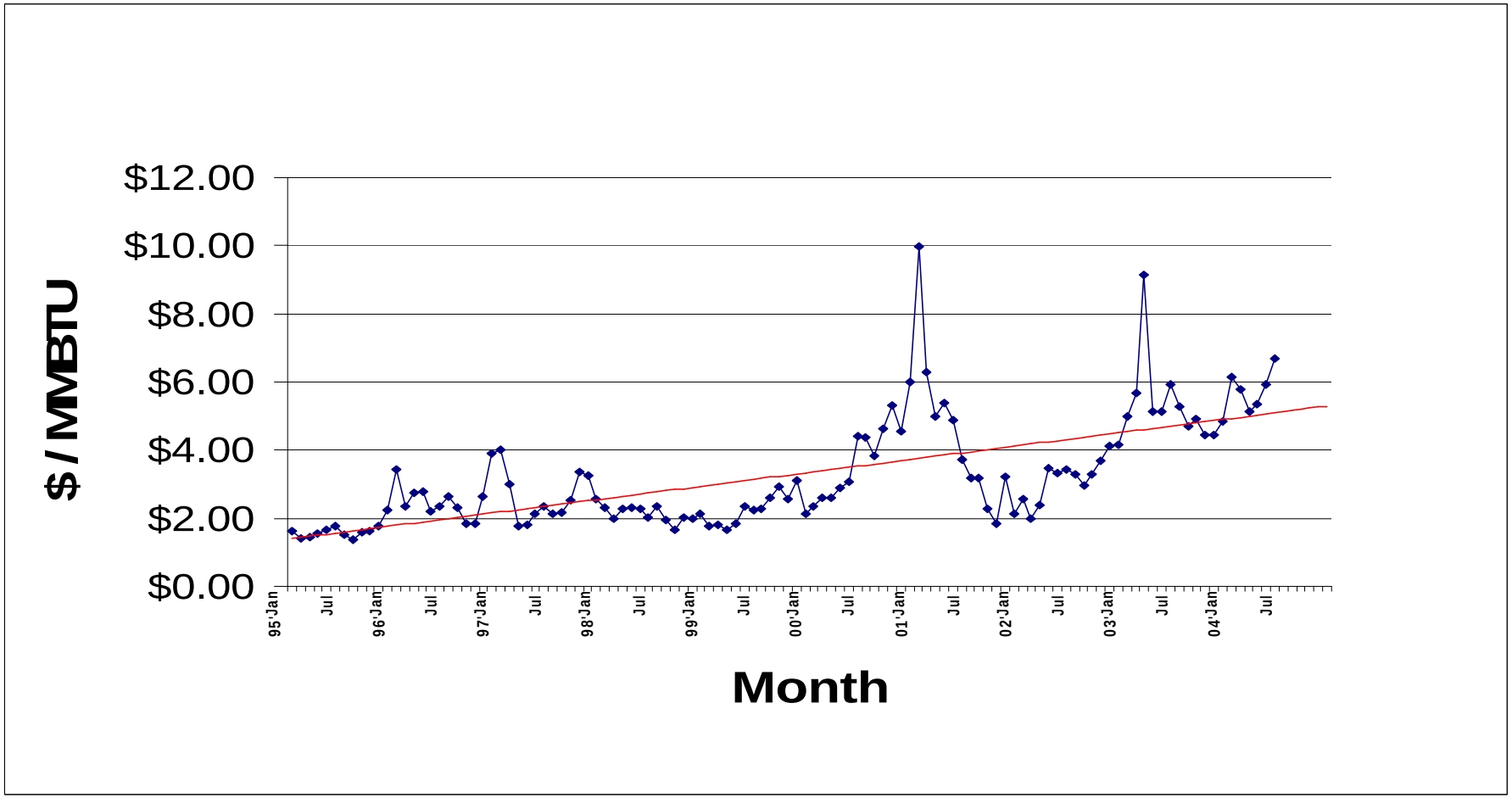
An Introduction to Natural Gas

NYMEX settlement prices since 1995



Natural Gas began trading on the NYMEX on April 3,1990

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FERC Order 636

- 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

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MARKETER

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. Marketing companies affiliated with regulated companies, such as pipelines, are called Marketing Affiliates or Affiliated Marketers.

