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| **Abstract:** |  |
| This paper proposes overcoming space constraints in solar projects by employing bi-facial PV (BPV) systems and flexible installations. The simulation study, conducted for a telecom operator's off-grid base stations in Bangladesh, demonstrates that deploying four vertical mini solar towers with bi-facial panels can significantly enhance solar harvesting, potentially leading to up to 50% annual diesel savings. This translates to an estimated 0.7 million USD1in savings for 290 off-grid base stations. The paper also includes a financial analysis comparing two solution options, highlighting the practicality of the proposed mini solar tower framework for addressing space limitations. | |