Aspen Energy
Orientation Training
Intro to Natural Gas
FERC Order 636 (April 8, 1992), required pipelines to "un-bundle" their services and to offer and price these services separately. Order 636 ended the pipelines' traditional middleman role as a buyer and a seller. It converted them to transportation companies. This enabled all natural gas producers to compete directly for buyers on an equal footing.

- Pipelines were instructed to implement a capacity release program for use by the FT customers.

- Intended evolution of full competition in the natural gas industry -- allowing all natural gas suppliers, including the pipeline as merchant, to compete for gas purchasers on equal footing.

- Promotion of competition among gas suppliers seen as benefit to all gas consumers and the nation by ensuring adequate and reliable supply at the lowest reasonable price
- New York Mercantile Exchange (NYMEX) is a commodity futures exchange.

- Natural Gas (NG) prices are posted on the NYMEX as spot pricing (to the second) or day ahead pricing (posted daily at 5pm)
A company or individual that sells gas, transportation, storage services, or any combination of these services. Generally, the term is used to identify a company that sells gas to an end user or LDC. Supplier companies affiliated with regulated companies, such as pipelines, are called Marketing Affiliates or Affiliated Marketers.
An individual or company engaged in bringing together buyers and sellers of gas at the wellhead. Brokers generally do not buy or sell gas for their own account, but act as agents for the buyer and/or seller.
• Service (sales/transportation/storage) offered on a guaranteed basis. Seller warrants service will be available every day of the contract unless prevented by Force Majeure.

• Buyer will generally pay a demand fee (or reservation charge) and a commodity charge for firm service. The total charge is generally higher than for interruptible services.

• Firm services have higher priority than interruptible services. Firm service contracts generally have a minimum one year term. Many firm service contracts are for as long as 15 years.
• A contractual clause that allows for suspension of a party’s obligation to perform under contractual terms if certain acts of God, natural disasters, or certain acts of man prohibit normal performance of the service. Examples include: freeze-offs, strikes, hurricanes, earthquakes, blow outs, etc.
Interruptible Service

• Service (sales/transportation/storage) that is not guaranteed. Seller can generally cease service performance with short or no notice. Seller will interrupt if the service is required to serve a higher priority customer.

• Buyer will generally pay only a commodity charge when service is utilized. The total cost is usually less than firm service. Interruptible service is less reliable by definition.

• Interruptible services have lower priority than firm services. Interruptible service contracts can have a term as short as several days to one month.
Storage Field

A place to store natural gas supplies for use at a later time. Can be an old gas field, developed salt dome or liquefied natural gas tank.

Advantages include:
- having gas closer to end-use markets,
- ability to offset supply disruptions during cold weather
- avoidance of pipeline bottlenecks during peak usage.
- Local Distribution Company (LDC).
- A company engaged in the sale and distribution of natural gas for ultimate consumption. The LDC generally serves residential, commercial and industrial markets through a network of distribution pipelines.
• The ultimate consumer of natural gas, such as a home, industrial plant, electric generating plant, office building, university, etc.
• Refers to the ultimate usage of gas. Originally referred to residential or commercial usage where special flame dispersing heads were attached to the gas burning appliance to make the flame suitable for lighting, cooking or industrial uses. Today the term is more generic and refers to any final usage of gas by an end user.
MCF (1,000 Cubic Feet)
- **British Thermal Unit.**

- *The amount of heat* required to raise the temperature of one pound of water one degree Fahrenheit.

**BTU (British Thermal Unit)**
A measurement of gas based on a standard heat value or stored energy. A million British Thermal Units, where a BTU is the amount of heat necessary to raise one pound of water one degree Fahrenheit.
• Equivalent to an MMBtu. Literally, it means 10 therms. A therm is defined as 100,000 BTUs.

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1 \text{ MMBTU} = 1 \text{ lb.} 
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\times 1,000,000 = 1 \text{ Dekatherm}
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Dekatherm (1,000,000 BTU’s)
• One billion cubic feet.
• Equivalent to 1,000,000 MCFs
• The measurement amount used to report weekly storage withdrawals and injections.
10 CCFs = 1 MCF = 1 DTh = 1 MMBTU

1 BCF = 1,000,000 MCFs
or 1,000,000 Dths
The day on which the maximum load is consumed or produced in a stated period of time.
The lowest daily amount of gas taken or consumed over a given period of time.
• The daily volume of gas taken or consumed above the base load quantity of gas.
The Henry Hub is a distribution hub on the natural gas pipeline system in Erath, Louisiana owned by Sabine Pipeline, LLC, a subsidiary of Chevron Corporation. Due to its importance, it lends its name to the pricing for natural gas futures contracts traded on the New York Mercantile Exchange (NYMEX).

It interconnects with nine interstate and four intrastate pipelines.

Spot and future prices set at Henry Hub are denominated in $/mmbtu (or $/Dth) and are generally seen to be the primary price set for the North American natural gas market. North American unregulated wellhead and burnertip natural gas prices are closely correlated to those set at Henry Hub.
Because market conditions vary between Henry Hub and the roughly 40 or so physical trading locations around United States, financial traders also usually transact simultaneously in financial "basis" contracts intended to approximate these differences in geography and local market conditions.

The rules around these contracts - and the conditions under which they are traded - are nearly identical to those for the underlying gas futures contract.

Basis is determined by weather, location, natural gas pipeline capacity and product quality.

Basis is = to the “+” in Nymex +

Basis
Interstate and Intrastate Pipelines

Legend
- Interstate Pipelines
- Intrastate Pipelines

Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System
The fees that a buyer pays for a service that are directly linked to the right to use the service. These costs will be incurred whether the service is used or not. Charges are generally based on $/Dth.
The fees that a buyer pays for a service that are directly linked to utilization of the service. Buyer pays the commodity charges only when service is used. Commodity charges are usually paid on a per unit basis ($/Dth).
Load Factor

- Average capacity utilization by a customer relative to total or maximum available capacity (peak utilization). Expressed as a percentage of average to maximum. Customers with a 100% load factor use their maximum capacity every day. A customer with a 50% load factor uses their capacity only half of the time.
• The mechanical compression of natural gas along the interstate pipeline results in a volume loss called shrinkage or fuel cost. Each pipeline has a defined rate regulated by FERC that determines the specific shrinkage percentage between delivery points along their pipeline.

• Fuel cost is calculated as a percentage of the commodity cost.
• Volumetric calculation
Example:

1000 Dths @ wellhead
X .9655 Transco Z 3-5 fuel percentage
965.5 Dths @ city gate

• Monetary calculation
Example:

$6.00 per Dth price @ wellhead
/ .9655 Transco A 3-5 fuel percentage
$ 6.2144 per Dth price @ city gate

$ 0.2144 per Dth is the actual fuel cost
• Orders which are issued by a pipeline to protect the operational integrity of the system. The orders may either restrict service or require actions by shippers to correct the problem.