

SPACE POWER SYMPOSIUM (C3)  
Space-Based Solar Power Architectures / Space & Energy Concepts (1)

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CONCEPTS FOR NEAR-TERM PROVISION OF POWER VIA SPACE SOLAR TO REMOTE AREAS

**Abstract**

Solar power satellites have been historically envisioned as a means of providing a continuous baseload source of energy for conventional electricity grids, much in the manner that coal or nuclear plants do today. However, the likely enormous cost to get to the first installed watt has diminished interest in their development from an economic perspective. Indeed, previous precedents from the communications satellite industry and renewable energy industry show that it may take decades for a new technology to become cost competitive with entrenched service providers. The means by which new technologies and approaches may often gain a toehold in such situations is by providing a compelling value that is unattainable by existing solutions. As observed in past studies, opportunities for space solar to provide this compelling value may exist in the provision of power for military operations or to other areas in which energy is limited, difficult, or expensive to obtain. Despite this, with few exceptions, there has been a dearth of work devoted to exploring the possibility of relatively near-term power provision for such areas, albeit at a likely higher cost than existing grid-based alternatives. This work explores several potential system concepts that are geared specifically toward servicing these remote or difficult to service areas, with little consideration for their contribution or lack thereof to an ultimate grid-servicing solar power satellites system.