Alternatives to the Keystone XL Pipeline

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Introduction

As rising demand for fuel in America pushes oil prices higher and higher, many have looked to new “varieties” of oil as a solution. New technology has made it possible to use tar sand oil, which had previously been too difficult to extract and refine, and it is widely believed that this relatively untapped resource is the answer to the world’s energy woes. TransCanada, a Canadian oil company, has proposed expanding their Keystone XL Pipeline through the United States to carry oil from the Athabasca tar sands to refineries along the Gulf Coast. The pipeline, and other projects like it, has been a widely debated source of contention among politicians and civilians alike, and Congress has yet to grant its full approval for the permit. The pipeline would potentially run from Canada down through the Great Plains states to the Gulf Coast, with several subsidiary branches splitting off to deliver oil to other areas of the country.

The Environmental Protection Agency (EPA) stands against the Keystone Pipeline on the grounds that increased use of highly pollutant tar sands oil may damage the environment. A spill or leak would be devastating to the environment and would damage some of the nation’s prime cropland and hinder America’s ability to produce crops and food.

Even if defeated in Congress, the Keystone Pipeline is only one of a number of transport methods that are and will be employed to move Canadian tar sands oil through the United States. At the same time, the date when tax credits for alternative forms of energy must be renewed draws closer. Your task is to come up with a viable alternative to the Keystone Pipeline and tar sands oil, using alternative forms of energy to achieve the same results – greater energy capacity, more jobs, and affordable power.

As a member of the EPA, you must convince Congress that tar sand oil is not a viable long-term solution for supplying American energy needs. Analyze the costs and benefits of the Keystone Pipeline versus extending tax credits to businesses or homeowners who install wind, solar, or other renewable energy-generating devices. Alternatively, you may think of a plan that incorporates something more innovative than the traditional tax rebates. You will recommend legislation to be put before Congress, and prepare yourself to testify about the risks and benefits of each of the options before you.
**Keystone Pipeline**

**Background**

The proposed path of the Keystone XL pipeline traces a 1700-mile-long route through Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. It is intended to transport oil from Alberta’s tar sands to refineries along the Gulf Coast, where it can then be exported. According to Bloomberg News, in 2011 the US became a net oil-product exporter for the first time since 1949; although popular belief holds that America imports most of its oil products, a good deal are shipped out of the country. A large portion of the oil that would be moved through the Keystone Pipeline would not remain in the United States for domestic consumption and would instead be shipped to other countries via the Gulf of Mexico.

Around 900,000 bbl. of oil – synthetic crude and diluted bitumen – would pass through the pipeline every day. This oil, from the Athabasca tar sands, is generally considered to be a “dirtier” variety than that commonly produced and sold in the United States, such as West Texas Intermediate and Kansas Common (commonly considered the standard for high-quality oil) (Pierce). Increased access to the tar sands oil is projected to lower oil and gas prices by some small amount throughout the United States. TransCanada, the Canadian company responsible for the pipeline, estimates that around 20,000 temporary jobs would be created as the pipeline is built; after construction is completed, the jobs remaining will number in the hundreds. Despite the non-permanent nature of the work, job creation has been a major selling point to many key players in the decision of whether or not to grant the construction permit.

**Additional Benefits of the Pipeline**

Aside from the perceived economic benefits of the pipeline, there are advantages to strengthening our political relationship with Canada as well. Canada is currently our largest trading partner and supplier of oil, and Canadian officials are pushing Congress to provide them with a permit (Burwell). Although Canada is considered a friend and ally, there are dangers in denying them a spectacular political and economic opportunity.

**Downsides to the Pipeline**

As currently drawn, the expansion of the pipeline would cut through the Ogallala Aquifer in Nebraska. The Aquifer is one of the most important non-renewable water reserves in the United States. It supplies the Central and Great Plains states with water, covering parts of Wyoming, South Dakota, Nebraska, Kansas, Oklahoma, Colorado, New Mexico, and Texas. This translates to roughly 20% of the country’s irrigated farmland that depends on the aquifer (Pierce). This region, commonly known as the “Breadbasket of America,” is crucial to agricultural production and food supply in the country. Despite high incidence of tornadoes and thunderstorms in the area, low annual precipitation makes the region extremely vulnerable to droughts, making the ability to irrigate extremely important.

