

# Energy efficiency: A clue to politically feasible climate policy

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Our federal government and many state and local governments have been promoting energy efficiency for decades. It is hard to argue against efficiency. Why would anyone want to waste something that costs

money, like energy? If I can drive a car forty miles on a gallon of gas, why would I want to spend twice the money if the same car got twenty miles to the gallon? If I can heat my home for 2/3 the price with insulated windows, why wouldn't I want to install those windows if I could? While the goal of energy efficiency is not controversial, the means of achieving efficiency can be a subject of debate.

Energy utilities all over America are encouraging their customers to adopt [energy](#) efficiency measures. Some states like California and New York tax energy use to generate funds that are invested in energy efficiency. Let's assume that you might want to install those insulated windows, but it will take several years for the windows to pay off, and you don't have the money in the bank to pay for new windows. State energy taxes, often administered by utilities, can provide the funding needed to loan you the money for installing new windows. After a few years, the cost of the windows can be recovered in lower energy bills. For some, this is government intrusion in the marketplace; for others, it is common sense public policy.

State and [local governments](#) continue to move aggressively on energy efficiency. One goal is to avoid the capital expense of new power plants. Another is to make the local economy more competitive. When we make the current energy system more efficient, we can increase energy use without generating additional power. The [federal government](#) under the Trump Administration seems to be retreating on energy efficiency. They are trying to roll back automobile fuel efficiency standards and are even going back on light bulb regulation. According to Nadia Popovich of the New York Times:

"Over the past decade, traditional incandescent bulbs, those distinctive glass orbs with glowing wire centers, have been rapidly replaced by more [energy-efficient lighting](#). The shift has driven down electricity demand in American homes, saving consumers money and cutting greenhouse

gas emissions. The energy savings are expected to grow as highly efficient and increasingly inexpensive LED bulbs continue to replace older lights. But energy efficiency advocates worry that the Trump administration could slow the pace of this lighting revolution. Last month, the Department of Energy said it would withdraw an Obama-era regulation that nearly doubled the number of light bulbs subject to energy-efficiency requirements.... Industry groups are also pushing back on new lighting efficiency requirements slated to go into effect next year. After climbing for decades, electricity use by American households has declined over the past eight years."

The more efficient bulbs are getting cheaper and it may be that government regulation will eventually be superfluous, but at the moment it helps push them and in a small way helps maintain the momentum behind energy efficiency. Energy efficiency is a growing business. According to the National Association of State Energy Officials: "2.25 million Americans work in Energy Efficiency, in whole or in part, in the design, installation, and manufacture of Energy Efficiency products and services." I am on the board of directors of a company called Willdan, which is a rapidly growing firm in the energy efficiency business. At Willdan I am observing first-hand the increasing technological sophistication of the effort to reduce energy waste. One of the companies that Willdan recently merged with works with utilities to ensure that the time of day they generate electricity matches the time of day it is used. There is a growing level of expertise being developed and deployed to reduce the use of energy, while continuing to produce the same output. In our homes we continue to use more energy-dependent technology every day, but our energy use per capita is going down rather than up.

Opponents of climate policy argue that combating global warming could raise the cost of energy and force changes in our lifestyle. I believe that the opposite is true and cite the example of energy efficiency. A more

efficient use of energy is an effort to use less energy to produce the same output. We have seen that more energy efficient technologies can be invented if we put our minds to it. Refrigerators, washing machines, air conditioners and automobiles have all become more energy efficient over the past several decades. When engineers are given energy efficiency as a design parameter, we soon start to see products that use less energy than they once did. The price of the new technology is rarely higher than the old one; it's just that saving energy wasn't a priority and now it is.

I continue to believe that the use of price to influence behavior is not an effective strategy for climate change policy. It works for transportation in a crowded city with congestion pricing because you have the alternative of using mass transit or travelling at a different time of day. However, much use of energy is too central to daily life and its use is largely nondiscretionary. If you don't have access to mass transit (like most Americans) you have no choice but drive to work. And you can't turn off your refrigerator, your climate control or stop charging your smartphone. A more effective strategy than taxing carbon is to create an effective public-private partnership to modernize the energy system and make it more efficient and renewable with the aim of lowering the price of energy. It is clear that if you can encourage or subsidize the capital required for energy efficiency, you can lower the consumer's cost of electricity. Even paying back the cost of capital, consumer energy bills can go down. Energy efficiency policy in America is in place at the state and local level and starting to work.

A similar logic can be applied to [renewable energy](#): Through technological innovation you can lower per capita cost of energy. The theory is straightforward. The cost structure for [fossil fuels](#), even without charging for its environmental impact, can only rise. First, you must extract fossil fuels from the earth, then transport them to where they are needed, and then burn them. Each of those steps not only

pollutes the planet but is bound to rise in price over the long run. They are called fossil fuels because they were only created once in our planet's history and they are a finite resource. Eventually they will become scarce and as that happens they will rise in price. The cost of transport will not go down much, and the cost of combustion is also relatively fixed. In contrast, the costs of renewable energy will continue to go down as solar cells and battery technology advances and as wind energy achieves economies of scale. The cost of the basic fuel, the sun, will remain zero for longer than our species will probably exist.

The problem is that this dynamic may take too long to save us from negative impacts of climate change. While the logic of fossil fuels vs. renewable energy pricing is clear to most advocates of climate policy, the political unpopularity of increasing energy prices seems to elude them. The popularity of energy efficiency and the illogic of opposing it is a clue that lowering energy prices is more politically popular and less controversial than increasing them.

The only politically feasible way of combatting climate change is to invest in research and development and infrastructure that makes our energy system more efficient and less dependent on fossil fuels. The goal is to build a more efficient, modern and lower-cost energy system. We need an energy system based on lower-cost renewable energy, widespread energy storage and distributed generation of energy, and a system that uses energy as efficiently as possible.

Even though the Trump folks want to move backward on light bulbs and fuel standards, if consumers believe they can get the same quality light and transportation they now have but pay less for it they will do it with or without the federal government. A climate policy that focuses on [energy efficiency](#) is already in place and is politically popular. A similar approach to renewable energy—one that emphasizes technological innovation designed to lower price while maintaining reliability—can

drive fossil fuels from the marketplace and ease the climate crisis confronting our planet.

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