

# Exploration and Development



## NATURAL GAS USAGE AND MARKET DEVELOPMENT

*Energy is one of the fundamental building blocks of an economy, anywhere in the world and at every stage of economic development. The availability and affordability of energy is an indispensable economic enabler and a major contributor to economic well-being.*

Pennsylvania has emerged as a leader in natural gas production in the United States. Since the beginning of the shale-gas revolution a little over a decade ago, Pennsylvania now ranks second only to Texas in natural gas (dry) production. As of 2018, Pennsylvania was supplying 20% of the nation's demand from gas produced in the state, with production expected to reach as high as 30% in 2020. The development of the Marcellus and Utica shales has allowed natural gas to become an important component of America's energy supply and economic health. The United States is once again at the global forefront of energy development. PIOGA is very focused on finding more ways to leverage these abundant natural resources for power generation, transportation, industrial (HHP) engines, manufacturing and even export.

### Pennsylvania, A Net Exporter

Today, Pennsylvania is no longer just a consuming region, as producers of oil and natural gas have been successful in recovering huge quantities of natural gas and natural gas liquids from "unconventional" formations such as the Marcellus and Utica. Pennsylvania will continue to be a consuming region of oil and natural gas and byproducts but is now also seen as an energy "supply region".

PIOGA's Market Development Committee is at the forefront of looking for opportunities to expand markets that utilize natural gas and natural gas liquids. PIOGA's market development committee advocates for the responsible production, development and use of PIOGA member resources.

### Benefits to Consumers in Pennsylvania: Residential, Commercial and Industrial

Consumers in Pennsylvania use natural gas for heating, cooking, electric power, industrial use and more. The

extraction of huge quantities of natural gas from shale formations in recent years has driven the price of gas down significantly in the state. The Pennsylvania Public Utility Commission estimates that the average Pennsylvania family is saving \$1,200 annually on their home heating bills due to lower gas prices, which has also resulted in fewer utility shutoffs among needy families.

Natural gas has been safely used to heat homes and commercial buildings for decades, thanks to a robust system of pipelines, storage fields, compressors and processing facilities that deliver the fuel to end-users. Approximately 51% of homes in Pennsylvania rely on natural gas heat. Natural gas accounts for about 32% of energy consumed in commercial buildings.

### Domestic Chemical and Manufacturing Growth

Natural gas is driving regional and national growth in manufacturing, including chemicals, steel, pharmaceuticals, fertilizers and plastics. Manufacturing uses account for approximately 80% of total industrial demand for natural gas, either as a fuel or a feedstock for production.

Pennsylvania and the Appalachian Basin stand ready to benefit greatly from dramatic growth anticipated in chemical processing and production, starting with Royal Dutch Shell's investment of more than \$6 billion to construct an ethane cracker near Monaca, Beaver County. This facility is anticipated to spur the growth of a petrochemical manufacturing cluster to produce hundreds of consumer, medical and commercial goods derived from polyethylene.

On a national scale, according to the American Chemistry Council, plentiful and affordable natural gas supplies have transformed America's chemical industry from the world's highest-cost producer five years ago to among the lowest-cost producers today. The United States now enjoys a decisive competitive advantage in the making of basic petrochemicals. Companies from around the world are investing in new U.S. production capacity, leading to an industrial revival and new jobs.

A 2018 analysis by the American Chemistry Council found that 333 new chemical facility projects were in development and construction in the U.S., constituting a total investment of \$202 billion. Those projects are estimated to support 431,000 direct and indirect jobs by 2025, along with a total economic output of \$292 billion.

### Transportation Fuel Conversions

Natural gas has been fueling vehicles since the early 20th century. Because it is a gas, it must be stored in either a compressed gaseous (CNG) or liquefied state (LNG), the difference being primarily vehicle specific. For example, most consumer vehicles can run on a dedicated CNG supply or a bi-fuel application, having the flexibility of CNG and gasoline.

Most LNG applications are available for commercial trucks that need a longer range. Heavy duty trucks that run on two fuels are referred to as "dual-fuel" vehicles.

The use of CNG as a transportation fuel is continuing to emerge as an emissions-reducing and cost-effective alternative to diesel and gasoline, with estimates of a 10% growth in usage by 2025 worldwide. Pennsylvania has seen a number of transit agencies, delivery services, waste hauling vehicles and heavy-duty trucking companies make the switch to CNG in the past decade, thanks to abundant and lower-cost natural gas supplies. PIOGA members are directly involved in this market segment, providing engineering, mechanical and contractor expertise.

Among the advantages of CNG over other types of transportation fuel are reduced maintenance costs and engine wear and tear, increased life of lubricating oils and cleaner emissions. Emissions of carbon dioxide, carbon monoxide, nitrogen oxide, sulfur dioxide, particulate matter and unburned hydrocarbons from CNG are all far lower than those from diesel or gasoline, and equivalent fuel costs for CNG are about \$1 less per gallon than the cost of diesel. It is estimated that the pay-back period to recover the cost to convert an engine to CNG fuel is 18-24 months.

Pennsylvania continues to install CNG fueling stations to serve both private fleets and the public. The state currently offers 90 such public stations along the turnpike and state and federal highways, with many more planned for the years ahead.

### Electric Generation

The electric power sector has grown rapidly in recent years and is projected to become the largest consumer of natural gas in Pennsylvania by 2020. Because of its environmental benefits, natural gas used for electricity generation has increased dramatically. According to the Energy Information Agency (EIA) it's estimated that by 2032, 40% of electric generating capacity will be fueled by natural gas. Its flexibility for use during times of peak consumption will be invaluable to future power generation. Because natural gas pipelines and infrastructure are situated near areas of demand, electricity generated using natural gas saves consumers on congestion costs.

### Environmental Benefits of Electric Generation

The use of natural gas for electricity generation is increasing steadily in the United States, and is a major factor in the significant reductions of key air pollution measures monitored by state and federal agencies. Approximately 6.9 million cubic feet (MMcf) of gas was dedicated to electricity production in 2008, and grew to almost 10 MMcf in 10 years. Electric utilities accounted for the largest jump in that amount, burning 2.7 MMcf in 2008 and 4.7 MMcf in 2017. Natural gas combined-cycle plants made up 40% of the total proposed energy production capacity scheduled to come on line in 2017 in the U.S., and more than 45 new gas-fired electric generators are in various stages of planning and permitting in Pennsylvania, as of the end of 2017.

*This information came from pioga.org website.*

**"GT"**  
Glenn Thompson  
Congress

# BUILDING ON SUCCESS.

Overcoming America's energy challenges is one of the most critical issues we face. Let's lead our nation to energy security by exploring the ways we can meet our energy needs as good stewards of the environment while preserving our jobs and heritage.

*Congressman GT*

Paid for by Friends of Glenn Thompson

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