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SPACE-BASED SOLAR SYNERGY

Latest news and updates in Space-Based Solar Power (SBSP) from the Space Frontier Foundation

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SBSP Bulletin

SPACE FRONTIER FOUNDATION

- Engaged in introductory discussions with experts at the GWU Space Policy Institute and the FCC to explore spectrum allocation and management aspects of SBSP.
- Drafted a news piece detailing the field report of the SBSP workshop, co-hosted with the Special Competitive Studies Project at the AI Expo in May 2024, which explored the use cases of SBSP and called for a national strategy. This piece is planned to be published in an energy magazine.
- The SFF SBSP team held a day-long strategy retreat in DC to refocus goals and efforts for the next six months.

VIRTUS SOLIS

- Secured bridge financing and extended financial runway while finalizing seed funding
- Upcoming big announcement on long-distance testing
- Media feature in engineering.com

SPACE SOLAR

- Awarded £1.2 million by the UK Government for the CASSIOPeiA design
- Featured interview in the Economist and The Sustainability Journey podcast
- Presenting and conducting demos at Voyagers Climate-Tech Festival (Sept) and International Astronautical Congress (Oct)

This issue:

Promising SBSP Use Cases

ENERGY GRID VULNERABILITIES

The US Energy Grid faces various threats, including cybersecurity, physical, and extreme weather, potentially including geomagnetic storms caused by powerful solar flares. The vulnerabilities arise from energy transmission from source to destination. As the DOE and DOD are looking to modernize the power grid, SBSP is a promising clean energy solution to explore that enables energy security and can be delivered straight to the demand without traditional transmission infrastructure. Read more about these threats and possible solutions being explored.

POWER DEMANDS OF QUANTUM COMPUTING

Quantum computing harnesses the laws of quantum physics to allow for multiple states between the 0 and 1 of classical bits. These "qubits" are proposed to revolutionize processing power and problem-solving capabilities, enabling breakthroughs in fields like cryptography, drug development, and artificial intelligence. As the problem grows in complexity, so does the number of qubits necessary, especially considering the precise conditions they must be kept in to function. While many companies are investing heavily in renewable energy infrastructure to power these quantum computers, SBSP could be a great alternative to provide either baseload or dispatchable power for these applications. Read more on this potential use case.

> "Right now [quantum computers] need orders of magnitude more power than competing classical technology."
>
> JERERMY HSU, IEEE

SBSP Coverage in the News

EXPERTS AND ADVOCATES ON SBSP

- In his Skeptic magazine article, Rob Mahan shares the urgent necessity for SBSP as fossil fuels get depleted and handles common objections (ie. “Why not ground-based solar power?”) and creates awareness around the promise and potential SBSP has.
- Chuck Ross, in his EPRI Journal article, interviews EPRI researchers J.D. Readle and Poorvi Patel who describe the key technological innovations that need to take place to enable SBSP, where the technology is currently, and how Earth-based energy beaming could be the first step to test out DC to microwave conversion, rectennas, and the entire system’s functionality.

OUTSIDERS’ PERSPECTIVES

- Market Research Future, a market analysis research firm, has written an article about the SBSP market and the recent advancements that have brought it closer to implementation.
- Oil Price, having explained the challenges of clean energy storage in their article, goes on describe the University of Glasgow SolSpace project, which utilizes solar reflectors as well as the exciting prospects of SBSP.
- Kat Friedrich, of ARS Technica and WIRED, shares in her article a hopeful future for SBSP, citing the progress of the Glasgow, the Caltech proof of concept, and that the over time, the cost of SBSP will fall to be competitive with current ground-based clean energy sources.

CRITICAL VIEWS

- Henri Barde, former head of power systems at ESA, is skeptical of the potential for SBSP to overcome the myriad technical hurdles to be fully viable alternative. He mentions how SBSP is projected to cost 12-80 times more than ground-based solar power, and that sustained political interest, regardless of the outcome, over decades is necessary to procure sufficient funding for the endeavor. Read more here.