

Natural Gas Production in Missouri:  
An Overview of Fracking and Pipeline Developments

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Though not typically thought of as an “Oil & Gas” state, Missouri is not entirely removed from the rapid expansion of the natural gas industry over the last few years. Advances in horizontal drilling and hydraulic fracturing techniques have created a massive boom on natural gas drilling operations all across the United States. With a little bit of advanced thought about its regulatory structure and natural gas pipeline infrastructure, Missouri can help position itself to attract a larger share of this new area of economic growth.

**I. FRACKING**

**A. Overview**

Thanks primarily to the refinement of a drilling technique over the last few decades, the United States finds itself with a dramatically increased supply of inexpensive, domestically produced natural gas. This technique, known as hydraulic fracturing or “fracking,” combined with horizontal drilling, has opened up huge deposits of natural gas from shale formations all across the country, but unfortunately comes with concerns regarding the potential environmental impact that is still being assessed and a particularly high level of public opposition. As is the case with every method or technology that produces energy, however, the truth is often far more nuanced than can be effectively conveyed in a 30-second sound byte.

Though fracking was first introduced in 1947 at a well in the Hugoton gas field in Kansas and received massive government support in the 1970s, the process was not able to effectively capture the natural gas deposits contained within shale formations due to shale’s high porosity and low permeability. It wasn’t until 1997 that a technique known as “slickwater fracturing” was developed which allowed for efficient and economical drilling of shale natural gas. When combined with horizontal drilling, the production of natural gas has seen an enormous expansion.

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[Return to MEI Energy Perspectives Newsletter Homepage](#)

In a typical fracking operation, a conventional vertical drill is used to drill down to a shale formation. Once the correct depth is reached, horizontal shafts are drilled throughout the formation in several different directions, often over an area of hundreds of acres. The wellbore is then cased with a perforated cement and steel casing to prevent infiltration into potable water sources. A mixture of water and chemicals known as “slickwater” is then introduced at a high pressure to create cracks and fissures in the shale formation, which are then held open by small particles of sand to allow the natural gas to flow into the wellbore and up to the surface.

## **B. Public Opposition**

The substantially increased use of fracking in the last decade has been accompanied by a substantial and growing concern about its environmental impacts. Part of this concern undoubtedly is due to the increase in drilling activity in states that have not historically had much oil and gas activity. However, some concerns are worth noting. A few of the most common concerns that are typically expressed about fracking are as follows:

1. Fracking requires excessive amounts of water. While it is true that fracking requires a substantial amount of water, up to 7 million gallons for a single well, this is not unique for techniques and technologies used to acquire resources for energy generation. Similar arguments are raised about the use of solar thermal generation, for example. As pointed out by Penn State hydrogeologist David Yoxtheimer, of the 9.5 billion gallons of water used daily in Pennsylvania, natural gas development consumes 1.9 million gallons a day (mgd); livestock use 62 mgd; mining, 96 mgd; and industry, 770 mgd.<sup>1</sup> Water, as one of the most fundamental natural resources, should always be considered and regulated as needed, but such review and regulation must be well reasoned.

2. Fracking fluid commonly contains an undisclosed number of harmful chemicals. Though the majority of chemicals contained in fracking fluid are harmless, a number of chemicals are considered carcinogenic or toxic, and thus many activists are calling for regulations forcing

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<sup>1</sup> Popular Mechanics, website, “Is Fracking Safe? The Top 10 Controversial Claims About Natural Gas Drilling,” available at <http://www.popularmechanics.com/science/energy/coal-oil-gas/top-10-myths-about-natural-gas-drilling-6386593#slide-2>.

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disclosure of all chemicals used. To address this concern, some states such as New York and Pennsylvania have passed legislation requiring natural gas drilling companies to disclose all of the chemicals that will be stored and used drilling sites, and President Obama called for disclosure regulations in his 2012 State of the Union address. On the other hand, oil and gas companies spend considerable time and money developing their own formulas and need some level of reasonable protection for these investments.

3. Fracking fluid can be released by spills, leaks, or faulty well construction and pollute potable water sources. While it is possible that spills, leaks, or cracked casings may result in the release of fracking fluids, it is incredibly difficult for any fluids injected into the horizontal wellbores to migrate up thousands of feet to contaminate any surface or near-surface potable water sources. Additionally, concerns about spills, leaks and cracked wellbore casings are not unique to fracking operations, and can usually be addressed by regulations ensuring that proper casings are used and maintained. There is nothing new in modern fracking that hasn't been addressed for decades by state all across the country.

