

# Who would benefit most from solar energy?

## Study ranks states

November 23 2010

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(PhysOrg.com) -- Americans have become more and more concerned with the idea of using cleaner energy sources and creating new jobs through the use of solar energy. A new study from the W. P. Carey School of Business at Arizona State University takes a closer look at which states might benefit the most both from generating solar energy and from consuming that energy. These are believed to be the first state rankings of their kind.

“We see a growing trend by states to increase the importance of renewable [electricity](#) generation,” says assistant research professor Matthew Croucher, who authored the report. “However, the biggest take-away from this study is that if the U.S. is serious about maximizing the societal benefits of solar generation, then we need to look at the national level at how different states can serve not only their own needs, but also those of other states with less ability to create electricity using solar technologies.”

The study was just published in The Electricity Journal. It ranks states based on several criteria. To find out where we should ideally create solar energy for the country, Croucher looked specifically at solar insolation, whether a considerable amount of energy can be generated in each state, as well as the cost of doing so there.

### **The Top 10 states that would benefit from solar deployment through generating and exporting energy**

**to other states are:**

1. Arizona
2. Colorado
3. Georgia
4. Texas
5. Hawaii
6. Arkansas
7. Wyoming
8. Alabama (tie)
8. Missouri (tie)
10. California

Croucher explains, “In terms of potential cost and output efficiency, Arizona has a significant amount of solar potential, but the state, like most other states, is currently constrained by its transmission system, which was created with mainly fossil fuels in mind. If Arizona is going to maximize the benefits from its competitive advantage in solar generation, it will need to figure out how to successfully export significant quantities to other states, which may require investing in infrastructure.”

According to the study, the top states for solar energy **consumption** are Hawaii, Delaware, Alaska, Wisconsin, Maryland and Ohio. This list takes into account the current carbon emissions from electricity in each state and whether [electricity prices](#) are high there. However, it doesn’t make much sense for states like Delaware and Wisconsin to try to generate their own solar energy. Croucher says that’s why it’s so important to consider both the generation and consumption lists together.

“If we want to maximize the societal benefits from solar generation, it should be deployed in the most cost-effective states and sold to states that have relatively high electricity prices and/or a relatively high carbon

content in their current generation mix,” explains Croucher.

Traditionally, most states have simply looked at using [solar energy](#) for their own benefit. Croucher also considered this using five criteria: solar insolation, how many jobs would be created, the cost to deploy, the carbon emissions from electricity in the state now, and whether electricity prices are currently high in the area.

## **The Top 11 states that would benefit from solar deployment solely for purposes of self-sufficiency are:**

1. Hawaii
2. New Mexico
3. Colorado
4. Missouri
5. Georgia
6. Texas
7. Arkansas
8. Alabama (tie)
8. Mississippi (tie)
10. Oklahoma (tie)
10. Wisconsin (tie)

Croucher says, “Hawaii is the most desirable location for solar deployment. Right now, it has the highest cost of electricity, and the electricity has a relatively high carbon content. It also has a high level of solar insolation and faces a relatively cheap cost of deployment.”

**More information:** The full study, including the rankings of all 50 states, can be found at [www.sciencedirect.com/science/journal/10406190](http://www.sciencedirect.com/science/journal/10406190). It is called the “Optimal Deployment of Solar Index.”

Provided by Arizona State University

Citation: Who would benefit most from solar energy? Study ranks states (2010, November 23)  
retrieved 30 April 2024 from <https://phys.org/news/2010-11-benefit-solar-energy-states.html>

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