

The competitive benefits of a modern energy system

June 24 2019, by Steve Cohen

As the EPA retreats from the Clean Power Plan's goal of reducing greenhouse gases and promotes President Trump's 19th-century coal-fired energy policy, states like New York and California are aggressively modernizing their energy systems. However, while blue states, largely on the coasts, are promoting renewable energy and reduced greenhouse gas emissions, red states are hanging back and letting the market alone determine their mix of energy. As Brad Plummer reported in the *New York Times* this past week:

"A growing number of blue states are adopting sweeping new climate laws—such as New York's bill, passed this week, to zero out net [greenhouse gas emissions](#) by 2050—that aim to reorient their entire economies around clean [energy](#), transforming the way people get their electricity, heat their homes and commute to work. But these laws are passing almost exclusively in states controlled by Democrats, while Republican-led states have largely resisted enacting aggressive new climate policies in recent years. At the same time, the Trump administration is rolling back federal climate regulations, which means many red states now face even less pressure to shift away from coal power or gas-guzzling vehicles."

There are technical and management challenges ahead if these goals are to be met, and we will also need to mobilize a great deal of public and private capital to transition to [renewable energy](#). A number of business interests are concerned that the new rules will make these blue states less competitive and dirty and deregulated states will be better able to lure

businesses that think they need to pollute to be profitable.

This line of reasoning persists in part because there are cases where this actually happens, and because of an ideology that is decades behind the times. Let's start with the fact that 80% of America's GDP is in the service sector. As manufactured goods increasingly resemble commodities, the high value-added parts of the economy are in design, software, creativity and what I often call the "brain-based economy". There is more money in software than hardware. Service industries care about the cost of energy, but care more about attracting and retaining talented people. Talented people tend to care about the planet, and just about everyone cares about the health and wellness of their families and loved ones. And people like to breathe. It's one of those things we get used to, and breathing is easier with clean air than with air poisoned by particulates and other pollutants.

And then there is energy's basic cost structure and its long-term price trajectory. Fossil fuels pollute when:

- You extract them from the planet;
- You ship them or pipe them to where they will be burned, and;
- You burn them.

Each of those actions have direct financial costs and create externalities that someone has to pay for. Extraction damages ecosystems and groundwater. Shipping has similar environmental impacts and of course it requires energy to ship energy. Burning requires capital to transform the fuel into the energy we use. The financial costs and environmental impacts of each of these actions may go down over time, but it's a long supply chain ironically subject to interruption by extreme weather events made worse by climate change. And the fuel itself is finite and when it finally becomes scarce (long after I'm gone), it will become more expensive. Pollution is a form of waste and productive systems that

reduce waste are by definition more efficient.

Let's contrast fossil fuels to solar power. While you can generate [solar power](#) at a central facility, you can also generate it anywhere. The source fuel (the sun) is free and will last for longer than humans will be around. The technology to receive it and store it is getting more efficient and less expensive and we have every reason to believe that technological development will continue to advance in this critical area. Today, solar cells are toxic, but some day they probably won't be. Solar energy does not require combustion of chemicals that pollute the air.

As states commit to greenhouse gas goals, they will be replacing fossil fuels with renewables, but will also be investing in microgrids and in other technologies that will make energy use more efficient and reliable—from light bulbs to compressors, and heat pumps to building and window insulation. The low hanging fruit of greenhouse gas reduction is energy efficiency, and a more efficient energy system lowers the cost of energy paid by consumers. Renewable energy is already less expensive than [fossil fuels](#) and this price differential will probably grow, unless the oil companies lower their prices below profitability in response to competition from renewables.

What all this means is that the states investing in greenhouse gas reduction are really investing in the modernization of their [energy systems](#). Our current electric grid dates back over a century ago to the heyday of Thomas Edison and his grid built on direct current in the 1880s. After a few decades, direct current (DC) lost out to alternating current (AC), but the basic grid is well over a hundred years old and is in need of modernization. The states that modernize first will end up with a more reliable and lower cost energy system. Since electric vehicles cost less to run and maintain than vehicles powered by internal combustion engines, the places that promote electric vehicles are also promoting lower priced transportation.

Even though most of our GDP is in the service sector, every element of our economy and of our daily lives is highly dependent on energy. The U.S. energy system has long required a partnership between the public and private sectors. The New Deal invested massive amounts of government capital into rural electrification—without which it might never have happened. Investment in energy was seen by FDR as a way of stimulating rural economic development, first in construction and second by making farming less dependent on human and animal labor, thereby creating more mechanized and efficient agriculture. In every part of the country, electricity was either publicly owned or developed as a government-regulated private monopoly. But public-private energy partnerships are far from perfect. In some places, government has proven to be an obstacle to the development of renewable energy. Russell Gold of the Wall Street Journal has written a fascinating account of the successful effort by two Republican senators from Arkansas to stop a clean power line proposed by wind power developer Michael Skelly that would have transmitted wind power across the southeast.

The lesson of wind power is one worth paying attention to as states work to decarbonize their economy. So too are the lessons of policy experimentation from the New Deal. We need to understand the limits of public policy but promote creative, pragmatic, policy that promotes the public interest. Public policy does not actually solve any problems; it makes them less bad. Policy is "remedial and partial". For example, in 1990, New York City suffered through 2,605 murders, while in 2018, the city endured 289. The murder rate in 2018 was less bad than 1990, unless you were one of the 289 dead, in which case the murder problem was still quite bad. Other examples: The air is cleaner in America today than it was in 1970, but it is far from pristine. Women have more rights today than when my mother was growing up, but we are still a long way from gender equality. We are not going to ever completely decarbonize our economy. We are going to reduce rather than eliminate [greenhouse gases](#). Some fossil fuel use will remain. It will often be a matter of two

steps forward and one step back. We need to be pragmatic and understand the trade-offs required to achieve greenhouse gas reduction goals. While New York's new law permits payment for carbon offsets, it is extremely unlikely that we will use public funds to pay for those offsets. We are talking about the public's money. Would we pay teachers less, or allow children to go hungry to pay for carbon offsets? Would we refuse shelter to the homeless? It is hard to imagine state tax funds being spent to reduce carbon in another jurisdiction.

But the main point I am trying to raise is that the modernization of our energy system will make blue states more economically competitive rather than less competitive. There will be examples of some political factors that will slow decarbonization, and there will be some short-term economic trade-offs that we also may be unwilling to accept. Exceptions to zero carbon will be required and for that reason zero carbon is an aspirational, not an operational, goal. A pragmatic approach with aggressive goals will result in a more rapid transition to renewable energy than either a slow and timid approach with modest goals or a frantic, ideologically driven approach that sees carbon as evil and these goals as absolutes.

This story is republished courtesy of Earth Institute, Columbia University
<http://blogs.ei.columbia.edu>.

Provided by Earth Institute, Columbia University

Citation: The competitive benefits of a modern energy system (2019, June 24) retrieved 7 May 2024 from <https://phys.org/news/2019-06-competitive-benefits-modern-energy.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--