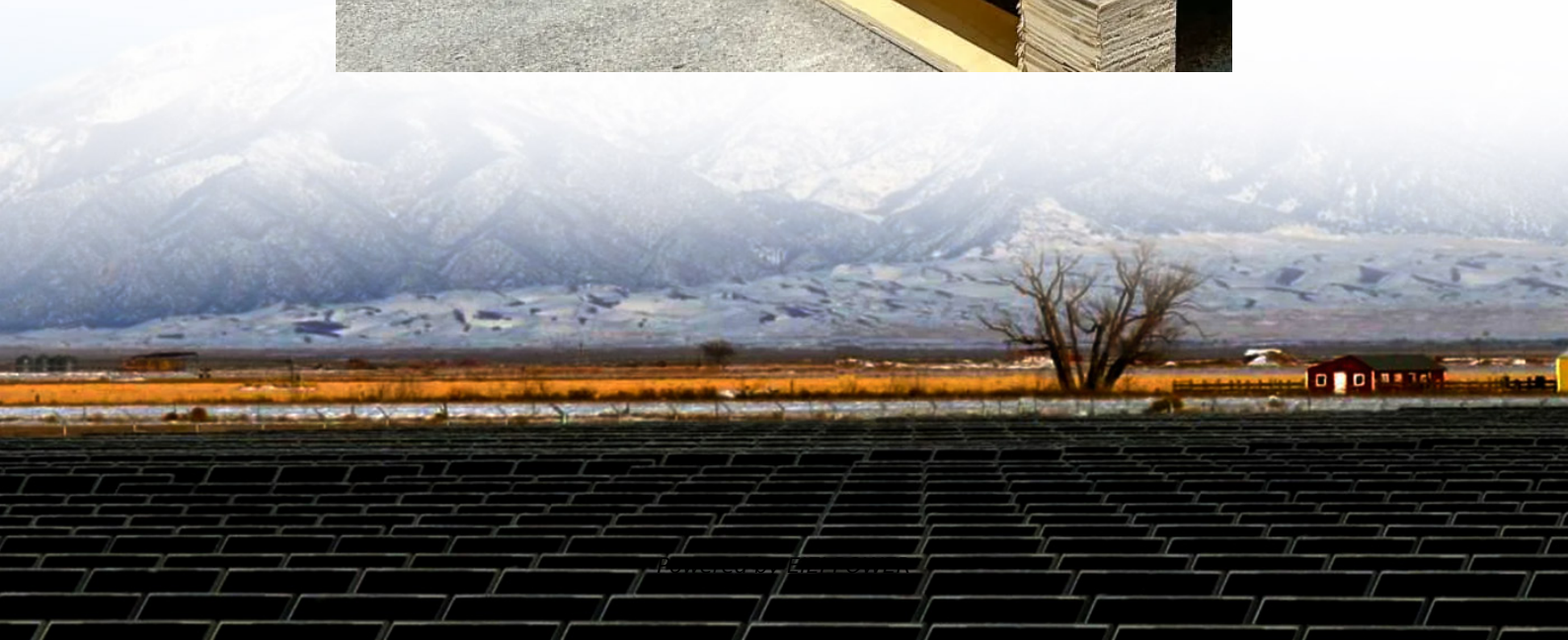


# **Energy-saving measures for outdoor base stations**





## Overview

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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.

How can a base station save energy?

There are two main methods of base station energy saving, including hardware and software.

What are the standardized energy-saving metrics for a base station?

(1) Energy-saving reward: after choosing a shallower sleep strategy for a base station, the system may save more energy if a deeper sleep mode can be chosen, and in this paper, the standardized energy-saving metrics are defined as (18)  $R_{ie} = E_{SM} = 0 E_{SM} = i E_{SM} = 0 E_{SM} = 3$ .

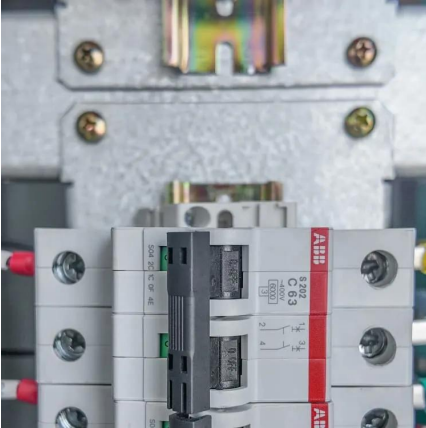
Why do base stations waste so much energy?

When there is little or no communication activity, base stations typically consume more than 80% of their peak power consumption, leading to significant energy waste . This energy waste not only increases operational costs, but also burdens the environment, which is contrary to global sustainability goals .



## Energy-saving measures for outdoor base stations

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### [Final draft of deliverable D.WG3-02-Smart Energy Saving ...](#)

May 7, 2021 · Change Log This document contains Version 1.0 of the ITU-T Technical Report on "Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to ...

### [Base Station Energy Efficiency: Key Strategies ...](#)

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### [\[2505.15445\] On Optimizing Time-, Space](#)

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## Optimal energy-saving operation strategy of 5G base station ...

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### Base Station Energy Efficiency: Key Strategies for Sustainable ...

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### STUDY ON AN ENERGY-SAVING THERMAL ...

...

Oct 24, 2025 · In order to solve the poor heat dissipation in the outdoor mobile communication base station, especially in summer, high temperature alarm phenomenon occurs frequently, ...



### Research on Energy-Saving Technology for Unmanned ...

Dec 18, 2023 · The energy-saving system components of the base station utilize the temperature difference between indoor and outdoor temperatures to form heat exchange, relying on a large ...





## ENERGY-SAVING MEASURES AND TEMPERATURE ...

Oct 24, 2025 · 25 million 5G base stations, and 9.96 million mobile communication base stations. According to 2021 National Development and Reform Commission Report, in 2020, China ...



## Energy-efficiency schemes for base stations in 5G ...

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 ...



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

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## **An Intelligent Energy Saving Strategy Recommendation Method of 5G Base**

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