Abstracts

An Overview of the Solar Power Satellite Option

P.E. Glaser. "An Overview of the Solar Power Satellite Option." 1992 Transactions on Microwave Theory and Techniques 40.6 (Jun. 1992 [T-MTT] (Special Issue on Microwaves in Space)): 1230-1238.

The objective of the solar power satellite (SPS) is to convert solar energy in space for use on Earth. Its most significant benefit is the potential for continuously generating large-scale electric power for distribution on a global basis. While there has been no SPS development program in the United States since 1980, it has continued to be investigated in several countries. The SPS system is outlined and the status of the SPS concept development is reviewed. Results of assessments of key issues are reported including economic considerations and environmental issues such as health and ecological effects of microwave beaming, non-microwave health and ecological effects, beam effects on the atmosphere and ionosphere, and electromagnetic compatibility, as well as physical resource requirements including land use, materials availability and energy pay-back periods. Legal issues and the need for international agreements on SPS operations are outlined. International SPS-related activities are discussed within the context of evolving space programs with the focus on Europe, Japan and the former U.S.S.R. An approach for an evolutionary advancement of SPS to meet requirements for power supplied at first for use on Earth and in space is presented, and a growth path to achieve the potential of power from space for use on Earth is outlined, The significance of advancements in technologies applicable to the development of the SPS as an alternative energy option for use on Earth, and as a potential stimulus for space infrastructure evolution, including the use of extraterrestrial resources, are discussed.

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