Energy Harvesting: Towards Green Cellular Networks

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The increase of energy consumption directly increases the greenhouse gas emissions which threatens the environment. In our work, promising solution such as energy harvesting is considered for investigation and how it could be deployed to improve the energy efficiency of cellular networks. We develop accurate yet tractable frameworks to model multi-tier cellular networks with energy harvesting while taking into account the topological randomness and network geometry. Throughout our work, we use statistical modeling to evaluate the performance of the proposed system model in terms of the coverage probability. Furthermore, we show that energy harvesting can be a reliable source to power cellular users with short-range communication, e.g., small cell users. In addition, we show that energy harvesting can achieve high coverage performance by carefully tuning the different network parameters such as the density of BSs as well as the receiver sensitivity.

REFERENCES


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