

Communication green base station shutdown conditions





Overview

Are green base stations a problem?

As society grows increasingly more aware of green energy sources, governments also start modifying their power rules to support them. As a result, problems with green base stations became the focus of a significant amount of recent ICT research efforts .

How can a communication base station reduce energy consumption?

Strategies such as applying solar energy generation facilities in base stations to replace part of the grid electricity or implementing active deep sleep in communication base stations to optimize energy management 7,8,9,10 have been applied to reduce the use of grid-supplied energy and lower the operating costs of communication systems.

Can base stations reduce energy consumption while maintaining quality of service (QoS)?

Liu et al. , this research proposes a sleeping algorithm for base stations (BSs) in wireless access networks to reduce energy consumption while maintaining quality of service (QoS). The algorithm relies on location data from user equipment (UE) which is sent to the mobility management entity or serving gateway (MME/S-GW).

Can low-carbon communication base stations improve local energy use?

Therefore, low-carbon upgrades to communication base stations can effectively improve the economics of local energy use while reducing local environmental pollution and gaining public health benefits. For this research, we recommend further in-depth exploration in three areas for the future.



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China Mobile - Renewable energy and green base station ...

Aug 7, 2025 · China Mobile added 467,000 5G base stations while achieving a 2% reduction in overall base station energy consumption in 2024.

Two-Time Scale Energy-Saving Scheme with Base Station ...

Jul 25, 2025 · Green communications (GC) is an urgent need for 5G and 6G. How to realize GC with guaranteed quality of service is still a challenging problem. This paper investigates the ...

Energy Saving of 5G Base Stations Based on Symbol Shutdown ...

Jun 12, 2025 · The rapid development of 5G technology leads to increasing energy consumption in base stations (BSs). For the vision of green and sustainable communications, we propose a ...

Final draft of deliverable D.WG3-02-Smart Energy Saving ...

Oct 4, 2021 · The beginning of network energy saving came with the fact that many sites had their traffic peaks and troughs, which means certain parts of the base stations could be shutdown to ...

Energy Efficiency Techniques in 5G/6G Networks: Green Communication

Feb 26, 2024 · The focus is on smaller cell infrastructure and the need for optimization in terms of connection, communication, and power. The solutions include reconfiguring flow paths, ...

Energy-saving control strategy for ultra-dense network base stations

Aug 1, 2025 · The authors in the paper [23] investigated that under the constraints of mobile network operators' user QoS demands and base station power budgets, an energy-efficient ...

Cell Reports Sustainability: Cell Reports Sustainability

Sep 1, 2025 · Wang et al. propose a nationwide low-carbon upgrade strategy for China's communication base stations. Using real-world data and predictive modeling, the study shows ...

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Low-carbon upgrading to China's communications base stations ...

Nov 21, 2025 · It is important for China's communications industry to reduce its reliance on grid-powered systems to lower base station energy costs and meet nationa...

Remake Green 5G

Nov 10, 2022 · The task of achieving carbon neutrality is short and challenging. As an



important infrastructure for digital transformation, the mobile communication network focuses on three ...

IEEE TRANSACTIONS ON GREEN COMMUNICATIONS ...

Nov 10, 2023 · IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING, VOL. XX, NO. XX, XX 2023 1 A Base Station Sleeping Strategy in Heterogeneous Cellular ...

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