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A Consideration of Hydraulic Fracturing in the United States

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INTRODUCTION

Although it has been in use for half a century, hydraulic fracturing has only come to the public's attention in the past ten years. In that time, the practice has spread across the country; inciting conflict and controversy wherever it goes. Recently the push for hydraulic fracturing has reached King George, Virginia, and has been met by much resistance from the local government. There are certain benefits and drawbacks of hydraulic fracturing. This unique way of accessing previously unattainable resources could lead to a brighter economic and political future for the United States. However, it comes with an environmental price that may be deemed excessive, and unreasonable. The purpose of this paper is to investigate both sides of the argument, and attempt to make an informed conclusion on the issue of whether or not fracking should be employed in the U.S. and in King George.

BACKGROUND

Hydraulic fracturing, or fracking, is a drilling method that involves pumping gallons of water, mixed with sand and chemical additives, at high pressures into tiny fractures within a bed of rock. The fractures release natural gasses or oil from within the rock, which are then collected and used for energy. According to the U.S. Energy Information Administration, "Over the past decade, the combination of horizontal drilling and hydraulic fracturing has provided access to large volumes of oil and natural gas that were previously uneconomic to produce from low permeability geological formations composed of shale, sandstone, and carbonate (e.g., limestone)" (2016). The effectiveness of this method has led to a dramatic increase in [its](#) use and popularity. "Since 2005, according to industry and state data, more than 137,000 fracking wells have been drilled or permitted in more than 20 states" (Ridlington, Norman, & Richardson,

2016). In 2015, fracking accounted for a little more than 50% of the crude oil production in the United States. This was a large jump from 2000, when only about 2% of oil production in the U.S came from hydraulically fractured wells (U.S. Energy Information Administration, 2016). This rise of the fracking industry to prominence on the energy scene has been highly controversial, and is widely debated.

PROS

The benefits of hydraulic fracturing are clear; fracking means oil, oil means money, and money means power. The United States is becoming an increasingly viable energy producer, due to the development of more effective and cost-efficient methods used to access its abundant natural resources. “Last year, US production reached 7.4 million barrels a day, an increase over 2012 of 15.3 per cent. A jump that large hasn’t been seen since 1951. This year the US should produce 8.3 million barrels a day.” (Usborne, 2016). This is largely due to the fracking industry, and the boom is not expected to level off until at least 2020. Even more impressive is the increase in natural gas production, an upward trend that should continue until 2040 (International Energy Agency, 2014). The IEA suggests that this could lead to unprecedented levels of independence for America, stating that, “Energy security has been strengthened over the past six years and rising domestic production of oil, shale gas and bioenergy alongside demand-side measures such as policies to support energy efficiency and reduce consumption in the transport sector could result in the United States becoming all but self-sufficient in net terms by 2035” (2014).

Self-sufficiency in terms of energy production would have enormous consequences domestically, and internationally. For the United States, it would mean freedom from dependence on countries like Saudi Arabia for energy. It would mean hundreds of billions of

dollars not spent on importing oil from overseas. It is also arguably a cleaner energy source than coal, which has previously been our main domestic source of electricity. Per the Ohio Environmental Council, “A power plant that runs on natural gas emits fewer greenhouse gasses than one that burns coal” (2015). On a local level, fracking could also positively influence job creation for those living near viable rock beds, such as the Virginia Taylorsville basin, including King George county. The economic implications are numerous, immense, and nearly all beneficial.

CONS

The other side of the debate is loud indeed, particularly among local authorities and residents of areas where fracking could potentially occur. In their haste to gain access to natural resources and the profits they yield, gas companies have trampled over environmental regulations such as the Clean Water Act of 1972, the Safe Drinking Water Act of 1974, and the Clean Air Act of 1970 (Twomey, 2016). They have also outpaced scientific research into the long-term effects of this type of drilling. This perceived carelessness has many people rightfully concerned, and has afforded gas companies a great deal of resistance in some areas. In August, the King George County Board of Supervisors voted unanimously to restrict drilling and hydraulic fracturing in their county. As an all-out ban would likely lead to exorbitant legal fees, the board opted instead to impose strict zoning regulations regarding hydraulic fracturing in proximity to inhabited buildings, groundwater, or other natural resources. The result of these ordinances is that currently only 9% of the county can be used for the purpose of fracking (Southern Environmental Law Center, 2016).

Locals in rural towns like King George are wary of large drilling companies moving in for several reasons. One concern is that work sites will be a blemish on the peaceful countryside.

Disruptive noises, large industrial machinery, and an increase in traffic are obviously undesirable, especially to locations known for their scenery and rural appeal. Environmental concerns, however, appear to be the dominant ones among consumers. Hydraulic fracturing has been linked to an array of natural issues, including minor earthquakes. Studies in Oklahoma have shown a relationship between increased seismic activity and hydraulic fracturing in specific areas. Not only has the fracking process been said to cause earthquakes in its own right, but, “Now, scientists believe that putting fracking wastewater in underground disposal wells – a common post-fracking practice – is more strongly linked to seismic activity than fracking itself.” (Ramsey, 2014).

More importantly, it poses a threat to water supply and quality. During the fracking process, extremely large amounts of water are pumped deep into an impermeable rock unit, and, “Once injected into the well, as much as 90% of the water used is left deep underground, unavailable for future recycling, either industrially or through the natural hydrological cycle” (Staddon, 2016). On top of being a massive water consumer, hydraulic wells could potentially be dangerous to drinking water under unfortunate circumstances. According to Staddon, Brown, and Hayes, “Occasionally, loss of well integrity has led to contamination of surrounding strata by fracking fluid and/or methane” (2016).

CONCLUSION

In light of this discussion, one may conclude that the absolute answer lies neither on one side of the table, nor the other. As with so many issues, moderation is required to satisfy the parties involved. Hydraulic Fracturing is a veritable goldmine for the U.S., as it could bring energy independence, which would mean greater financial and political stability for the country. The process is not without its risks, however, and perhaps more will emerge as research is done

on the topic. The safety of the earth and its inhabitants should be considered above all else. Drilling companies, federal and local government, and environmental experts should collaborate their efforts to determine whether or not it is possible to devise a safe method of unlocking the precious shale beds underneath America- keeping in mind that the benefits should always outweigh the risks. It is also extremely important to note that oil and natural gasses are both finite fuel sources. Eventually the last drop of oil will be tapped from the wells, and the last wisp of gas will have escaped from the earth. So, while fracking may appear to be a prudent option for the moment, clean sustainable resources, along with energy efficient infrastructure, should still be pursued with the utmost urgency in order to ensure the future of our county, the country, and the Earth.

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