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Broker

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.

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FIRM Service

- **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.**

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Force Majeure

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.

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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.**

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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 including having gas closer to end-use markets, ability to offset supply disruptions during cold weather, and avoidance of pipeline bottlenecks during peak usage.

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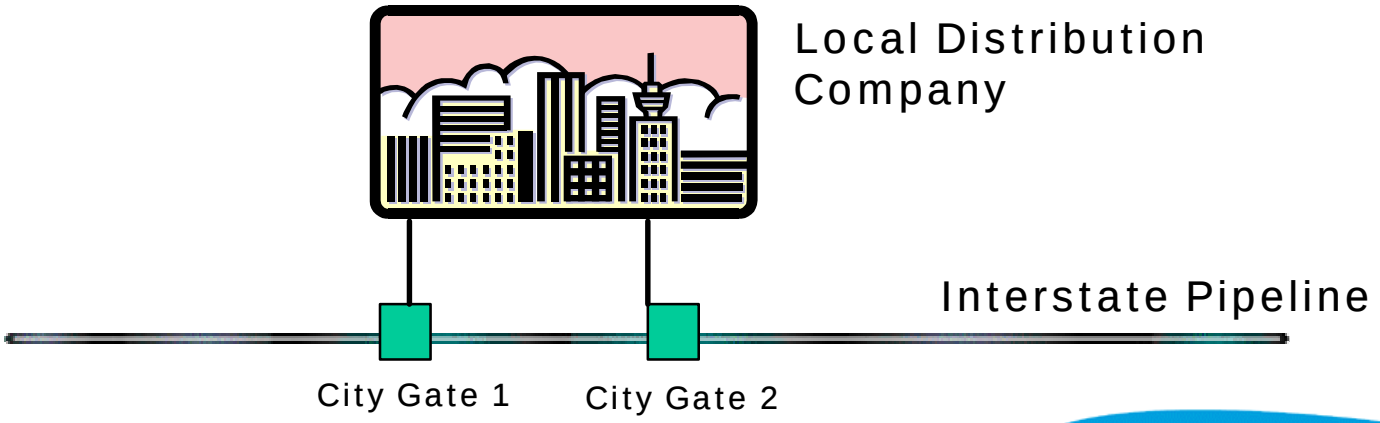
LDC

Local Distribution Company. 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.



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End User

The ultimate consumer of natural gas, such as a home, industrial plant, electric generating plant, office building, university, etc.

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Burner Tip

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.

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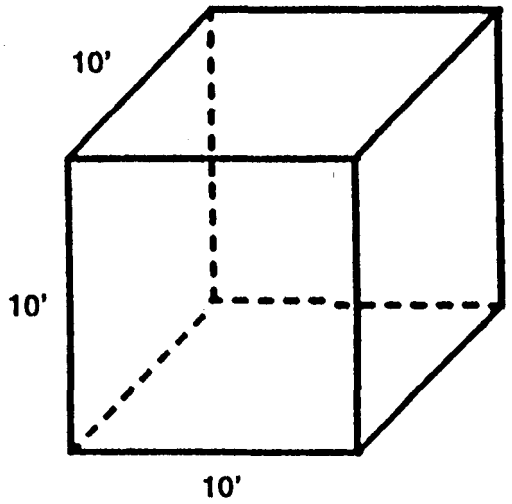
MCF

The volume of natural gas which occupies 1,000 cubic feet when such gas is at a temperature of 60 degrees Fahrenheit and at a standard pressure of approximately 15 pounds per square inch.



