RELIABILITY OF RENEWABLE ENERGY: WIND

Many Americans are looking to limit the use of fossil fuels. Policymakers have responded by subsidizing and mandating wind-generated electricity. These government policies drive the growth of wind power, not market forces. One way to determine whether policymakers have made beneficial decisions regarding wind power is to examine its reliability as an energy source. In the Reliability of Renewable Energy: Wind report, the Institute of Political Economy (IPE) at Utah State University examined wind power's economic, physical, and environmental implications to assess its overall reliability. IPE found that wind power is not a reliable energy source or a worthwhile investment of tax dollars.

KEY FINDINGS

ECONOMIC RELIABILITY

Wind energy is not economically reliable because it is heavily dependent on the Production Tax Credit (PTC) and other subsidies, as well as state mandates like renewable portfolio standards (RPS). This dependency means that taxpayers are paying for an industry that cannot sustain itself in the open marketplace.

Despite receiving billions of dollars in subsidies over 23 years, wind power only produced 4.4 percent of total U.S. electricity in 2014. The Obama Administration now wants to make the PTC and other wind subsidies permanent. Indefinite subsidies could continue to cost taxpayers at least $12 billion per year while benefiting wind-industry favorites.

PHYSICAL RELIABILITY

Wind is not physically reliable because it is inefficient and inconsistent. The amount of energy a wind farm actually produces on average pales in comparison to its potential. Wind power only produces 30 to 40 percent of its potential energy output, as opposed to 75 to 93 percent for coal-fired power.
The highest concentrations of wind are far from cities. Wind turbines in Wyoming, for example, could produce 50 percent more energy than the exact same turbines in more populated areas such as New York. Because the current electric grid is designed to supply power at the local and regional level, thousands of miles of new transmission lines must be constructed to accommodate increasing wind power production.

Building new transmission lines to connect remotely-located wind installations to areas with high populations is not practical. A transmission overhaul would cost a minimum of $60 billion, but likely much more. These costs would be passed on to consumers through higher taxes or higher electricity rates. Wind power will continue to be physically unreliable without huge infrastructure investments and technological innovation.

ENVIRONMENTAL RELIABILITY

Wind power is environmentally reliable because it produces less emissions than traditional fossil fuels, but wind power still has environmental costs. Because the wind is intermittent, wind power plants have to be backed up by more reliable energy sources like coal, natural gas, or hydropower generators when the wind is not blowing. Wind power is dirtier than most people assume because fossil fuels must often compensate for wind’s variability.

Wind turbines also increase bird and bat mortality rates. In North America, wind turbines kill an estimated 214,000–368,000 birds annually. In 2012 alone, wind turbines killed an estimated 600,000 bats in the United States.

CONCLUSION

Wind power may serve as a supplement to the nation’s energy portfolio, but it is not efficient, cost effective, or dependable. It cannot serve as a source of baseload electricity. Wind power is not a worthwhile investment of tax dollars because it is not reliable, and the financial investments needed to make it reliable outweigh its limited environmental benefits. Whether wind power will become reliable or economical within the next few decades is an open question best addressed by markets, not government subsidies or mandates.