

States boost renewable energy and development when utilities adopt renewable standards

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States that require utilities to increase renewable energy see expansion of renewable energy facilities and generation—including wind and other renewable sources, but especially solar—according to new research from Indiana University and two other institutions.

IU's Sanya Carley led a team of researchers including Nikolaos Zirogiannis, an assistant scientist at IU, and law professors Lincoln Davies of the University of Utah and David B. Spence of University of Texas at Austin. The group closely examined the history and evolution of state renewable portfolio standards and interviewed more than 40 experts about renewable portfolio standards implementation.

Their findings are newly published in the peer-reviewed journal *Nature Energy*, in an article titled "Empirical evaluation of the stringency and design of renewable portfolio standards."

The regulations, which require utilities to increase the percentage of energy they sell from [renewable](#)

[sources](#) by a specified amount and date, have been adopted in varying forms by about 30 states. For example, New York requires 50 percent of all electricity sold in 2050 to come from solar.

"As the federal government moves away from climate mitigation policy, including abandoning the Paris Agreement, the role of state-level policy tools such as RPS take on increasing importance," said Carley, an associate professor in the IU School of Public and Environmental Affairs.

Most states have adopted such standards, except those in the Southeast and parts of the Great Plains and Interior West, where fossil fuel prices are low. Nevada and Massachusetts were the first to adopt a renewable portfolio standard in the 1990s, and Hawaii's is considered the most stringent, a pivotal measuring stick.

Renewable mandates drive [renewable energy](#) development across the U.S., the researchers found. The design of the policy, however, is of fundamental importance. These are key findings:

- When designing a renewable mandate, stringency is critical. The stronger the mandate, the more renewables a state develops.
- Other important design features include frequent planning processes and regulations that are mandatory rather than voluntary.
- States that allow utilities to count non-renewable energy, such as "clean coal" or other fossil fuels, to satisfy renewable mandates will develop significantly less renewables, particularly less solar energy.
- In addition to the renewable portfolio standards, having a conducive economic climate and good resources (e.g., strong

winds as in Iowa or abundant sun as in Arizona) is especially important.

Carley said teaming up with researchers from three universities gave the project unique and unusual depth, including through its quantitative analysis and the use of structured expert interviews. The team developed a unique score to measure the stringency of renewable portfolio standard policies, then reaffirmed their findings by interviewing experts from government agencies, including public utility commissions and state energy offices, and renewable energy firms and associations.

"Policymakers face tough trade-offs when designing their RPS policies, such as whether to force in-state renewable energy for local economic development purposes, or to purchase renewables from other states at a potentially lower cost," said Davies of the University of Utah. "Our research also shows just how critical state energy laws are today, particularly as the Trump administration alters the national energy [policy](#) landscape. States are where the action is. They are driving the future of our electric grid."

More information: Sanya Carley et al, Empirical evaluation of the stringency and design of renewable portfolio standards, *Nature Energy* (2018). [DOI: 10.1038/s41560-018-0202-4](https://doi.org/10.1038/s41560-018-0202-4)

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