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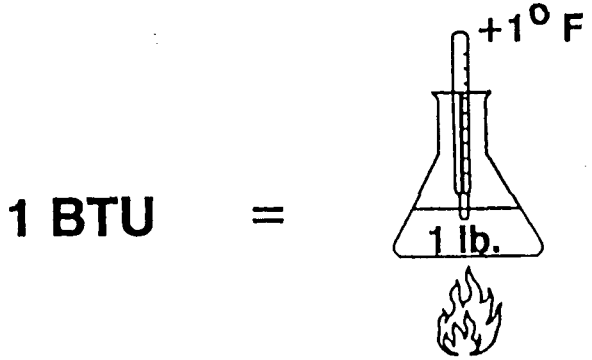
BTU

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



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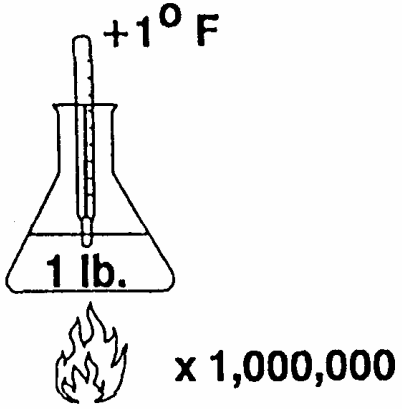
MMBTU

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.



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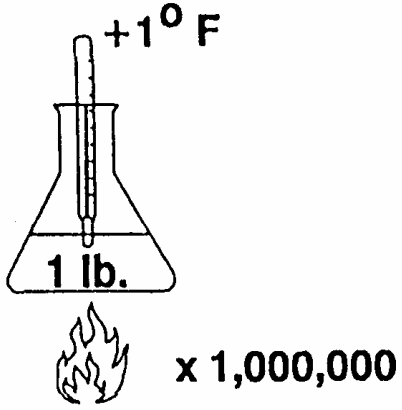
Dekatherm

Equivalent to an MMBtu. Literally, it means 10 therms. A therm is defined as 100,000 BTUs.

1 MMBTU = 

= 1 Dekatherm

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BCF

One billion cubic feet.

Equivalent to 1,000,000 Mcf or 1,000 MMcf.

1,000 Mcf =	1 MMcf =	.001 Bcf
1,000,000 Mcf =	1,000 MMcf =	1 Bcf

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Equivalent Values

Energy Conversion:

1 CCF = 100 CF = 1 Therm

1 CF (Cubic Feet) = 1,000 BTU's

1 Therm = 100 CF = 0.1 MCF

10 Therms = 1 MCF = 1 DT = 1 MMBTU

1 MCF = 1.000 CF = 10 CCF

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Degree Day

A measure of weather coldness experienced, based on extent to which daily mean temperature (average of high and low readings) falls below a reference temperature of 65 degrees Fahrenheit.

$$\frac{50^{o}F + 30^{o}F}{2} = 40^{o}F$$

65ºF - 40ºF = 25 degree days

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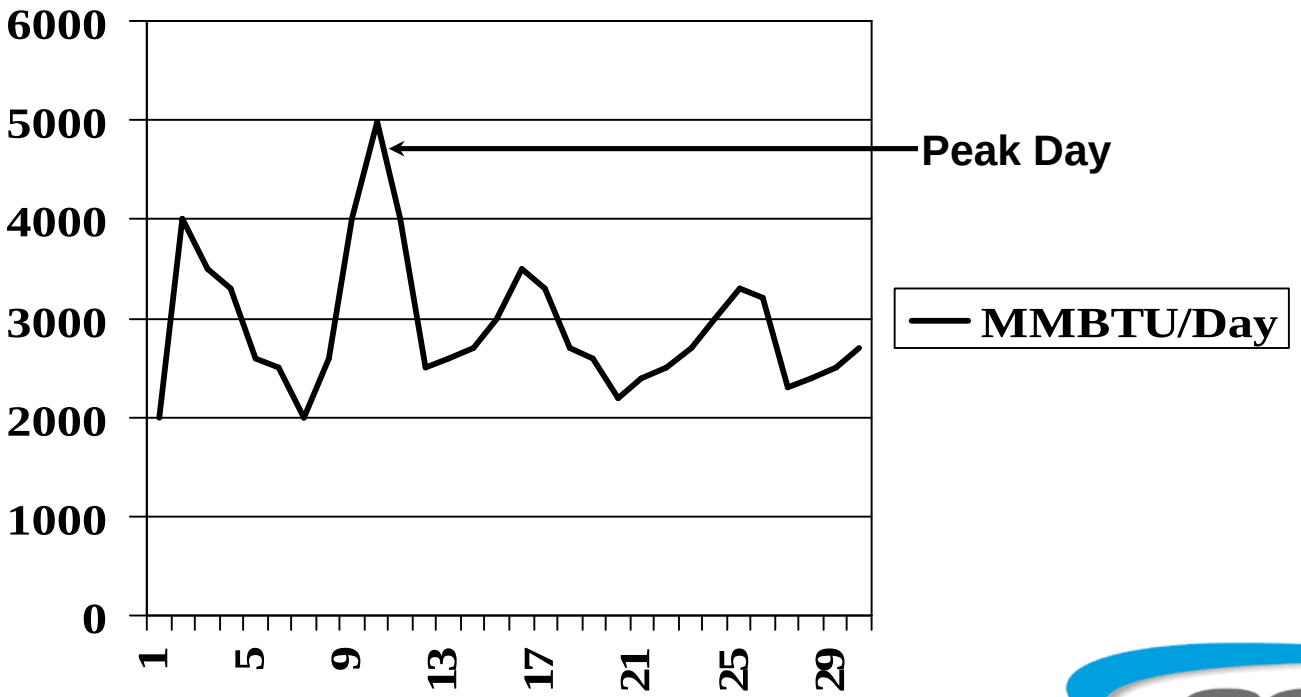
Peak Day

