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SPACE SOLAR POWER - STATE OF THE INDUSTRY REPORT 2024

Abstract

This report presents updated insights into the development of space solar power, building upon previous findings in 2023. It highlights trends in investment and technological advancements within the international space solar power community, aiming to provide valuable guidance for future policy and investment decisions. Both the figures and insights will be refined through collaboration with the international community.

The previous report identified 160 projects initiated since the 1960s, with a notable increase in activity accounting for more than a quarter of all projects starting in 2021. While direct investment of $879 million remains relatively modest compared to other alternative power technologies, substantial funding, in the hundreds of billions, has been allocated to scaling critical subsystems, particularly solar photovoltaics. With the maturation of core technologies and increasing financial activity, space solar power development is poised for rapid growth. This step change in growth is paralleled by a transition from government-driven to mixed and private funding sources, a trend that this report will closely track.

A key determinant of project success is the cost and frequency of launch, particularly for proposed gigawatt-scale projects. The ongoing decline in launch costs, compounded by potential advancements such as Starship, holds the promise of making the price of launch for space solar power even more economically competitive with traditional power generation methods. This report tracks progress in this regard and provides insights for future development strategies.

The specific funding rationale behind investments is outside the scope of this report, but the context around the increasing financial activity in space solar power is vitally important. The business and economic opportunities of space solar power are both strong and rare, but Space Solar Power also has significant potential geopolitical and environmental impacts. All three demand drivers are running in parallel and will continue to do so into the foreseeable future.