Trillions of gallons of water are stored in the Aquifer, which supplies as much as five trillion gallons a year to the drought-stricken plains of the Midwest. A spill would not necessarily contaminate the whole aquifer, according to John Stansbury, a professor of environmental water resources at the University of Nebraska. He found that the worst-case scenario suggests that up to 5 billion gallons of water could be polluted in the event of a spill. The resulting “plume” of oil is estimated at around 40 feet thick, 500
feet wide, and 15 miles long – not only a colossal waste of oil but a serious threat to water, wildlife, and humans in the vicinity. A spill would be devastating to the environment, wildlife, and farmers for years to come. TransCanada pipelines have a history of spills – there have been 14, the largest of which leaked 21,000 gallons (National Public Radio).

The pollutant oil, too, is a concern; when it is eventually burned, it will contribute increased amounts of greenhouse gases to the atmosphere. According to the National Resources Defense Council, “if the United States were to import 3 million barrels per day (mbd) of tar sands oil, it could offset all the emissions gains projected by the Environmental Protection Agency (EPA) under the Renewable Fuels Standard (RFS2) by 2022.” Lastly, the production process for tar sand oil involves strip mining techniques - which permanently scar the land - rather than traditional wells. Though the EPA of course has no authority over Canada, where the extraction will occur, any measures that can be taken to discourage these techniques are desirable.

**WIND ENERGY**

Wind is considered a particularly promising source of energy in the Plains states, where the pipeline would run. Generally it uses large turbines to generate and store energy from wind. Large commercial “wind farms” even leave the surrounding areas farmable, and personal residential generators can take some homes “off the grid.”

Wind’s abundance alone gives it an edge as a renewable energy source. Turbines can be placed almost anywhere, although they are more appropriate in some areas than others; the top ten states in terms of wind energy potential are North Dakota, Texas, Kansas, South Dakota, Montana, Nebraska, Wyoming, Oklahoma, Minnesota, and Iowa. It is estimated that each day, were all the wind power on Earth harnessed, the entire planet could be powered 200 times over (Phelps). Although turbines are expensive, technology has improved enough since the 1980s that installation and maintenance prices have fallen more than 60%.

**Downsides to Wind Energy**

One of the top complaints against wind farms is so-called “noise pollution.” Although the average residential turbine only produces a low “swooshing” sound, the noise from commercial wind farms has been likened to that from a small jet engine. In the same vein, residents often complain about the aesthetics of the farms – commercial turbines can measure up to 325 feet tall and are quite conspicuous, especially when located on the open prairie or farmland. They are often referred to as unsightly and can lower home values if placed within viewing distance of the property.

It is not uncommon for birds to be killed when attempting to fly between the spinning blades of turbines. It is estimated that approximately 440,000 birds per year die in this manner. Experts worry that the problem could be exacerbated if farms are placed in the line of certain bird species’ migratory patterns. It should be noted, however, that far more birds die annually by other “human-caused methods” (such as flying into cars); wind turbines cause only 3 out of every 100,000 human-related bird deaths (Daly).

Wind energy is, however, inconsistent. Although some areas sustain generally high wind speeds, the wind of course does not always blow at a constant rate. This makes wind somewhat unsuitable as a power base, as extra power that builds up during windy times must be stored in a battery generator. As technology advances and storage capacity improves, wind may become more suitable to serve as a power base. However, it is possible for homeowners to sell excess energy.
produced by residential turbines back to the grid, producing a small profit. This means wind is ideal to supplement other types of energy – for example, when wind speed picks up, turbines can supply power to a whole grid, and when it dies down, the grid can switch back to fossil-fuel generated energy.

Cost-competitiveness is the final, and most grave, issue with wind energy. Although the input is free – unlike fossil fuels – startup costs are high, and so far wind energy has not proved commercially competitive without government subsidies. Although a clean form of energy, it remains more expensive per kilowatt-hour than traditional sources of energy.

**SOLAR ENERGY**

Solar energy uses nuclear fusion processes to harness the energy of the sun via photovoltaic technology and what are commonly known as “solar panels.” Advances in technology have led to more innovative mediums; most notable are solar shingles that can be used on both residential and commercial buildings. They are a quiet and non-pollutant method of generating large amounts of energy, for both commercial and residential purposes.

Despite several drawbacks, solar energy is quickly emerging as a viable and desirable form of alternative energy. Solar generators are particularly popular in the Southwest, which receives significantly more sun than the rest of the country. With improved technology to harness and store energy, it is estimated that the entire world’s energy needs could be fulfilled 20,000 times over with the energy of the sun captured from a very small land area. Solar energy is also ideal in areas of the world that cannot be connected to a conventional power grid – solar panels connected to battery storage can provide enough power for small villages in Africa, for example. Photovoltaic technology, which uses silicon-based materials to convert solar radiation into electricity, is more efficient than any other type of renewable energy; solar cells can provide power at a density of up to 170 W/m².