The day on which the maximum load is consumed or produced in a stated period of time.



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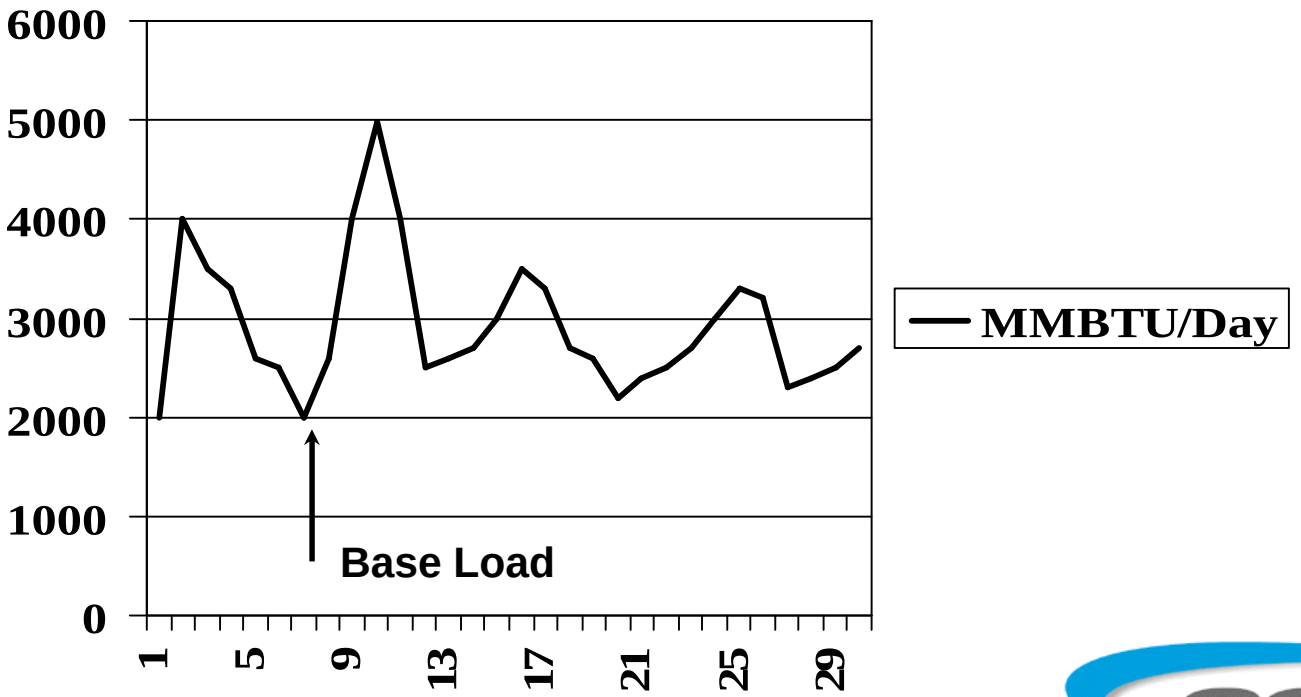
Base Load

The lowest daily amount of gas taken or consumed over a given period of time.



