All About Natural Gas

American Gas Association • Representing America's Natural Gas Utilities

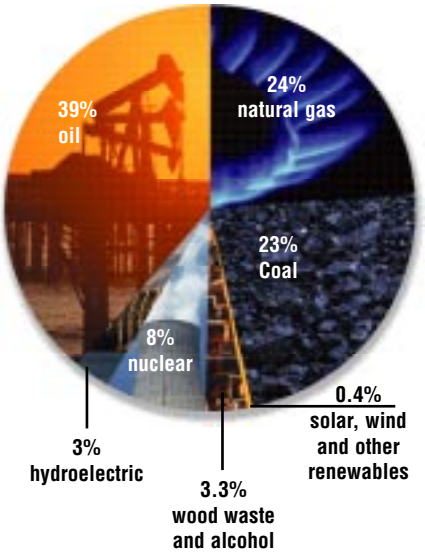
America's Cleaner Energy Choice, Today and For Years of Tomorrows

The solution to many of our nation's current and future energy challenges lies literally under our feet: natural gas. This efficient and cleaner-burning fossil fuel is found in abundance throughout the United States, Canada and Mexico.

Natural gas was formed from the buried remains of tiny plants and sea animals that died more than 200 million years ago. Under the pressure and heat of built-up sand and silt — sometimes thousands of feet thick — these energy-rich materials slowly decayed, then changed form until all that was left were concentrations of natural gas trapped in layers of rock.

Natural gas has a simple chemical make-up: one molecule of carbon and four molecules of hydrogen (CH_4). That's what makes it so clean-burning. Oil and coal, the other fossil fuels, are more chemically complex (see chart on back page). They contain higher proportions of carbon, sulfur and nitrogen.

Currently, natural gas supplies one-fourth of the energy needed to efficiently run U.S. homes, businesses, vehicles, industries and power plants. Over the next 20 years, its use here is expected to grow by 50 percent.



It's a Fact

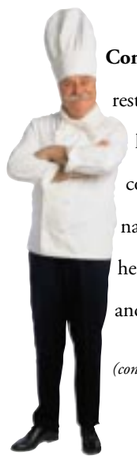
- Natural gas provides one-fourth of U.S. energy needs. (see chart above)

- The Natural Resources Defense Council says: "Of the three fossil fuels that dominate the U.S. energy market, natural gas is by far the cleanest burning fuel. It is, therefore, a key part of NRDC's energy policy – the bridge to greater reliance on cleaner and renewable forms of energy."

DID YOU KNOW?

Meeting America's Energy Needs at Home and at Work

Residential... Most American homes (58 million) use natural gas, and an impressive 70 percent of new single-family homes feature natural gas heat. Consumers prefer natural gas for its value, efficiency, reliability and ease of use. Throughout the home, natural gas provides clean energy to heat water, garages, pools and patios; cook meals on ranges and grills; dry clothes; and light the outdoors.



Commercial... Schools, restaurants, stores, hospitals and other commercial facilities use natural gas for space-heating, air conditioning and dehumidifying.