**Downsides to Solar Energy**

Although solar energy itself is clean, the process used to produce solar panels is highly pollutant. Chemicals such as nitrogen trifluoride (NF₃) and sulfur hexafluoride are used and released during the manufacturing process; scientists estimate NF₃ is 17,000 times more pollutant than carbon dioxide. If care is not taken during production, abundant amounts of greenhouse gas can be released into the atmosphere (Parkinson). However, according to Vasilis Fthenakis, head of the Photovoltaic Environmental Research Center at Brookhaven National Lab, if proper methods are used when producing and disposing of solar cells, research has shown that they can reduce emissions by more than 89% in comparison to fossil fuels.

Like wind energy, solar energy is as of yet too inconsistent to be an energy base. During overcast days or nights, the grid must rely upon battery storage or another form of energy. It is also expensive; for a typical residential setup, it can take several years to earn back the cost, even with the current government subsidies.

**CURRENT RENEWABLE ENERGY SUBSIDIES**

There are currently two major types of government subsidies directed at renewable energy. In the past, the government has tried to encourage both homeowners and commercial generators to install wind turbines, solar panels, or other methods of generating alternative energy. According to the Environmental Law Institute, in the years
2002-2008, the government provided roughly $29 billion in subsidies to support renewable energy. Although $29 billion may sound like a lot of money, the government actually provided more to producers of fossil fuel: over $72 billion dollars in the same time period.

**Wind Subsidies**

The **Production Tax Credit (PTC)** is the main subsidy for wind energy producers; however, it is scheduled to expire at the end of 2012. The PTC provides an income tax rebate of 2.2 cents per kilowatt-hour to producers. It is possible Congress could pass a temporary extension, as it has done in the past. As previously mentioned, the wind and solar industries have not yet become completely self-sustaining, and many providers rely on the tax credits (American Wind Energy Association). Industry officials are worried, saying that the industry’s 75,000 jobs could be put in serious jeopardy if the credit is ever discontinued (Martin).

Commercial wind farmers and homeowners can also earn a tax credit when they install new turbines. The government will subsidize up to 30% of startup costs, assistance that has been vital in getting the young industry on its feet.

**Solar Subsidies**

The solar investment tax credit provides tax credits of up to 30% of startup costs for installing solar panels. This can be extended to either homeowners or commercial generators. The credit, unlike the wind tax credit, is scheduled to be in place until 2016.

**PREPARING FOR BOSTON**

America is in danger of falling behind other developed nations such as China in terms of innovation and experimentation with alternative energies. We have abundant supplies of free energy sources available on our land for the taking, yet the infrastructure and technology we currently have in place has not allowed us to fully tap into these resources. In order to progress as a nation, we need to take advantage of these resources while also acting as guardians of our land and environment.

As you can see, there is no simple or obvious solution to the energy crisis in the United States. As you prepare for the Boston conference, think about some of the more viable options and begin to integrate them into a program that you could support before Congress. Remember that you must balance your own concerns, as staffers on the EPA, with concerns that will allow you to get your bill passed. For example, keep in mind how average Americans will be affected by your plan. One of the most attractive aspects of the Keystone XL pipeline is the jobs it will create; Congress will not be easily dissuaded from this proposition unless you can come up with an alternative energy plan that will boost the economy and the jobs market. Also consider cost: historically, energy forms such as wind and solar have not been competitive in the private sector without government support. If possible, try to come up with an innovative program that will foster success and responsibility with government funds while also encouraging entrepreneurship and technological development. Feel free to look into other types of renewable energy as well – although wind and solar energy have been the most high-profile of the renewables so far, technology in the market is constantly evolving. Your main job is to convince Congress that the Keystone pipeline and fossil fuels are a shortsighted venture not in America’s best interests. Keep in mind that you are also trying to dissuade Congress from pursuing similar projects in the future; you may want to discourage subsidies to so-called “big oil.” TransCanada and the Canadian government are important friends to the United
States, so a diplomatic fallout over permits for the pipeline would be detrimental to the government of the United States. As such, it is extremely important that you come up with a serious plan with a real potential to boost the economy, lower energy prices for the average American, and make the nation more self-sustainable moving forward.

**GLOSSARY**

*bbl.* – barrel; a unit of measurement equivalent to 42 US gallons, used for quantifying amounts of oil

**EPA** – Environmental Protection Agency; a government agency responsible for promoting responsible environmental stewardship

**PTC** - production tax credit; a subsidy offered to producers of alternative energy

**RFS2** - Renewable Fuel Standard; guidelines promoted by the EPA for reducing emissions by increased use of alternative energy, among other means

**WORKS CITED**


