

Path Forward to Space Solar Power using the O'Neill - Glaser Model Modified for Climate Change Demand and Considering the Increasing Risk of Human Self-Extinction if Confined to Earth

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The cost of energy is humanity's economic exchange rate with the universe. Space solar power is the first great step that our technological species has to utilize the energy of its star. The classic Peter Glaser Solar Power Satellite, SPS, and later designs collect a large area of solar energy in space and beam it back to Earth for use in the electric grid, but even with optimistic launch costs and technology innovation a clear economic path is not evident using Earth launch of SPS. O'Neill in 1969 solved the transportation costs problem by a model that uses lunar and asteroid materials to build SPS and locates the labor force permanently in space (O'Neill free space habitats). This solution closes the economics and predicts large profits after 17 - 35 years. However the costs of time have up to now prevented this solution. We discuss a strategy to move forward in SPS with the motivations to stop global warming and prevent human self-extinction. There are near term steps that can be taken that place us on this path forward. First, we must reevaluate the technologies for the classic model and update the parameters to current technology. As technological capability continues to increase exponentially, we need to understand when the monetary potential energy hills are small as the technology gets larger. But the chance for self-extinction, if humanity remains in a single vulnerable habitat, also increased exponentially with time. The path forward is to identify investment points while assessing the risks of non-action.