

The Better Road: Hydraulic Fracturing vs. Nuclear Power

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Whether we are ready or not, the United States is approaching an energy crossroads. From the early realization that flowing water and steam could be harnessed to generate electricity to the modern development of solar technology to produce power directly from the sun, the path to this fork in the road has been paved by enormous advances and innovation in energy production methods. According to the U.S. Energy Information Administration, our nation's energy production continues to be dominated by coal (~39%), with natural gas (~27%) and nuclear (~19%) far ahead of other technologies ("What Is U.S. Electricity Generation by Energy Source?"). As the realization grows that the supply of fossil fuels will someday dwindle-- particularly the availability of easily obtained natural gas-- the industry must decide whether to pursue natural gas in traditionally difficult locations or to invest a greater effort and financial resources in another technology. Two options to consider at this crossroads are the relatively new natural gas exploration technique of hydraulic fracturing, also known as fracking, or the established nuclear power generation industry. Although neither path is perfect, the road of nuclear power is the much better course for the future.

Fracking is a relatively new player on the energy production field. Simply stated, it is a natural gas extraction process that specializes in unlocking natural gas reserves in shale deposits that are difficult to access. The procedure involves drilling thousands of feet into the earth, blowing holes in deposits in order to open up cracks in the gas bed, and pumping thousands of gallons of water, sand, and chemicals into the shaft to draw out the gas. The idea is inventive, and it accomplishes a purpose impossible with other drilling methods. As a result, vast quantities of natural gas are now available to be recovered by frack wells and used within the United States.

At first glance, the discovery of fracking seems like great news for the future of the American economy and energy supply, but the story is far from complete. First of all, the fact that fracking is a very new idea carries several implications. Scientists have not yet had enough time to analyze its long-term effects. Several USGS studies have linked this drilling technique to an increase in seismic activity, stating that the detonations of explosive charges and forced injection of fluid could be causing earthquakes ("USGS FAQs"). Also, fracking's newness means there are few federal and state regulations because lawmakers simply have not had enough time to determine what needs to be monitored and controlled. For example, natural gas drilling companies are currently not obliged to disclose the chemical makeup of the fracking fluid that is pumped into the ground; however, it is now known that toxic chemicals such as benzene and formaldehyde are among the scores of biohazardous chemicals dumped into the earth ("Hydraulic Fracturing 101"). There are also multiple cases documenting fracking's pollution of drinking water to the point where town residents have been told not to drink it (CBS News). One prominent example involves a town in Pennsylvania where the EPA recently acknowledged that fracking has "led to impacts on drinking water resources, including contamination of drinking water wells" (Banerjee). A news report showed a resident literally lighting the water from his faucet on fire as the flammable chemicals in the water were enough to sustain a combustion reaction. As a Pennsylvania resident explained, "Water is a commodity. You might not think it is when you have it and it is good, but when you lose it, it's gone; you will never get it back" (KCETLink Media Group). The financial losses from water contamination are enormous, decimating individual, local, and regional economies.

In addition to devastating the water supply, fracking requires hundreds of trucks filled with fracking fluid be sent to the drilling site constantly while the well is being fracked, and the

resulting noise and inconvenience has disturbed the quiet of several small towns. The fracking trucks themselves are a rather intriguing story. Many tankers that carry fracking fluid or components of the solution are labeled with a hazmat placard-- often “corrosive” or “hazardous.” If one of these trucks crashed, special precautions and cleanup would be necessary to make sure the contents did not leak into the ground. If this is the case, then why are fracking companies allowed and even encouraged to pump millions of gallons of this material into the earth annually? The sad fact is that many governmental officials and agencies are inclined to ignore the harmful effects of fracking to make themselves appear successful in finding an energy solution for America, and companies are all too willing to disregard the environmental and local economic impacts in order to reap their own immediate financial benefits.

Nuclear power, another technology in the energy market, is an innovative yet established method of energy production. Nuclear power plants work on the basis that splitting atoms releases large quantities of energy, and that energy is used to heat steam that drives electric generators. Despite common opinion, nuclear energy is entirely a closed circuit system, meaning no radiation or radioactive material normally escapes into the environment. Although nuclear power is potentially very dangerous, it is heavily regulated and monitored, unlike fracking. Nuclear energy has withstood the test of time, and it has developed and improved over the years.

The public is generally wary of nuclear power, envisioning glowing green fluid oozing into our lakes and rivers, but in reality, nothing could be farther from the truth. In fact, many proponents of fracking may be surprised that some radioactive waste is also generated by hydraulic fracturing (Stromberg). This waste, however, is not monitored nor handled with same care as depleted fuel from nuclear power plants. Abner Vengosh, a Duke University geoscientist, warns, “Even if, today, you completely stopped disposal of the [fracking] wastewater, there’s

enough contamination built up in sediments that you'd still end up with a place that the U.S. would consider a radioactive waste site" (Stromberg). Part of today's *nuclear-o-phobia* is a result of the general public's lack of a basic understanding of radiation itself and how nuclear reactors really work. The world's first introduction to the power of a nuclear reaction at Hiroshima and Nagasaki left an obvious impression as to the might of this technology. This awareness is actually a good thing as the world delved into the production of nuclear energy with eyes open and mindful of its dangers; as a result, generating nuclear power is a very carefully supervised process. Also, some of this paranoia is also a result of the earlier nuclear disasters such as Three Mile Island and Chernobyl. Although there have been a few cases of meltdown and significant leaks, they were poorly managed or maintained plants that would never survive today's strict standards of nuclear power operation. The reality is that nuclear energy can provide more than enough power for generations to come, and it does not compromise our environment in the process. Nuclear power does not produce greenhouse gases, and radioactive waste is disposed inside protective concrete casks where no radiation will leak out. Another major benefit of nuclear power is that it is a relatively clean method of producing power, but unlike other environmentally friendly methods like hydroelectric dams and wind turbines, nuclear power does not rely on changing environmental patterns, making it a more consistent solution for American energy needs.

Admittedly, though nuclear power facilities are expensive to construct, are highly regulated, and must have high security measures, nuclear power is a long-term solution for America's energy needs. The government can seem short-sighted in these matters, but nuclear power is an investment in a brighter future for America. Fracking carries many significant risks and issues, dangers that could jeopardize the health of local ecosystems and economies. Fracking

can provide enough natural gas to be a short term solution when more power is immediately needed, but nuclear power has not yet reached the peak of its capability. Given the chance, it will prove to be a more efficient, reliable, inexhaustible, and environmentally friendly energy source. When comparing the two, it is easy to see that nuclear energy is the better choice that can keep up with rising global demand for energy.

As a nation, we must be careful when considering our options for energy production in the future. Although both methods are potentially dangerous, the nuclear road is paved well by many safety advances while the fracking path is unexplored and spotty. Also, nuclear power has the guardrail of being well-regulated, unlike the winding and largely unprotected cliff road that is hydraulic fracturing. Racing towards fracking to reap quick financial gain is simply foolish. Where will America allocate its energy resources in the future? The day is quickly coming when that choice will have to be made; the one thing we must decide is which way to safely steer.

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