportation to move gas from the wellhead to the LDC or other end user
  - Allows firm and interruptible service
- Required that interstate pipelines offer additional services
  - No notice transportation service
  - Access to gas storage
  - Capacity release programs
  - Increased flexibility in receipt and delivery points



# Changing Structure

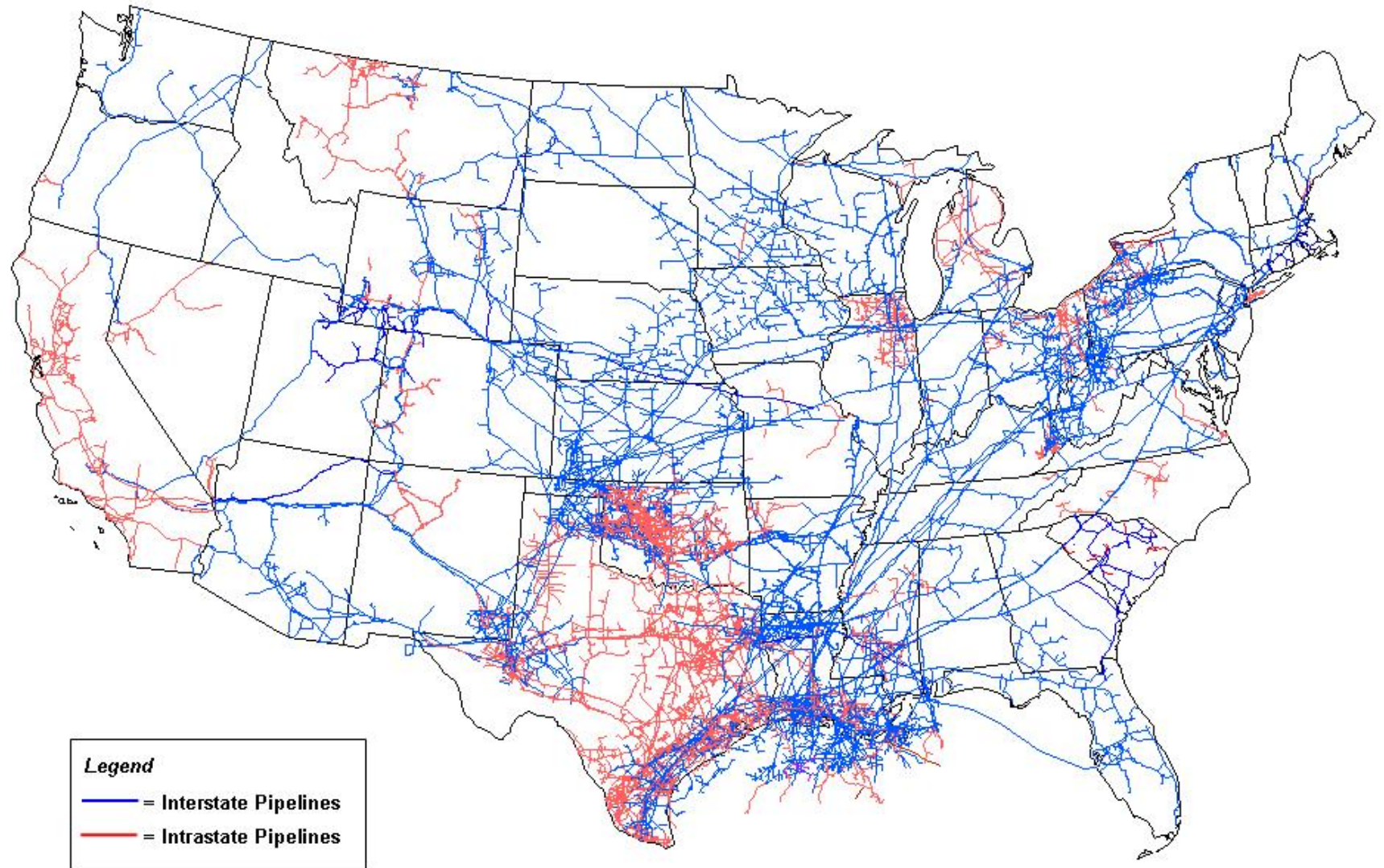
- Producers are now free to sell gas, at market prices, to marketers, LDCs, and end-users
- Pipeline companies no longer take ownership of gas, and just transport
- Marketers can sell gas to LDCs, end-users, or other marketers



# Gas Marketers

- Have focus that ranges from national to regional (mostly in the case of LDC marketers)
- First marketers were spin-offs from pipeline companies who had signed ‘take or pay’ contracts before regulation

