



Solar power generation success stories

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The U.S. Department of Energy Solar Energy Technologies Office (SETO) supports early-stage research and development to improve the flexibility and performance of solar technologies that contribute to a reliable and resilient U.S. electric grid. The office invests in innovative research efforts that securely integrate more solar energy into the grid, enhance the use and storage of solar energy, and lower solar electricity costs.

SETO plays a crucial role in the growth of U.S. solar energy, partnering with hundreds of private companies, universities, state and local governments, nonprofit organizations, and national laboratories to fund cooperative research, development, demonstration, and deployment projects that drive down the cost of solar electricity. Below are success stories from just a few of the several hundred projects. Select a project to learn more.

The BATRIES team published its findings in a toolkit of best practices and technical solutions to interconnect energy storage systems to the grid. The free resource is designed to help utilities and regulators improve energy storage interconnection with solutions that are replicable across the country. Updating state rules will help reduce the costs and time to safely interconnect energy storage and solar-plus-storage systems.

For example, some states' interconnection rules don't include energy storage, which can cause delays and additional expenses in the interconnection process. The toolkit begins with a discussion on how to update interconnection rules with the correct terminology to describe energy storage projects and their pairing with other renewable generation, like solar. Incorporating storage into the rules provides greater clarity for developers, utilities, and regulators.

DOE continues to focus on bringing together stakeholders to solve interconnection challenges through the Interconnection Innovation e-Xchange (i2X). i2X recently released a roadmap for improving the interconnection process at the transmission level, and is in the process of developing a roadmap for the distribution grid. BATRIES findings can help inform the roadmap recommendations to quickly bring more energy storage capacity online.

Almost all of the electricity generated in seven countries around the globe comes from renewable sources. Today, over 99.7% of the electricity produced in Albania, Bhutan, Nepal, Paraguay, Iceland, Ethiopia, and the Democratic Republic of the Congo comes from renewable energy sources like solar, wind, hydro, and geothermal.

Looking for more insights, stats, and opinions on the current state of the renewables sector? Download our Renewable Energy & Solar Research Report 2024 that draws from an industry survey and analysis of solar simulations carried out on the RatedPower Platform.



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Albania generates almost all, 98%, of its electricity from hydropower. Since 2008, the country has increased its hydro capacity by 65%, reaching 2.5 terawatts, an achievement that has helped Albania reach nearly 100% renewable electricity.

The Albanian government has been actively expanding its hydropower sector. They've signed 130 contracts for new plants, with 45 already operating in the Librazhd region. The European Union has also helped substantially, funding eight major projects through the European Bank for Reconstruction and Development.

However, relying heavily on hydropower does pose risks, particularly as climate change impacts water availability. In Albania, projections suggest a decrease in annual precipitation of up to 6.3% by 2050, with the most significant reductions expected during the summer.

To manage these challenges, Albania is expanding its electricity mix. Solar power is now playing a more prominent role, especially during the summer. In 2023, it made up 9% of Albania's electricity capacity. This increase is supported by projects like the Valtia photovoltaic park in Karavasta, which is set to power approximately 220,000 households.

Additionally, the EU is supporting Albania with a EUR333 million investment in wind energy. These efforts are making Albania's energy supply more stable and diverse as the country reduces its reliance on hydropower.

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