

What is Caltech's space solar power project?

Formed in 2011, Caltech's Space Solar Power Project was made possible from more than \$100 million in donations from Donald Bren, chairman of the Irvine Co. and a Caltech trustee, and his wife, Brigitte.

What is Caltech's space solar power demonstrator?

Caltech's Space Solar Power Demonstrator, launched in January, includes an array of different types of advanced solar panels to test which will work best for a space solar power station, as well as a test system designed to unfold into a 6-by-6-ft. structure that could be used to hold solar panels, alongside Hajimiri's energy transfer system.

What is the goal of the Space Solar Power Project (SSPP)?

The Space Solar Power Project (SSPP) aims to harvest solar power in space and transmit it to the Earth's surface. Wireless power transfer was demonstrated on March 3 by MAPLE, one of three key technologies being tested by the Space Solar Power Demonstrator (SSPD-1), the first space-borne prototype from Caltech's Space Solar Power Project (SSPP).

How much did Caltech spend on a solar power station?

Caltech's \$100 Million Gambit A NASA artist's rendering from 1999 of a solar power station in orbit. Like many other space-based solar designs, it required many connected parts, which translates to considerable launch costs. In 1941 Isaac Asimov, the science fiction writer, published a short story called "Reason";

Will Caltech launch a solar array in 2022 or 2023?

That's a lot of money, and, importantly, the work has been spread out over a decade. A team at Caltech is aiming for the first launch of a test array in late 2022 or 2023. "This is something that's pretty daring," says Ali Hajimiri, a professor of electrical engineering and a co-director of Caltech's Space Solar Power Project.

How did the Caltech effort start?

The Caltech effort to develop space solar power began after philanthropist Donald Bren learned about the potential for space-based solar energy manufacturing as a young man after reading an article in Popular Science magazine.

One year ago, Caltech's Space Solar Power Demonstrator (SSPD-1) launched into space to demonstrate and test three technological innovations that are among those ...

Wireless power transfer was demonstrated by the Microwave Array for Power-transfer Low-orbit Experiment (MAPLE), one of three key technologies being tested by the ...

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Through the Space-based Solar Power Project (SSPP), a team of Caltech researchers is working to deploy a constellation of modular spacecraft that collect sunlight, transform it into electricity, then wirelessly transmit that ...

A Caltech team is celebrating the world's first space-based wireless power transmission, and the first time detectable levels of power have been beamed down to Earth. The Space Solar Power Project ...

Credit: Caltech. A space solar power prototype, SSPD-1, has achieved wireless power transfer in space and transmitted power to Earth. The prototype, including MAPLE, a flexible lightweight microwave transmitter, ...

Late last month, a few days before Caltech's announcement, Japan's space agency, JAXA, announced a public-private partnership that aims to send solar power from space by ...

Space-based solar power has been studied for decades because, theoretically, it could tap into a virtually unlimited supply of solar energy in outer space. Caltech researchers estimate that solar from space could yield eight ...

Historically, satellites have been used for data collection and analysis in the solar sector, but with Caltech's MAPLE work demonstrating the efficacy of space-based power transfer, and earlier ...

We provide an update on the Caltech Space Solar Power Project (SSPP). Our space power station employs a "sandwich" architecture where solar energy is collected on one side of a plate and coherent ...

Wireless power transfer was demonstrated by MAPLE, one of three key technologies being tested by the Space Solar Power Demonstrator (SSPD-1), the first space ...

Scientists from Caltech have reported a significant milestone in their Space Solar Power Project (SSPP), successfully demonstrating the wireless transmission of power from ...

SSPD-1 is the first spaceborne prototype from Caltech's Space Solar Power Project (SSPP). [Caltech story] On a cool, clear evening in May 2023, Caltech electrical engineer Ali Hajimiri and four members of his lab ...

Intrigued by the potential for space solar power, Bren approached Caltech's then-president Jean-Lou Chameau in 2011 to discuss the creation of a space-based solar power ...

A satellite launched in January has steered power in a microwave beam onto targets in space, and even sent some of that power to a detector on Earth, the experiment's builder, the California Institute of Technology ...

Lightweight gallium-arsenide photovoltaic cells would be attached to "tiles"--the fundamental unit of the Caltech design, each of which might be as small as 100 square centimeters, the size of a dessert plate.

"This is something that's pretty daring," says Ali Hajimiri, a professor of electrical engineering and a co-director of Caltech's Space Solar Power Project. The long timeline, he says, "allows you ...

Wireless Power Transfer. We focus on various strategies and techniques for ultralight-weight mid- and long-range wireless power transfer, including using flexible phased arrays systems at various frequencies that can convert, ...

The challenging environment of space has driven the development of the highest efficiency and most reliable solar cell technologies available today. We seek to advance the state of the art with respect to specific power (power output per ...

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