# U.S. Natural Gas Pipeline Network, 2009



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System





# FERC Natural Gas Responsibilities

- Pipeline, storage, and LNG facility construction
- Transportation in interstate commerce
- Issue certificates of public convenience and necessity to prospective energy service providers and builders/operators of interstate pipelines and storage facilities
- Facility abandonment
- Rates for transportation services
- Oversight of construction and operation of facilities at import/export points of entry





# Gas Pipeline Safety

- The Department of Transportation's Office of Pipeline Safety is responsible for monitoring and enforcement of compliance with pipeline safety regulations
- After a series of accidents involving cast iron pipe, the Department has urged comprehensive reviews of cast iron pipelines and replacement programs, and requests state agencies to consider program enhancements



# State Regulators

- State agencies regulate all aspects of operation for investor-owned LDCs, including rates
- For municipal utilities, state jurisdiction limited to safety and arbitrating territorial disputes
- State agency may also be designated as a safety inspector for intrastate pipelines
- Interstate pipeline safety regulated by Department of Transportation



# Gas Contract Provisions

- Term
- Volume
- Price or Price Mechanism
- Delivery Point



# Volumetric Risk

- Transportation contract specifies volume at a particular delivery point for a fixed period of time
- Needs of the system may change
- If the gas is for a specific generating unit, this introduces operating uncertainty

