

Energy saving for green communication base station equipment

What is the energy-saving technology of base stations?

This technical report focuses on energy-saving technology of base stations. Some energy saving technologies since 4G era will be explained in details, while artificial intelligence and big data technology will be introduced in response to the requirement of an intelligent and self-adaptive energy saving solution.

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.

Will communication base stations reduce electricity consumption?

Our findings revealed that the nationwide electricity consumption would reduce to 54,101.60 GWh due to the operation of communication base stations (95% CI: 53,492.10-54,725.35 GWh) (Figure 2 C), marking a reduction of 35.23% compared with the original consumption. We also predicted the reduction of pollutant emissions after the upgrade.

How can a 5G base station save energy?

(1) Incorporation of Communication Caching Technology: The model includes communication caching technology, which fully leverages the delay-tolerant characteristics of communication flows, further enabling energy saving in 5G base stations.

The Ministry of Industry and Information Technology issued the "Action Plan for Green and Low-Carbon Development of the Information and Communication Industry (2022-2025)" [1] It is ...

GREEN 5G WHITE PAPER Figure 12 Radio Air conditioner Power supply Others Figure 13 Baseband Figure 14 Power consumption A I-CIB increase in base station transmit power leads to an ...

Green network aims to promote the sustainable development of communication systems, and base station (BS) and cells sleeping has been proven effective in reducing the power ...

In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable communication. Recognizing this, Mobile Network Operators are actively prioritizing EE for both ...

In 2024, nearly 60,000 minimalist base stations were deployed. 3. Research on low-carbon energy technologies for communication sites: in 2024, China Mobile advanced research on ...

As China rapidly expands its digital infrastructure, the energy consumed by communication base stations has grown dramatically. Traditionally powered by coal-dominated grid ...

For hardware energy saving, it is mainly achieved by base station equipment architecture design optimization,

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the increase of chip integration like baseband processing, digital intermediate ...

To further explore the energy-saving potential of 5 G base stations, this paper proposes an energy-saving operation model for 5 G base stations that incorporates communication caching and ...

Modern base station equipment is designed with energy-saving technologies such as high-efficiency power amplifiers, low-loss cables, and intelligent control systems.

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