



STRATA

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**NEWLY RELEASED STUDY EXAMINING MULTIPLE ENERGY SOURCES FINDS RELIABILITY
PROS/CONS NOT ALWAYS AS PRESUMED**

USU study looks at the economic, physical, and environmental implications of five prevalent renewable energy sources to assess their overall reliability.

LOGAN, Utah — The Institute of Political Economy at Utah State University released an examination of the five most common sources of renewable electricity generation. The report's findings show some to be less reliable than previously thought, while others would thrive if not restrained by onerous regulations. The study assesses each source's economic, physical, and environmental aspects.

Dr. Ryan Yonk, one of the co-authors of the study, explains the report is an examination of the pros and cons of each energy type with specific attention paid to the reliability of each source.

"We wanted to look at sources of renewable energy and analyze each based on reliability factors," said Yonk. "The findings from the report show that the most popular sources aren't necessarily the most reliable sources."

The report notes that while some renewable energy industries receive billions of dollars each year in subsidies, while others face significant regulatory barriers, issue related to reliability and efficiency are often overlooked. In many instances subsidies and mandates make some electricity sources appear to be more attractive options, however they are often not equally cost effective, reliable, or environmentally friendly. The report is separated into the five different types of energy. The following table is a breakdown of the key findings from each section of the report: (See next page)

| Electricity Type | Economic Reliability | Physical Reliability | Environmental Reliability |
|-------------------------|--|--|--|
| Wind | Supplied 4.4 % of total U.S. electricity in 2014; officials calling for permanent subsidies of at least \$12 billion per year. | Production rarely meets potential; produces 30-35% of potential energy output, compared to 75-93% output for coal-fired power. | No direct emissions; however requires non-renewable sources when idle. Bird & bat populations affected. |
| Solar | New transmission infrastructure costly. Heavy government subsidies and mandates. | Sunlight not always available. Transmission infrastructure needs significant build out for remote power plants. | Large amounts of water for cooling and maintenance of plants. Backup power from non-renewable sources. |
| Hydro | Heavily regulated, and investment difficult for new hydropower plants, despite thousands of existing viable dams. | Very efficient with less maintenance than other power sources. Improvements could raise large-scale production 50%. | New turbines on existing non-powered dams could increase renewable electricity generation at lower costs. |
| Geothermal | No fuel costs. Low cost of maintenance and operations. High subsidies to offset high cost of exploration and development. | Can run uninterrupted. Geographically constrained and only certain locations have accessible geothermal reservoirs. | Fewer environmental impacts than fossil fuels. Geothermal fluids contain toxic chemicals. Potential danger to water sources if not contained properly. |
| Biomass | High production costs. Heavy subsidies and mandates. Often encourage energy producers to use non-waste material, like timber and crops for electricity production. | Natural high water content = biomass materials burn less efficiently. Reliability of waste materials depends on cost of collecting, transporting and using for fuel. | Small-scale operations can be sustainable and environmentally friendly. Subsidies and mandates can lead to unsustainable logging and harmful agricultural practices. |

The full report can be found on the home page for the Institute for Political Economy at Utah State University, www.usu.edu/ipe. A link to the summaries of each renewable energy type, along with videos and infographics can be found on Strata's home page, or at www.strata.org/reliability-of-renewable-energy

At Strata, our mission is to help people make informed decisions about issues that impact the freedom to live their lives. We work to achieve more prosperous and free societies by affecting a change in the climate of ideas. We do this by conducting robust research on energy and environmental issues, informing policy makers, citizens and civic leaders, and by mentoring high-achieving students to become future decision makers. Strata is located in Logan, Utah. We draw from the collective academic strength and ideas from the faculty and students at Utah State University and a strong network of academics and professionals throughout the world.

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