Natural gas is found in the earth, it comes from 3 sources organic matter, microorganisms and abiogenic process. Organic matter is when the remains of plants and animals that lived millions of years ago get compressed under the earth at high temperature. The higher the temperature the more natural gas is produced. Second is by microorganisms that live near the surface of the earth and in the intestines of animals and humans. They chemically break down organic matter to produce methane which is the main component of natural gas. Third is abiogenic process, deep in the earth there are hydrogen gases and carbon molecules that rise to the earths surface. During the rise to the surface they interact with other elements at high pressures and form methane deposits. Most natural gas rises to the earths surface and gets lost in the earths atmosphere but some get trapped in porous rocks like sandstone with a dense rock on top. These become natural gas reservoirs.

#1 How much does the U.S. use?

The Energy information administration estimates that the demand for natural gas could be 31.41 trillion cubic feet for the year 2025. That is a 38 percent increase from 2002, which was 22.8 tcf. The EIA predicts a 1.4 percent annual increase over the next 21 years. The United States accounted for 25 percent of the total
worldwide consumption in 1999.

#2 How do we use this energy?
We use natural gas for different reasons: residential, electric generation, fertilizer and transportation. Residential uses natural gas for heating homes, multifamily buildings and commercial buildings. From 1991 to 1999 66 percent of the new homes used natural gas, in 2002 70 percent of new homes used natural gas. Electric generation accounted for 16 percent of all generation in 2002. But because of its low capital requirements for building factories and the reduction of emissions the EIA expects a 57 percent increase in electric generation buildings. Natural gas produces ammonia that is used in fertilizer. Transportation sector accounts for 3 percent of the United States natural gas demand. Majority of that demand is to fuel pipelines that transport hydrocarbons. The demand for natural gas fuel is very low but they expect to see more interest in it because of new emission standards. They have already started selling new cars that use natural gas.

#3 What are the obstacles for more use in the future?
The National Petroleum Council estimates that there is enough domestic production to last for 75 or more years. The obstacles of natural gas are availability of equipment, the drilling rigs are expensive and they can’t plan the placement of the drills to far in advance. Permitting and well development is the next issue, once they find a field they have to get permission from the landlord to
install drilling equipment and they need a permit from The Bureau of Land Management. Then they drill, extract, set up field processing equipment and gathering system. Hurricanes can shut down production, there can also be malfunctions and accidents. The government owns 29 percent of the United States land and 40 percent of undiscovered natural gas exists on this land, 59 percent of undiscovered gas are on federal lands off shore. Transportation of the gas is through pipelines and only so much gas can travel through these pipes. Its expensive to search for natural gas estimation from 1999 to 2015 companies spend 1.44 trillion in capital. People talk about the Natural gas crisis but the production has not gone down it just has leveled off. We get the same amount out of the ground every year.

#4 How long will it take to develop this energy?

Before a company can drill they need to find out the nature of the potential formation to be drilled, characteristics of the subsurface geology, depth and target size, can they legally drill there, secure permits to allow natural gas companies to extract and sell the resource. After they find a site and drill they have to design a gathering of lines that will connect to the wells that will connect to the pipelines that goes to get it refined then out to where it is needed.

This process can take a few months or up to ten years. Waste containing landfills produce natural gas and they are creating new technology to harvest the natural gas from those landfills to produce power for cities, also they are looking at doing the same but except with the methane produced from cow manure.
Most natural gas that comes from the United States comes from five states. The states are Louisiana, New Mexico, Oklahoma, Texas and Wyoming. The states equal 80 percent of the total marketed natural gas in the United States.

#5 What are the Drawbacks?
Like any natural resource it can run out if we are not careful in managing supply and demand. People who work on the production of natural gas can get hurt during the process. It is expensive for companies and the harder its is to find the natural gas the more expensive it will be. Natural gas is made mostly of methane and lots of methane in the atmosphere could be considered a pollutant and aid in the greenhouse effect but when in the atmosphere it gets oxidized producing carbon and water. The gas is transported by pipelines but the pipelines wont work across oceans, they can transport it by trucks but then the gas has to be liquefied or compressed and that cost more money. They added methyl mercaptan an odorant so they can smell leaks because natural gas is combustible. There are few explosions from natural gas every year but most are from homes when natural gas builds up, people inside these structures are normally only minor injuries. The exploring and drilling do affect the natural habitats but because of new technologies they have reduced the impact that they make on the habitat. They have satellites that have sensing devices and make it possible to find reserves reducing the number of wells drilled and they have horizontal drilling that makes it possible to collect more natural gas in one well.

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