U.S. ENERGY AND CLIMATE ROADMAP · CHAPTER BRIEF

Fueling Technology Deployment with a Clean Electricity Standard

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A national Clean Electricity Standard would level the playing field between clean and dirty energy sources, mandate decarbonization of the power sector, and encourage innovation in clean energy technologies. Policymakers could maximize the benefits of this approach by making the standard flexible and technology neutral, linking it to carbon reduction policies in other sectors, and pairing it with complementary policies that facilitate grid integration and directly support technological innovation.

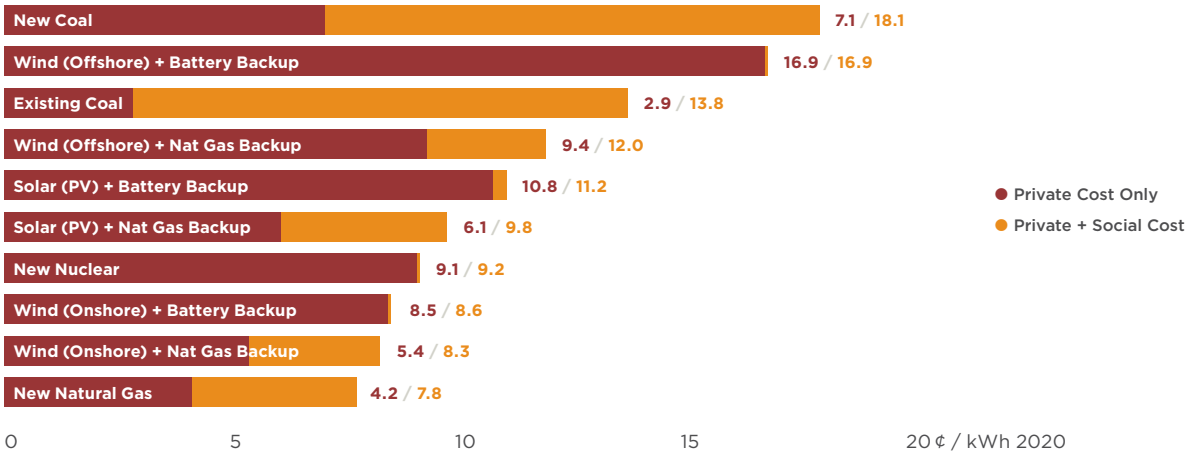
The Challenge

While production from renewable sources of power, such as wind and solar, has grown rapidly in recent years, clean energy sources still account for only a minority of U.S. electricity production—less than 38 percent of U.S. electricity came from carbon-free sources in 2019. If the United States stays on its current track, the share of carbon-free electricity will remain under 50 percent by 2030 and climb to only 53 percent by 2050, according to the U.S. Energy Information Administration. While the direct costs of producing electricity from sources like solar and wind have fallen to about the cost of coal and natural gas in recent years, the need for backup power and extensive transmission infrastructure add considerably to their full costs. As a result, clean energy sources have trouble competing on the uneven playing field they share with fossil fuels, which receive an indirect subsidy by not being priced to reflect the climate, environment and health damages they impose on society.

Policy Context

State-level Renewable Portfolio Standards (RPS), which have been implemented by thirty states and the District of Columbia over the past three decades, mandate that a certain proportion of electricity in a state be generated by sources designated as renewable. Electricity producers receive Renewable Energy Credits (RECs) for producing qualifying renewable power, and retailers purchase RECs equal to the required proportion of their sales to achieve compliance, or pay a fine for each unit they fall short of the mandate. Because RECs are tradable across technologies, and to some extent across jurisdictions, this approach allows market forces to select the lowest cost sources and locations for renewable production. However, RPS policies often exclude some carbon-free electricity sources, favor some sources over others, and limit the degree of trade across regions. These and other limitations have made electricity more expensive for consumers and RPS policies less cost effective in reducing emissions than they could have been.

Levelized Cost of Electricity by Source



Note: Unable to quantify non-greenhouse gas costs of nuclear energy.
Source: EPIC analysis

Recommendations

A national Clean Electricity Standard can harness market forces, incentivize firms to innovate, and reduce U.S. emissions substantially over time. Drawing on the lessons from state RPS programs can help guide the most efficient policy.

- **Allow the broadest possible range of technologies and geography to qualify for compliance.** Including nuclear and carbon capture and sequestration technologies and allowing trading in an integrated national market could reduce the costs of the policy.
- **Specify clear standards for certifying new technologies to promote innovation.** A flexible legal framework and clear standards would encourage inventors to build the technologies of tomorrow that could radically transform the market. The Department of Energy would be given the power to certify new technologies for inclusion, as well as review approved technologies to ensure they are delivering.
- **Set up a centralized exchange for Clean Energy Credits (CEC) trading to promote transparency and efficiency.** The transparent trading market could exist through FERC, which could then monitor the market for compliance and ensure that the aggregate costs of the policy are minimized.
- **Allow CECs to be traded with credits issued for compliance under EPA's Light-Duty Vehicle GHG Standards.** Given that the electricity sector accounts for only 27 percent of U.S. emissions, harmonizing carbon-trading regimes across sectors can increase the coverage of national emissions being addressed by policy while reducing total costs to the economy.
- **Award CECs for carbon reductions that do not involve electricity generation.** Policymakers could also empower regulators to issue credits for other provable methods of reducing emissions outside of the electricity sector. For example, technologies that capture and durably sequester carbon such as agricultural processes that increase soil absorption of carbon, forest expansion, etc. This certification process could be administered by DOE in consultation with relevant scientific experts from the EPA.
- **Empower FERC to site interstate transmission lines in "National Interest Electric Transmission Corridors" to improve integration of renewables.** To maximize FERC's authority to take over responsibility for siting transmission lines, the statutory definition of "national interest" could be expanded to include connecting renewable energy to population centers—given that facilitating low-cost carbon-free power to mitigate climate change constitutes a national interest. Further, the statute could be amended to clarify FERC's authority to take full control over the siting process.
- **Invest heavily in government research and development of new energy technologies.** Ambitious targets could be made more achievable by increasing funding to DOE and its Advanced Research Projects Agency to support all stages of this innovation process, from basic science to demonstration and commercialization.

FURTHER READING

Do Renewable Portfolio Standards Deliver?

Social Science Research Network

State-level renewable electricity mandates increase electricity prices by as much as 17 percent over twelve years, making the cost of reducing carbon emissions with these policies likely more expensive than current estimates of the direct benefits of emissions reductions.