

## Natural Gas Distribution System in Pennsylvania

### AERS and PA PUC Partnership

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### Market Structure – Supply

- Interstate Pipelines – bring supply from wellheads & storage to City Gates
- Natural Gas Distribution Companies – dual role: operate monopoly distribution system and provide last resort supply service
- Natural Gas Suppliers – provide competitive supply options to customers



2

### Market Structure – Customers

- Large Industrial Customers – can be transportation only or transportation and supply
- Small Commercial – can choose competitive supply
- Residential – can choose competitive supply



3

### Number of Customers – 2006

- Residential – 2,605,782
- Commercial – 231,560
- Industrial – 5,241

Industrial Sales Customers – 3388  
Industrial Transport Customers -- 1853



4

### Volumes Delivered – 2007

(in million cubic feet)

- Residentials – 231,461
  - Commercials – 144,947
  - Industrials – 193,157
  - Electric Generation – 140,222
- ✓ Note – 2002 electric generation consumption was 50,251



5

### Average Prices (annual)

- 2007 City Gate Price  
✓ \$9.35 US per thousand cubic feet
- 2007 Residential Price  
✓ \$14.68 US per thousand cubic feet
- 2002 City Gate Price  
✓ \$5.20 US per thousand cubic feet
- 2002 Residential Price  
✓ \$9.46 US per thousand cubic feet



6

## Natural Gas Distribution Companies

- Monopoly Service – sole distribution service for residential and small commercials
- Required to provide safe, adequate and reliable service to supply customers on default service
- Must provide equal access to distribution system for competitive suppliers
- Allowed to provide competitive supply through affiliated supply company



7

## Natural Gas Suppliers

- Provide competitive supply options to consumers on natural gas distribution systems
- Must meet strict credit requirements
- Must achieve delivery and load targets or pay monetary penalties
- Must take pipeline capacity from distribution companies when assigned



8

## Public Utilities Regulation

<http://www.legis.state.pa.us>

Chapter 66 PA C.S.A – Consolidated Statutes Annotated



9

## Statutory Unbundling

- Previously, most customers received an all inclusive price for the gas commodity and delivery of gas.
- Section 2203 of the Public Utility Code provided that the Commission could “unbundle,” or separate, the service into supply and distribution.



10

## Regulations - Statute

### • § 2205. Duties of natural gas distribution companies

#### (a) Integrity of distribution system

(1) Each natural gas distribution company shall maintain the integrity of its distribution system at least in conformity with the standards established by the Federal Department of Transportation and such other standards practiced by the industry in a manner sufficient to provide safe and reliable service to all retail gas customers connected to its system consistent with this title and the commission's orders or regulations.



11

## Regulations – Statute (cont.)

(2) In performing such duties, the natural gas distribution company shall implement procedures to require all natural gas suppliers to supply natural gas to the natural gas distribution company at locations, volumes, qualities and pressures that are adequate to meet the natural gas supplier's supply and reliability obligations to its retail gas customers and the natural gas distribution company's supply and reliability obligations to its retail gas customers. The procedures shall include, but not be limited to:

- (i) A communication protocol with natural gas suppliers.
- (ii) An ability to issue system maintenance orders to control the flow of gas into the distribution system.
- (iii) The right to issue and enforce penalties pursuant to commission direction, provided, however, that the commission may approve additional procedures of like nature by order or regulation to preserve reliability.



12

## Regulations Statute (cont.)

### (b) Installation and improvement of facilities

- (1) The natural gas distribution company shall not have an obligation to install nonstandard facilities, either as to type or location, for the purpose of receiving natural gas from the natural gas supplier unless the natural gas supplier or its retail gas customer pays the full cost of these facilities.
- (2) Nothing in this chapter shall prevent the natural gas distribution company from maintaining and upgrading its system to meet retail gas customer requirements consistent with the requirement of section 1501 (relating to character of service and facilities) or compliance with other statutory and regulatory requirements.



13

## Supplier Operations on the Distribution System

- All Natural Gas Distribution Companies must provide operational rules to permit Natural Gas Suppliers to serve customers on the distribution system.
- These "supplier rules" are contained in a supplier tariff.



14

## Supplier Tariffs

- Supplier Tariffs provide specific details regarding:
  - ✓ Credit requirements (bond or letter of credit covering default)
  - ✓ Electronic communications protocols
  - ✓ Scheduling of delivery into the system
  - ✓ Tolerance bands and balancing requirements



15

## Supplier Tariffs (cont.)

- Creditworthiness –
  - ✓ Should be designed to protect the natural gas distribution company in the event of a default.
  - ✓ A typical bond or letter of credit will be based upon the cost to the natural gas distribution company to acquire gas in the short-term market for the supplier load over a period of time, usually one billing cycle.



16

## Supplier Tariffs (cont.)

- Balancing Services -
  - ✓ Suppliers usually have certain tolerance bands within which they must match delivery to load. Tolerance bands run from 2.5% of actual load to 5% of actual load.
  - ✓ Suppliers have the option to purchase balancing services to guard against penalties for failing to meet the delivery/load targets.
  - ✓ Penalties for failure to hit targets (over or under) can be substantial. Under-deliveries usually carry the price of replacement gas plus a penalty amount. Over-deliveries are paid out at less than the market rate.
  - ✓ Some natural gas distribution companies permit imbalance trading among suppliers.



17

## Supplier Tariffs (cont.)

- Suppliers are subject to flow orders by natural gas distribution companies.
- Suppliers may be directed to increase or decrease scheduled supply to maintain system balances.
- Failure to comply with flow orders result in monetary penalties. (example: \$30 US per mcf difference)



18

## Products

- For residential and small commercials, last resort supply offers a basic product set of supply and delivery.
- The competitive market will offer some options for aggregation, seasonal rates, firm rates.
- Customers can obtain transportation-only service where they must obtain all other gas related services on their own. These customers must have a 5,000 mcf consumption per year.



19

## Last Resort Customers

- No customer is required to obtain service in the competitive market.
- Last Resort Service is provided by the natural gas distribution company.
- Last Resort Service includes the commodity and delivery services.
- Commodity (supply) must be procured on a least cost basis. (Section 1307(f))
- No profit may be earned on the commodity by the natural gas distribution company.



20

## Financial Derivatives

- Over the past decade, natural gas prices have been five times more volatile than the Standard and Poor's 500 stock index (S&P 500).
- The inherent volatility of the price of natural gas encourages the use of financial derivatives to hedge against the risk of price movement.
- Buyers and sellers of natural gas hedge using derivatives to reduce price risk.



21

## Financial Derivatives (cont.)

- Derivatives are financial instruments that do not represent ownership of an asset but derive their value from the underlying commodity.
- Basic derivatives are:
  - ✓ **Forwards**-An agreement between individuals to buy/sell any commodity in the future at a negotiated price (or price formula), with delivery at a negotiated location.
  - ✓ **Future**- A standardized agreement between an individual and an exchange to buy/sell a traded commodity in the future, at current future prices, with delivery at a location specified by the exchange.
  - ✓ **Option**-The right to buy (call) or sell (put) in the future at a fixed (strike) price.
  - ✓ **Swap**-An exchange of fixed for floating cash flows, for example a fixed for a variable rate mortgage.



22

## References

- Energy Information Administration – U.S. Department of Energy
- Pennsylvania Code and Statute
- Various Natural Gas Distribution Company Tariffs – <http://www.puc.state.pa.us>



23