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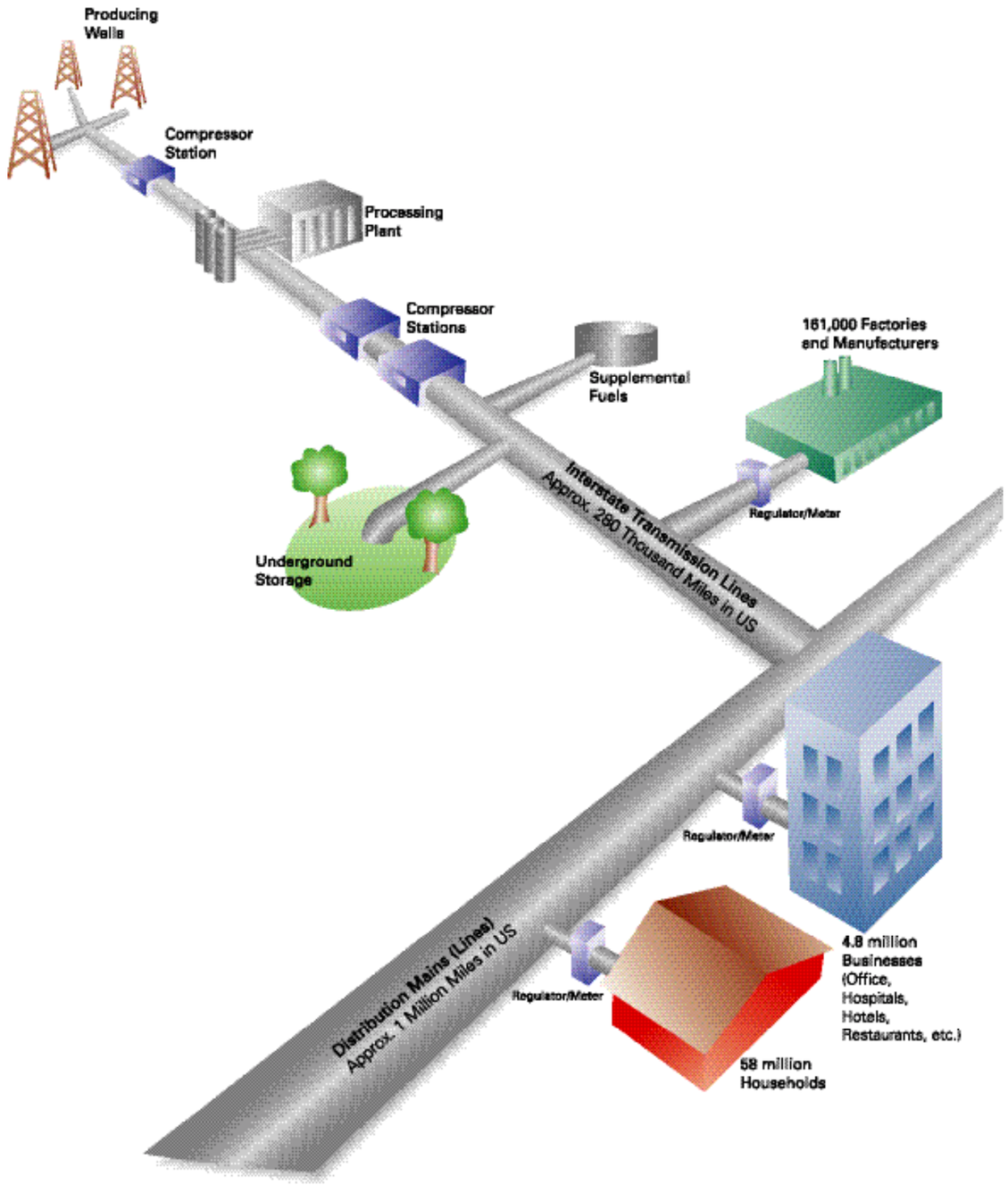
Getting Natural Gas Safely to You



Here's how we get natural gas to you:

From wells in remote places to homes in your neighborhood, America's natural gas industry operates a safe delivery system that is a model for the world. In fact, while the amount of natural gas delivered to customers the past 12 years has increased by nearly 22 percent, incidents throughout the gas delivery system have decreased by 44 percent.

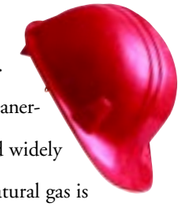
Natural gas utility companies take any threat to their gas service very seriously. These companies have extensive contingency plans for dealing with natural disasters, such as earthquakes and hurricanes, and other calamities, including the threat of terrorism. Because utilities must "expect the unexpected," these companies have developed and refined back-up plans to help ensure that natural gas will flow safely and reliably in the event of a natural or man-made disaster.