4. Fracking leads to higher levels of harmful air emissions. There appears to be a material body of evidence indicating that higher air emissions are present in horizontal well drilling and fracking operations than traditional natural gas operations, most commonly in the form of methane released through venting and leaks. However, this increase in emissions is not due to something inherently harmful about the fracking process, but rather reflects the fact that these fracking wells produce higher volumes of natural gas than traditional wells. In order to address this problem, the EPA has introduced new regulations for controlling emissions from upstream oil and gas operations. These regulations went into effect on April 20, 2012.

### **C. Sensible Regulation**

The most effective way to combat these public concerns and ensure that fracking operations are undertaken in a safe and environmentally sound manner, yet protect the proper business interests and technological investments of the oil and gas producers, is to encourage

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[Return to MEI Energy Perspectives Newsletter Homepage](#)

reasonable and fair regulations. Though contrary to some of the public's common perception, sophisticated natural gas companies are encouraging reasonable and logical regulations.

We don't have to look too far back to find an example of a poor regulatory regime that caused harm to both the environment and the oil and gas industry. In Wyoming during the coalbed methane exploration that precedes this shale boom, there was little regulation related to salt water disposal. Without requirements of properly disposing of the non-potable water that was produced along with the natural gas, most producers enacted and followed good oil field practice on their own volition. However, a few disposed of the salt water on the surface, creating damage to the surface and limited use of that portion of the land. While this problem was eventually corrected, the claims that coalbed methane development was bad for the environment was proclaimed and written about long after the root problem was corrected and the claim without a basis in fact. This unneeded situation was neither good for the state of Wyoming or the oil and gas industry. Avoiding this situation in Missouri will be good for the industry and the environment.

Also of note, fracking has been a hot issue in Kansas in recent months. The Kansas Corporation Commission has experienced a dramatic increase in the number of applications for horizontal wells over the last few years, and currently the extent of its authority to regulate those wells is uncertain. Legislation designed to increase the KCC's authority over fracking and horizontal drilling has been presented with the support of the KCC, the Kansas Independent Oil and Gas Association, and the Kansas Sierra Club.

## **II. MISSOURI'S NATURAL GAS PIPELINE INFRASTRUCTURE**

Of course, extracting natural gas from the ground is only half of the battle, as that gas still needs to be transported by pipeline to customers. Though fracking has yet to make a large impact on Missouri natural gas production, traditional extraction methods and a healthy appetite for natural gas consumption have necessitated the installation of numerous interstate and intra-state natural gas pipelines over the years.

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[\*\*Return to MEI Energy Perspectives Newsletter Homepage\*\*](#)

The authority to regulate these various natural gas pipelines is somewhat scattered across a number of state and federal agencies. Interstate natural gas pipelines are largely regulated by the Federal Energy Regulatory Commission. Intra-state pipelines, on the other hand, are typically subject to regulatory scrutiny by the Missouri Public Service Commission and environmental regulations set forth by the Missouri Department of Natural Resources.

Focusing on those interstate pipelines subject to FERC regulation, Missouri hosts portions no fewer than twelve interstate natural gas pipelines, including the largest state-to-state pipeline in the region, the Southern Star Central Gas Pipeline Company's line which serves the St. Louis, Kansas City and Wichita markets with a capacity of 2.4 Bcf per day. Other notable interstate pipelines that pass through Missouri include those developed by ANR Pipeline Co., Centerpoint Energy Gas Transmission Co., Mississippi River Transmission Corp., Panhandle Eastern Pipeline Co., and Texas Eastern Transmission Corp. Of particular note, in early 2008, Kinder Morgan Energy Partners LP completed a 713-mile portion of its Rockies Express Pipeline with a capacity of up to 1.5 Bcf per day of natural gas into eastern Missouri, and then on to Ohio and New Jersey. However, it should be noted that, generally speaking, these pipelines provide only limited service within the state on their way to larger markets in the Northern and Eastern United States.

This does not imply, however, that there are no companies interested in expanding their service to Missouri consumers. Earlier this year, Summit Natural Gas submitted an application with the Missouri Public Service Commission to distribute natural gas in the Lake of the Ozarks area. Summit is proposing to expend roughly \$93 million to provide natural gas service to the area, and is planning to construct a six-inch main line from Lincoln to Sunrise Beach. This application is similar to one that Southern Missouri Natural Gas filed a few years ago to provide gas service to the Branson area. As of the time of this writing, the MPSC Staff has conditionally recommended that Summit's application be approved, but the Commission has not issued a final ruling.

### **III. CONCLUSION**

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[Return to MEI Energy Perspectives Newsletter Homepage](#)

In conclusion, natural gas is a proven, safe, reliable, efficient and clean source of energy. In the past, gas was used primarily for heating our homes and powering industrial manufacturing facilities. Thanks to the advances provided by fracking, horizontal drilling and a robust pipeline infrastructure, new and more abundant natural gas will now commonly be used to create electricity and fuel vehicles. Missouri is well positioned in the middle of the country to take advantage of these new opportunities.

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