Energy Industry

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Abstract

The natural gas industry is a large and diverse industry that has both competitive and monopolistic features. The industry has many participants that are competing for a share of the market and they often find that some areas are suppliers while other geographies are in need of supply. There have been hundreds of thousands of miles of pipeline laid to meet market demand. Natural gas is an abundant natural resource that will supply the United States of America with energy. The U.S. is seeking energy independence and natural gas will be one of the sources the U.S. will need to discover.

Natural Gas Industry

The Natural Gas Industry (NGI) is a commodity market. The prices are set in the commodity market and it is set by supply and demand. Prices are determinant of exploration and production (E&P) activities. As prices increase E&P will rise and as prices decline E&P will slow but the demand side of the equation will fall as consumers use less. The opposite is true as prices decrease consumers will demand more for their activities but E&P will slow as it less profitable to supply more natural gas. The NGI has become deregulated since the mid 1980’s and has many participants.

**Scope of the Natural Gas Industry**

The NGI industry has about 283 trillion cubic feet of proven reserves (Natural Gas Industry, N.D.). The majority of the reserves are in the states of Alaska, Texas, Oklahoma, and other states in the middle of the U.S. It is a market that stretches to all continental US and Alaska. The market has many miles of interstate pipeline to deliver natural gas from areas with excess supply to ones with demand that outstrips supply (Natural Gas Industry, N.D.) .

**Natural Gas Industry Participants**

The NGI has a large number of participants and they fall into the following categories:

 Producers: There are more than 6300 producers in the United States. They range from large integrated producers to small operations with one well (Natural Gas Industry, N.D.).

Processors There are over 530 producers that process 15 trillion cubic feet of natural gas annually (Natural Gas Industry, N.D.).

Pipelines: There are about 160 pipeline companies that control over 300,000 miles of natural gas pipeline. They control 180,000 miles of interstate pipelines that can move gas across state lines to areas in need of NG (Natural Gas Industry, N.D.).

Storage: There are over 130 storage operators that operate over 400 storage facilities in the U.S. They can store over 4,000 billion cubic feet of natural gas(Natural Gas Industry, N.D.). Every week they Energy Information Administration reports how much additional supply has been added or depleted from the NGI (EIA, N.D).

Marketers: Marketers sell gas from the producers to the local distribution companies (Natural Gas Industry, N.D.). They are a vital part of the industry to make sure natural gas is bought and sold in an efficient manner. They help create a more competitive market.

Local Distribution Companies: There are about 1200 local distribution companies in the U.S. and they control about 1.2 million miles of distribution pipeline (Natural Gas Industry, N.D.). Most of these distribution companies have a monopoly in the market they serve. States and other regulators are attempting to increase competition in local markets. The barriers to entry are high as the cost of laying pipeline is very expensive.

Federal Energy Regulatory Commission (FERC): The FERC is the primary regulator of the NGI. The FERC regulates the transporters of natural gas across state lines. They regulate the 160,000 miles of pipeline for the protection of the end user (FERC, N.D). FERC has determined that the interstate pipeline can only be used for the transport and not the sale of natural gas (FERC, N.D).

**Demand Components**

Natural gas has four groups that demand gas. The groups are consumers, industrial, electric generation, and to a small extent the transportation sector (Natural Gas Industry, N.D.).

 Consumer demand is driven mainly by weather patterns and geographic density. The colder the weather the more gas consumers use to heat both homes and commercial buildings. Population density is a driver the demand for natural gas. Residential demand accounts for 22% of natural gas consumption (Natural Gas Industry, N.D.).

 Industries use NG for energy intensive manufacturing such as steel smelting and non energy intensive manufacturing. The energy intensive manufacturing is expected to shrink demand while non energy intensive manufacturing demand is expected to grow. Demand from the industrial sector accounts for 37.6% of all NG demand (Natural Gas Industry, N.D.).

 Natural gas powered electricity plants are a growing portion of the demand for NG. NG powered plants produced 16% in 2002 it is forecasted that by 2025 21% of all electricity will be generated by NG powered plants (Natural Gas Industry, N.D.). The demand drivers for NG are the retirement of old no NG powered plants and the increased demand for electricity by a growing population.

 Transportation accounts for about 3% of NG demand (Natural Gas Industry, N.D.). The ever increasing demand for cleaner and environmentally friendly cars is a demand driver for the future.

**Supply Components**

 Domestic production of NG is the largest supply component. Production in the U.S. accounts for about 90% of the demand in the U.S. The states that supply the most are Louisiana, Texas, New Mexico, Oklahoma, and Wyoming. These states accounted for about 80% of domestic production (Natural Gas Industry, N.D.).

 Natural gas imports account for about 10% of the demand in the U.S. Canada accounts for about 90% of the imports in the United States (Natural Gas Industry, N.D.).

 Liquid Natural Gas (LNG) is beginning to account for additional imports to the domestic market. LNG is brought to the US via tanker from all parts of the globe.

 The NG supply side is constricted in the short term by several factors. The industry specific barriers are qualified workers, equipment shortages, governmental permitting, and weather. The general factors are land access, available pipelines and access to capital.

**Substitutes**

 There are several substitutes for NG. Consumers can access both NG, electricity and heating oil to power heating units. There is a short term cost to switching as the consumer will have to commit capital to change the heating unit in either the house or building.

 Energy intensive manufacturing can access coal or electricity to power their heavy equipment and it would be very expensive to switch the facilities and equipment to fit a new source of power.

 Non energy intensive industries can access electricity from the grid with little or no cost to change. They are using NG to create electricity so to access it from the grid is a matter of sunk costs.

 Electric generation plants cannot switch to another form of power generation. The company may have to scrap a project but it would be a matter of sunk costs and replacement costs.

 Transportation use can be switch with relatively low costs. A vehicle can be purchased with little barrier and the driver can switch to electric or gas powered.

**Strong and Weak Competitive Forces**

 The strongest force in the NG is the price of the commodity. As prices rise additional participants will enter the market and try to capture market share. The opposite is true as competitors will head to the exits as profits are squeezed.

 Regulation is another strong force in the market. NG exploration will slow down as governments tighten restrictions on drilling. The barriers to entry increase and costs increase will drive away poorly capitalized companies.

**Possible Changes in the Natural Gas Industry**

Changes to the NG industry will be interesting to see unfold. Natural gas is abundant domestically and in Canada. The oil spill in the Gulf of Mexico may have changed the regulatory landscape for energy independence. Natural gas is a clean energy source that the United States can tap in the near future. The energy future of the United States is unclear after recent events but natural gas should play a role in its future.

**Competitive Markets and a Monopoly**

The natural gas market is an interesting market that has both competitive nature and a monopolistic one as well. The NG producers have a competitive market as they have many market participants, a homogenous product, low barriers to entry, and information is disseminated quickly (Hirschey, 2009, pp 283). The retail consumer of natural gas faces a monopoly on NG. They often have regulated utilities that supply them with gas. The utilities own the underground pipes and for a new supplier to enter a market is prohibitive on cost and regulation (Hirschey, 2009,pp.480).

**Conclusion**

 The natural gas industry is competitive market for the producers but a monopoly for the utilities. There are many participants in the natural gas industry which make is a vibrant and competitive market. Changes for the natural gas industry abound as the United States of America seeks energy independence. There will be both environmental and economic changes coming for this industry.

**References**

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