We typically find natural gas in underground formations of porous rock, either alone or together with oil. We get it out by drilling **wells** into the rock then using pipes to bring the gas to the surface. In most wells, the pressure of the natural gas is enough to force it to the surface and into the **gathering lines** that run to central collection points.

Transmission pipelines act like interstate highways for gas, moving huge amounts thousands of miles from production regions to **local natural gas utilities**. More than 280,000 miles of 20- to 42-inch diameter steel pipe create an interconnected underground network throughout the lower 48 states. **Compressor stations** about every 50 to 60 miles boost the pressure to make up for what's lost from the friction of gas moving through the pipe.

If interstate pipelines are natural gas highways, the **underground pipeline systems** operated by local utilities act like city streets. Utilities deliver natural gas through these lines to the homes and businesses they serve. After passing through a **meter** that measures use, the gas travels to the customer's equipment and appliances.

Because natural gas is odorless, utilities add the familiar "rotten egg" smell so customers can smell even small quantities of gas. It's just one more way we keep natural gas a safe energy choice.



Industrial... Efficient, cleaner-burning and widely available, natural gas is industrial customers' fuel of choice to manufacture or process food, paper, plastics, chemicals, glass, metals, machinery and equipment. Many industrial customers also use natural gas to generate the electricity and steam that run their plants.

Electric Power Generation... While most electricity in the U.S. comes from burning coal, most new power plants will be fueled by natural gas. Not only are these "combined-cycle" plants faster and less expensive to build, they improve air quality, since natural gas emits less pollution.

Vehicles... More than 100,000 natural gas vehicles (NGVs) are already on the road in the U.S., helping to fuel a cleaner

A Brief History of Natural Gas Service in the United States

The nation's first gas utility was established in Baltimore, Maryland, in 1816, with a charter to light the city's streets with gas manufactured from bituminous coal. The first natural gas well was drilled five years later in Fredonia, New York. Because there were no pipelines to bring gas into individual homes, street lighting remained the primary use of gas throughout the 1800s.

Three late-century developments sent gas producers looking for new ways to market their products: the conversion of many city gas lamps to electricity; Robert Bunsen's new burner that showed how gas could be used for cooking and heating; and construction of the first pipeline.

But it took WWII-related improvements in metals, welding techniques and pipe-making to make pipeline construction economical. After the war, and throughout the 1950s and '60s, the 1.4 million-mile U.S. pipeline network began to take shape ... enabling truly "natural" gas to replace manufactured gas.

Natural gas service is now available in all 50 states, serving more than 63 million customers.

Environmental Benefits Of Natural Gas

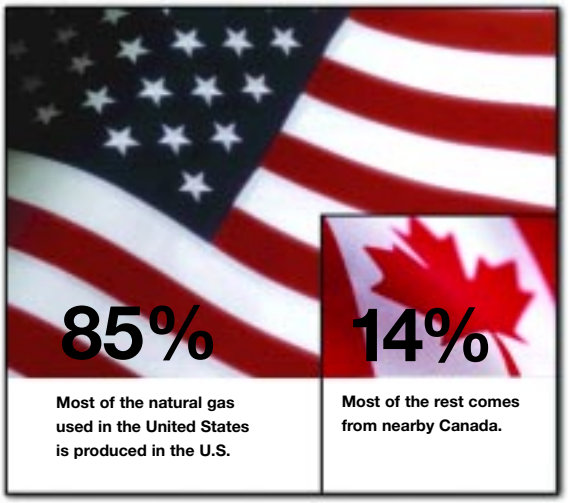
Comparison of Air Pollution From Fossil Fuels

(Pounds of air pollutants produced per billion Btu of energy)

Fuel Source	Natural Gas	Oil	Coal
Carbon Dioxide	117,000	164,000	208,000
Nitrogen Oxides	92	448	457
Sulfur Dioxide	0.6	1,122	2,591
Particulates	7.0	84	2,744

SOURCE: Energy Information Administration.

Natural Gas is a "Home Grown" Fuel



AGA American Gas Association

Representing the natural gas utilities who bring you the energy of America.

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