

SPACE POWER SYMPOSIUM (C3)

Poster Session (P)

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OVER THE HORIZON WIRELESS POWER TRANSMISSION, A LOW-COST PRECURSOR FOR
SPACE SOLAR POWER**Abstract**

A system called Over-the-Horizon Wireless Power Transmission, OTH-WPT, is proposed as a low-cost precursor for Space Solar Power, SSP. The proposed system uses high-power lasers and high altitude aerial platforms (e.g. aerostats, electric VTOLs, etc.) to beam 100s of kW of electric power over distances of 10s of km from one point on the earth to another. The demo system will present technical challenges similar to those of an operational SSP system. It will also include many of the major components required by an operational SSP system. But it will not require the extreme cost of transportation to and assembly of components and subsystems in geosynchronous orbit in space. It is the great cost of getting to space that has been a major obstacle to progress in SSP development. It is expected that the proposed OTH-WPT demonstration will help overcome this obstacle. The OTH-WPT system proposed will test techniques for i) atmospheric turbulence compensation, ii) platform jitter control, iii) incoherent beam combining, iv) aerostat maintenance and durability and v) a low-loss aerostat electric power cable/tether. The successful demonstration of these techniques will be an important milestone in establishing the feasibility of SSP. In addition to being a low cost demo of SSP, the proposed OTH-WPT system has potentially important civil, commercial, and military applications for the supply of power as an alternative source or on an emergency basis to remote areas and to rapidly changing theaters of operation. Various configurations are presented to meet a variety of range, power, weather and tactical needs.