

Energy modernization as climate policy

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When West Virginia Senator Joe Manchin stabbed President Joe Biden's Build Back Better Bill in the back, he also "signaled" his support for the energy modernization and environmental elements of the bill. Of course, earlier, he "signaled" that he did not support a 4-trillion-dollar bill but

might be interested in a smaller bill. Two trillion dollars in cuts later, it's hard to know what his signals mean. While he struggles to survive the deep red politics of West Virginia, he is a very smart guy, and knows that fossil fuels are on the way out. Federal funding to modernize the energy system and make it more efficient and "green" doesn't penalize his home state fossil fuel businesses too much and may provide the resources to invest in a lower cost and more reliable energy system. America will need such an energy system to remain competitive in the global economy. America's electric grid is increasingly unreliable. According to the U.S. Energy Information Agency: "On average, U.S. electricity customers experienced just over eight hours of electric power interruptions in 2020, the most since we began collecting electricity reliability data in 2013." Most interruptions are caused by major weather events. Climate change is responsible for more frequent and intense weather events. Without redesign and reconstruction, we should expect increased energy blackouts.

That is the sales point that seems to be missed when we are discussing the energy system and climate change. The current system is highly centralized and vulnerable to climate and cybersecurity impacts. It also depends on fossil fuels. Even if fossil fuels were not destroying the planet, they remain a technology ripe for displacement. In the long run, fossil fuels will be far more costly than renewables. Fossil fuels are finite, and while there is plenty of supply left, it's getting harder to get to it. The sun, by contrast, will last longer than our species. The technology of solar cells, batteries, and wind power continue to improve and get more efficient and less expensive—sort of like computers and smartphones. A multi-million-dollar computer in the 1970s had far less computing power than your \$300 smartphone. The source fuel for renewables is free. Contrast that to fossil fuels. Oil, coal and gas must be extracted from the earth at a cost to the pocketbook and ecosystems, transported to where they are burned (more cost) and then finally burned. Expense on top of expense. It's a technology that is being

disrupted and displaced by renewable energy.

For the foreseeable future, we still need an [energy grid](#), and with high-capacity transmission lines, we might transmit renewable energy from sunny and windy places to cities. But efforts like the ridiculous one in California to tax homes with solar arrays to pay for the [grid](#) will not work and grid finance is going to be more difficult when distributed power generation reaches an as yet unknown tipping point. We can expect to see [electric utilities](#) and their regulators pushing back on efforts to promote renewable energy. An effort in California to tax solar arrays was lampooned by former Governor Arnold Schwarzenegger in a [New York Times](#) op-ed last week. According to Arnold, the state was proposing:

"...a new monthly "grid participation charge" that would average an estimated \$57 a month for solar customers. People who power their homes with fossil fuels wouldn't pay this. So let's call it what it is: a solar tax. This solar tax would also apply to customers who invested in batteries to store that solar energy. Battery storage is critical for the transition to clean energy and grid resilience. But this tax will only discourage that progression. Moreover, the commission would cut credits to new solar customers (and some older ones) as much as 80 percent for the electricity they don't use and send to the grid under the net metering program. Those credits in turn can lower their utility bills. This is just another case of the big guys—the investor-owned utilities—fighting for themselves and hurting people who have invested or want to invest in solar panels."

The political reaction against the California Utility Commission effort was swift. As a result, Governor Newsome and the Commission seem to be backing off. According to Rob Nikolewski, reporting in the San Diego Union Tribune:

"In an unsurprising move, the California Public Utilities Commission has postponed a vote on a controversial proposal that would dramatically change the way the state's 1.3 million rooftop solar customers get compensated when their systems produce more electricity than they consume. The commission had originally scheduled a vote on Jan. 27 but the agenda for next Thursday's meeting had no item listing the proposed decision on what's colloquially called NEM 3.0, or more formally, the Net Energy Metering tariff."

The institutional and [financial interests](#) invested in fossil fuels and the electric grid are major obstacles to modernizing our energy system. While currently, owners of [solar arrays](#) and batteries often sell back their excess to the grid, thus lowering the cost of energy on the grid, an effort to tax household solar could result in decisions to disconnect from the grid entirely. Technology may develop that will make cutting the energy cord less risky and more common, leaving those dependent on the grid with higher costs. We have seen this with telephone landlines and cable television. Why should electricity be immune from similar forces?

The issue in California is that the payment to homeowners and businesses selling energy back to the grid may have been set too high in an effort to encourage renewable energy investment. The cost of maintaining and updating the grid needs to be paid by someone. The capital investments needed are in part subsidized by the federal infrastructure and Build Back Better climate provisions. But the long-term shape and financing of the electric grid will need to be rethought and refinanced as part of the effort to modernize and decarbonize the energy system.

Since I live in an apartment in New York City, I have no place to put rooftop solar. But a number of companies are working on placing solar cells in window glass. That technology shows enormous promise and should lead to a time when people in multi-family homes or offices in

skyscrapers will be able to generate their own electricity. While all of these technological developments will help reduce [greenhouse gasses](#), when coupled with advancing battery technology, they also promise lower cost and more reliable electricity.

At one time, homes were heated by fireplaces and light came from oil or gas-fueled lamps and candles. Those technologies were displaced by oil, gas and electric heat and electric light bulbs. There is no reason to believe that the current method we use to power our homes will continue indefinitely. In the future, electric utilities will play a different role than they currently play in powering our economy. We all have an interest in an energy transition that prevents the bankruptcy of electric utilities and encourages their active participation in the transition to renewable energy. We should not use taxes on renewable energy to fund the transition, at least until the use of renewable energy is more widespread. California has over a million installations, but it is a state of over 39 million people. They have a long way to go, and the rest of the country has an even longer road to renewable energy.

It will take national-level resources to provide the capital needed to modernize the grid. By relieving utilities and their ratepayers of some of these capital costs, utilities can reduce costs by making the grid less wasteful and less dependent on [fossil fuels](#). A large-scale, national project like modernizing the electric grid will require subsidies, but once built, some of the continuing costs of grid maintenance and energy generation can be reduced and built to accommodate a different load than the current system seeks to meet.

The transition will be complicated, and financing needs will vary by location. Interest group politics will feature intense lobbying by utilities, fossil fuel companies, renewable energy companies and environmentalists. But the goal should be a lower cost, more reliable and less polluting [energy](#) system. By wedding those three elements together,

under the umbrella of modernizing our [energy system](#), we can create a broader coalition than an effort dominated by the goal of greenhouse gas reduction. Energy modernization is the goal, greenhouse gas reduction is a much-needed byproduct.

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