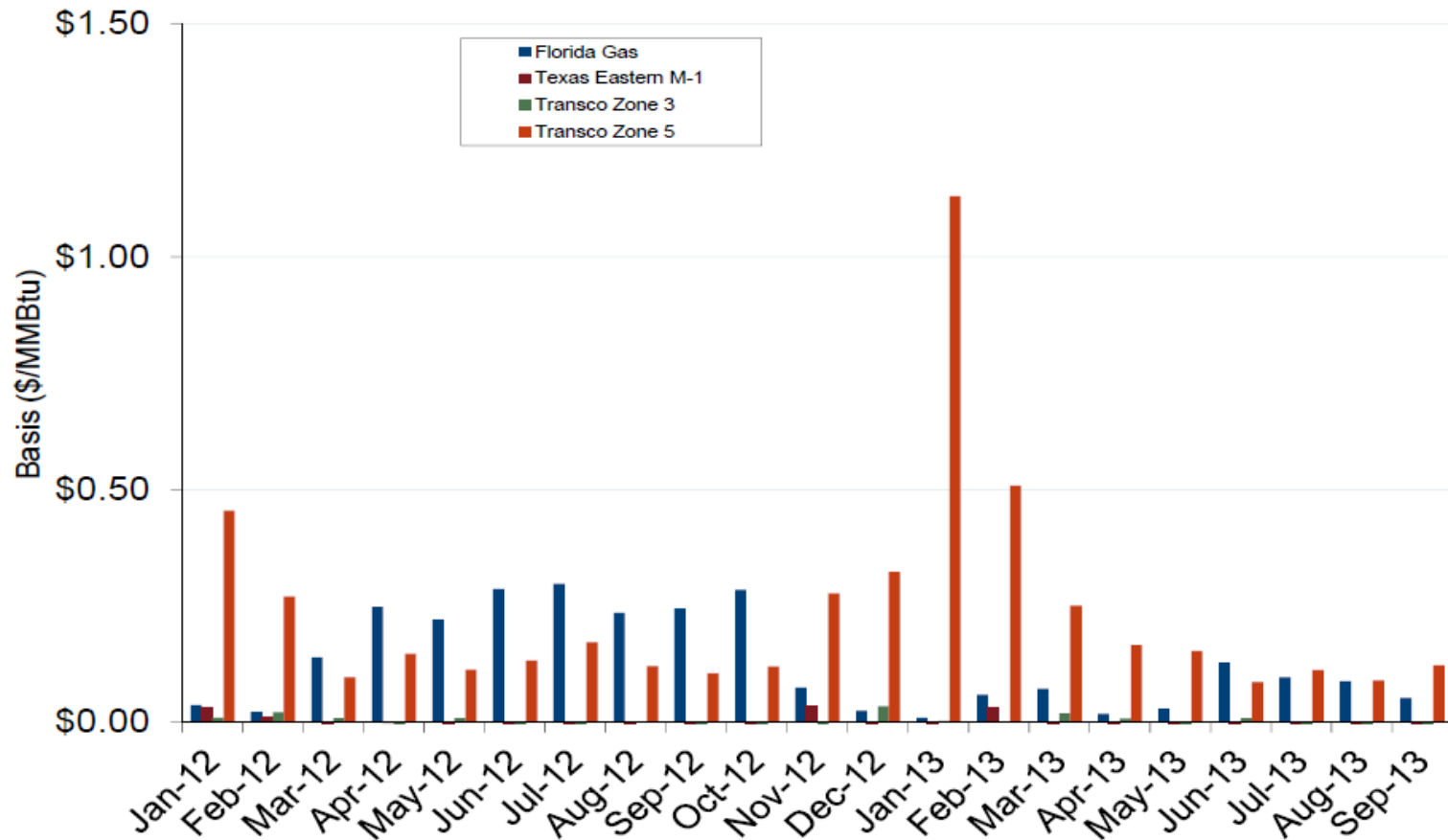


# Basis Risk

- The difference between the price index at the delivery point and the price index of the product actually purchased
- For example, if a utility purchases spot gas at the Florida City Gate, but hedges this with forward purchases at Henry Hub, then the basis risk is the potential difference in the way those prices move from the time of forward purchase to the delivery



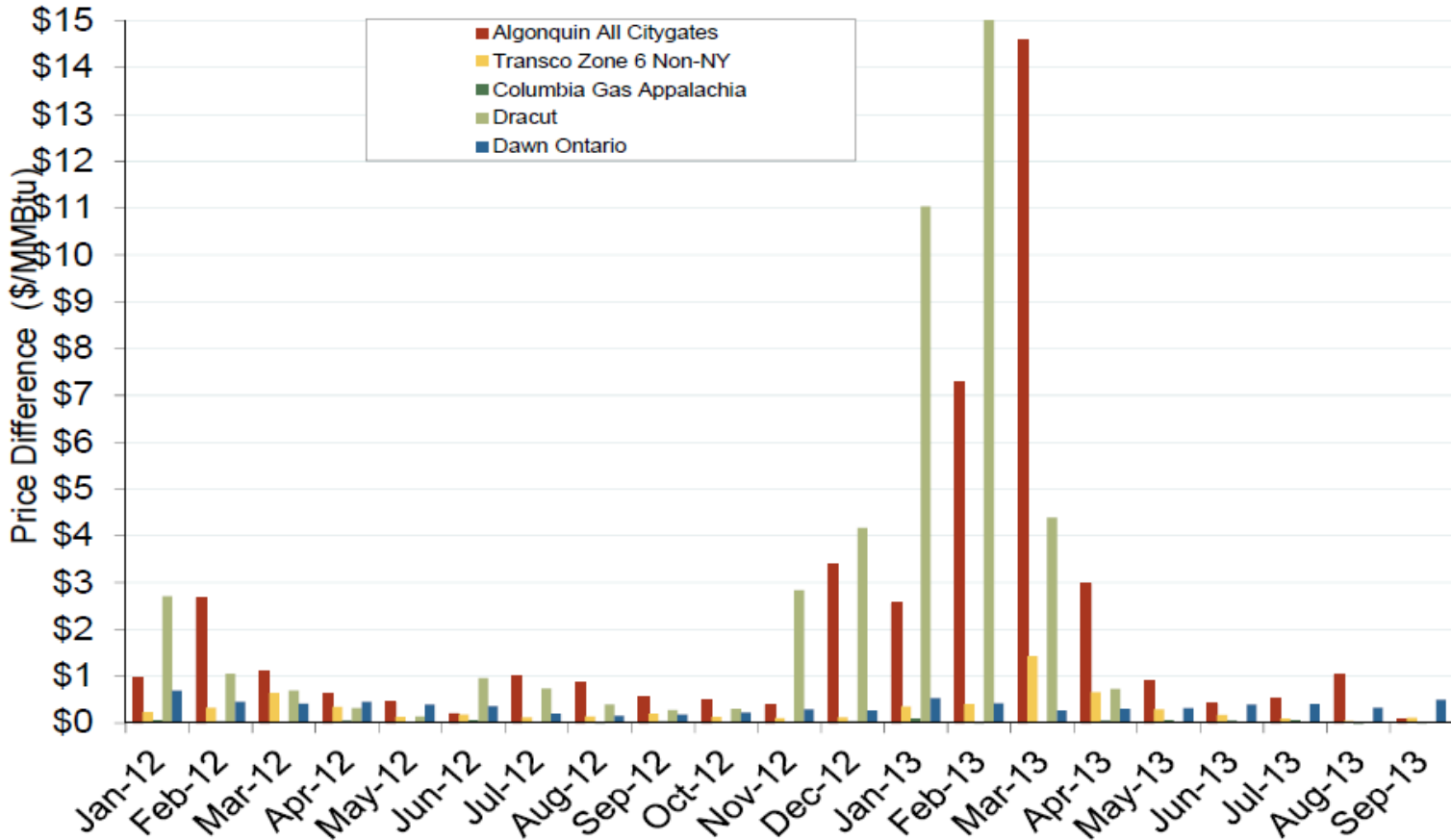
## Southeastern Monthly Average Basis Value to Henry Hub



