

Summary: Amory Lovins, “Do Coal and Nuclear Generation Deserve Above-Market Prices?” Forthcoming in *Electricity Journal*.

Amory Lovins evaluates the fourteen rationales various stakeholders claim to subsidize or mandate uncompetitive nuclear and coal plants. **The most striking finding is that subsidizing costly nuclear plants is actually counterproductive to fighting climate change.** Closing uneconomical nuclear plants and reinvesting their operating costs in energy efficiency would actually save more emissions and reduce energy demand for the same price. Lovins also debunks the claims that nuclear and coal power are necessary for a reliable, affordable, and efficient grid. Below is a summary of the pieces most relevant to New York’s nuclear bailout. The full analysis is available [here](#) and the press release [here](#).

MYTH: Nuclear plants are necessary to fight climate change. In fact, subsidizing extremely costly nuclear plants is counterproductive to fighting climate change. Why? Because with the money we’re already spending to keep the plants operating, we could instead be investing in energy efficiency (better insulation, appliances, etc.) that both replaces the nuclear power generated AND saves additional energy, thereby reducing emissions from coal or gas plants. It works like this:

- a. The 25 percent most expensive-to-operate nuclear plants across the country (the ones that are closing or the public is being asked to subsidize) cost an average of 6.2 cents per kilowatt hour (kWh) to operate.
- b. Utilities can buy end-use energy efficiency for their customers for an average of 2-3 cents per kWh.
- c. Thus, closing these costly nuclear plants and reinvesting their operating costs into energy efficiency (which regulators could require) could yield 2-3 kWh of efficiency for the same price, 1 kWh of which would replace the 1 kWh no longer generated by nuclear energy, with the remaining 1-2 kWh displacing power derived from coal or gas, thereby reducing emissions further than those avoided just by keeping the nuclear plants online.
- d. Customers are already paying for the operating costs of nuclear plants, so this swap for efficiency does not require extra money and eliminates the need for subsidies. In other words, we can reduce emissions and ratepayer bills at the same time, without charging people an extra dime.

Policymakers have to stop thinking about nuclear plants only in terms of saved emissions and start to consider the opportunity costs of sinking money into them instead of reinvesting that money more efficiently. New York failed to follow the money as well as the carbon.

It is also worth noting that New York’s subsidies are projected to last twelve years. Lovins points out that given the rapidly changing energy markets and plummeting price of renewables, no policymaker can reasonably predict energy prices a decade from now. For example, the real

price of power purchase agreements in the US fell 83 percent for solar power and 71 percent for wind power from 2008-2016, which is less time than the duration of New York's subsidies.

MYTH: Large power plants are necessary for a reliable, affordable and efficient grid. This was true in the past, but today it's a myth. Not only are large, inflexible power plants (sometimes referred to as "baseload" power) no longer needed, they can actually become a liability to operating an efficient, affordable and reliable grid. Their size and inflexibility (i.e., they're difficult to ramp up and down) also make them a barrier to integration of renewables into the grid.

This has been confirmed by a former FERC Chairman, the CEO of National Grid and General Electric, and confirmed by analysis from the Department of Energy. It is why Pacific Gas & Electric chose to close the Diablo Canyon nuclear plant in California and replace it with efficiency, renewables and other carbon-free resources. It is also why countries have been able to integrate a high proportion of renewables and maintain reliability. In 2014, four European countries were able to meet 46-64 percent of their electricity needs with renewable resources with no bulk storage and little to no hydropower, and had superior reliability.

Distributed resources like wind and solar can largely or completely bypass grid failures, which are the source of nearly all US power outages. Interconnected microgrids that exchange power with the larger grid but are able to isolate themselves in the event of a malfunction of the larger grid are especially resilient, able to power their local areas until full grid service is restored. This is how the US military is powering their bases, because reliability is essential.

MYTH: Nuclear plants deserve subsidies for their carbon-free electricity. Advocates of nuclear subsidies claim the market has failed nuclear energy by not rewarding it for generating carbon-free energy. On the contrary, nuclear subsidies and other around-market mechanisms actually create market failure. Lovins states: "Around-market subsidies like those just adopted in New York and Illinois distort pool-wide prices, crowd out competitors, discourage new entrants, destroy competitive price discovery, reduce transparency, reward undue influence, introduce bias, pick winners, and invite corruption."

It is wise to incentivize low-carbon and zero-carbon electricity production, but the most efficient, simple and effective way to do that is through a price on carbon, which would advantage all low- or no-carbon generation, not just nuclear power.

Conclusion

Subsidizing the most expensive nuclear plants is not necessary to reduce emissions. Rather, investing that money into far cheaper energy efficiency can avoid the subsidies, replace the power generated by nuclear plants and can displace power generated by fossil fuels. It saves emissions and ratepayer money. Large power plants are not needed to maintain grid reliability and in fact can become a hindrance to effective grid operation. Lastly, subsidies distort the market and are not an efficient way to reward low- or no-carbon energy. Rather, a carbon tax would effectively incentivize low emitters across the board, not just nuclear plants.

Amory Lovins bio

Physicist Amory Lovins has advised major firms (including utilities) and governments worldwide for over 40 years; written 31 books and over 600 papers; and received the Blue Planet, Volvo, Zayed, Onassis, Nissan, Shingo, and Mitchell Prizes, MacArthur and Ashoka Fellowships, 12 honorary doctorates, the Heinz, Lindbergh, Right Livelihood, National Design, and World Technology Awards, and Germany's Officer's Cross of the Order of Merit. An honorary architect, Swedish engineering academician, and former Oxford don, he has taught at ten universities. *Time* named him one of the world's 100 most influential people, and *Foreign Policy*, one of the 100 top global thinkers.