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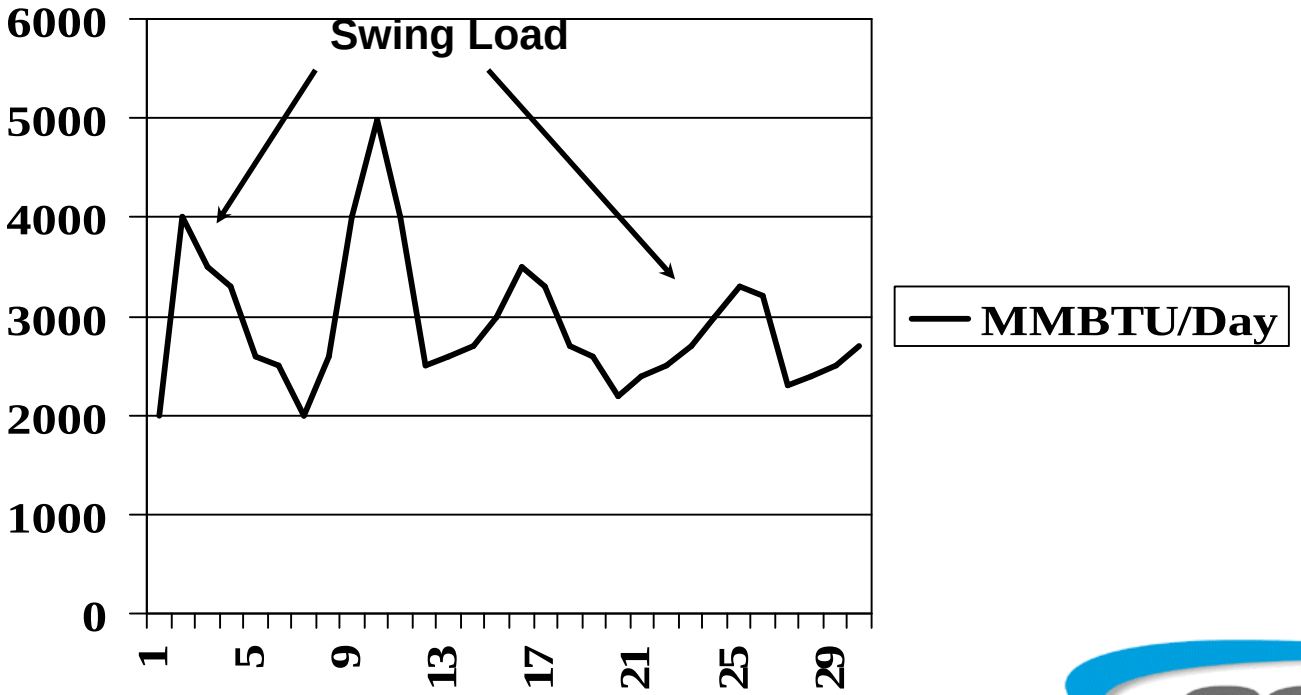
Swing Load

The daily volume of gas taken or consumed above the base load quantity of gas.



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MDQ

Maximum Daily Quantity- The maximum quantity of gas a customer can take/request under a contract on any one day. MDQ's may vary by month or season. It is not unusual for the MDQ to be higher during the winter (as compared to summer).

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Demand Charge

The dollars 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 of MDQ or TQ.

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Commodity Charge

The dollars 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 ($/MMBtu).

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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.

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Fuel/Shrinkage

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.

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Fuel/Shrinkage Calculation

- **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

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Operational Flow Order

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.

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Curtailment

A curtailment is issued by an LDC to protect the operational integrity of the system and ensure delivery to their firm transportation holders. The curtailment will restrict service to customers that have Interruptible Transportation (IT) contracts only. Residential customers, small general service rate customers and other end users holding firm transportation contracts will not be curtailed. Interruptible customers will be curtailed in order of priority to ensure firm deliveries are met first.

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