**Northeast Natural Gas Market: Average Basis to Henry Hub**

Federal Energy Regulatory Commission • Market Oversight • [www.ferc.gov/oversight](http://www.ferc.gov/oversight)

**Northeastern Monthly Average Basis Value to Henry Hub**



Source: Derived from Platts data

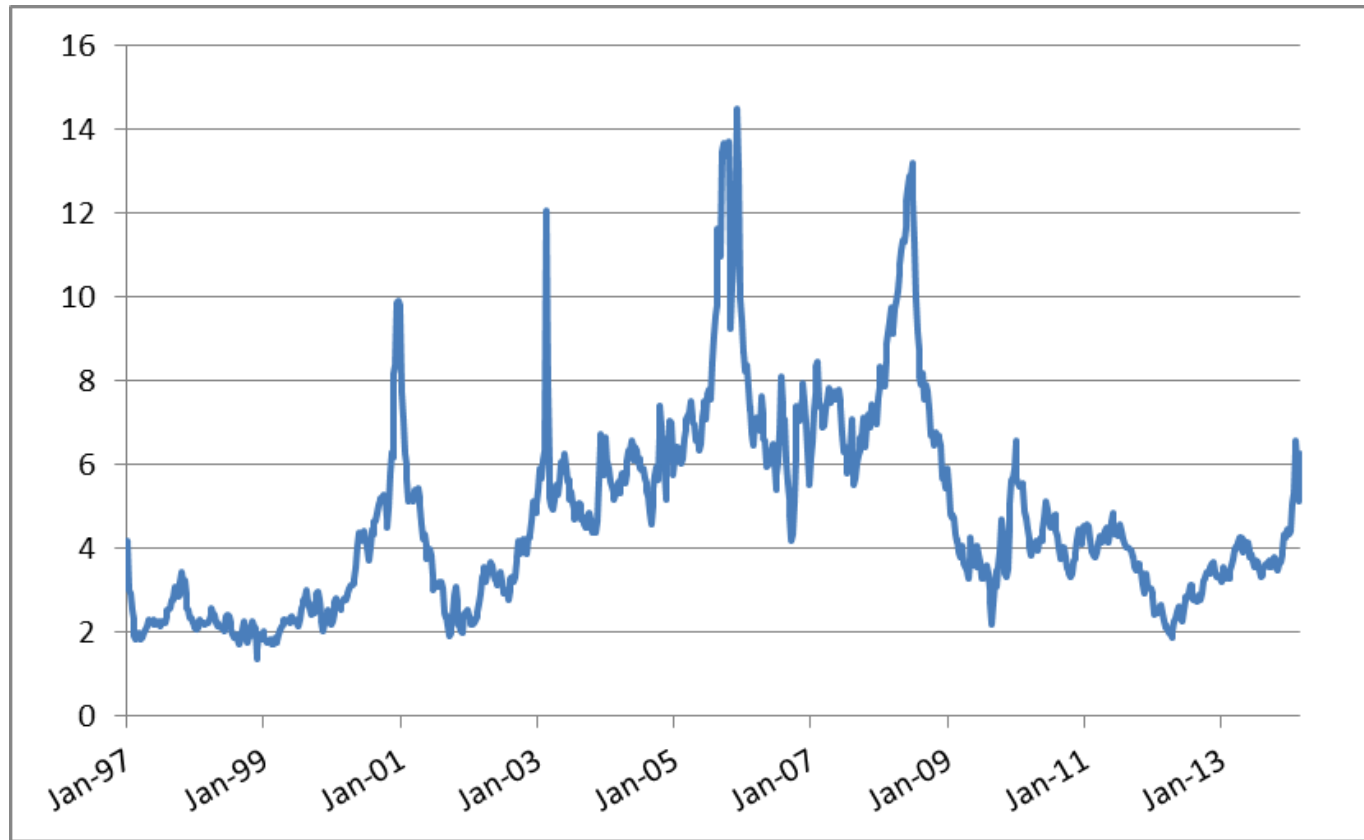
Updated: October 03, 2013



# Price Risk

- Natural gas prices are determined in world markets, with numerous factors affecting supply and demand
- History does not tell us whether prices will go up and down, but does tell us that prices will be volatile
- Volatility can be hedged, but hedging implies a cost

# Weekly Henry Hub Gas Prices





# Conclusions

- New market structure offers increased flexibility
- Difficult to call new market structure ‘deregulation’ because the role of regulation has changed, not been eliminated
- New challenges and opportunities with new market structure