

Text A Solar power from space

Two general concepts have been proposed for delivering solar power to Earth from space. In one, Peter Glaser of Arthur D. Little, Inc. (Cambridge, MA), proposed in 1968 that a huge satellite in geosynchronous orbit around Earth could dependably gather solar power in space. In the second concept, discussed here, solar power would be collected on the moon. In both ideas, many different beams of 12-cm wavelength microwaves would deliver power to receivers at sites located worldwide. Each receiver would supply commercial power to a given region. Such a receiver, called a rectenna, would consist of a large field of small rectifying antennas. A beam with a maximum intensity less than 20 % of noontime sunlight would deliver about 200 W to its local electric grid for every square meter rectenna area. Unlike sunlight, microwaves pass through rain, clouds, dust, and smoke. In both scenarios, power can be supplied to the rectenna at night.

The space-based technology poses little risk to human health. A person standing in the microwave beam would absorb about 2 % of the incident power and feel slightly warmer. Nonetheless, the general population would be restricted from the industrially zoned beam area, and workers could be easily shielded. Such a beam does not pose a hazard to insects or birds flying through it. Microwave intensity under and horizontally beyond the rectenna will be far less than is permitted for continuous exposure of the general population.