

Economic Feasibility of Space-Based Solar Power Generation in Remote Mining Applications

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There exist many valuable mineral deposits that are far from conventional sources of electricity. Additionally, mines have large baseload power demands over a multi-decade time frame due to the refining and processing of ore in the deposit. Large quantities of costly heavy fuel oil (HFO) are commonly consumed by remote mining operations for power generation. If SSP is found to be cost competitive with HFO in remote regions, a market could exist for SSP that would be attractive to investors. Furthermore, in jurisdictions where governments have imposed taxation on carbon emissions the costs of burning HFO are elevated further. Our project evaluates the feasibility of using space-based solar power to meet near-term commercial energy demand for mining and resource extraction on Earth and in space. Our evaluation develops estimates of net present value and then assesses the sensitivity of net present value to changes in its underlying determinants.