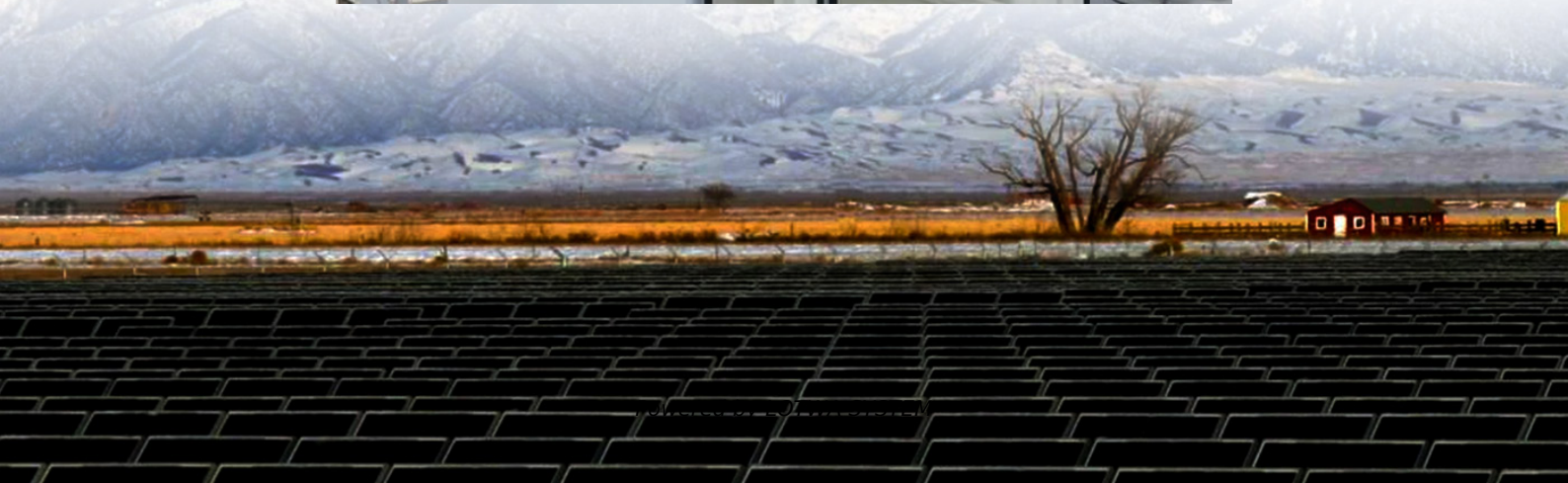


Large-scale power outage at solar container communication stations





Overview

Does a 100% renewable grid increase the risk of power outages?

In contrast, surpassing this level toward a 100% renewable grid may greatly increase the risk of climate-induced cascading power outages, primarily due to enlarged energy imbalances resulting from substantial reductions in renewable generation that further challenge the grid inertia and system flexibility.

What is space solar power station (SSPs)?

Space solar power station (SSPS) are important space infrastructure for humans to efficiently utilize solar energy and can effectively reduce the pollution of fossil fuels to the earth's natural environment. As the energy conversion system of SSPS, solar array is an important unit for the successful service of SSPS.

Could climate extremes exacerbate the risk of widespread power outages?

Nature Communications 16, Article number: 2582 (2025) Cite this article
Climate extremes, such as hurricanes, combined with large-scale integration of environment-sensitive renewables, could exacerbate the risk of widespread power outages.

Do large interconnected power systems face challenges under climate extremes?

While our analysis focuses on Puerto Rico's islanded power grid, large interconnected power systems may also face great challenges under climate extremes.



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