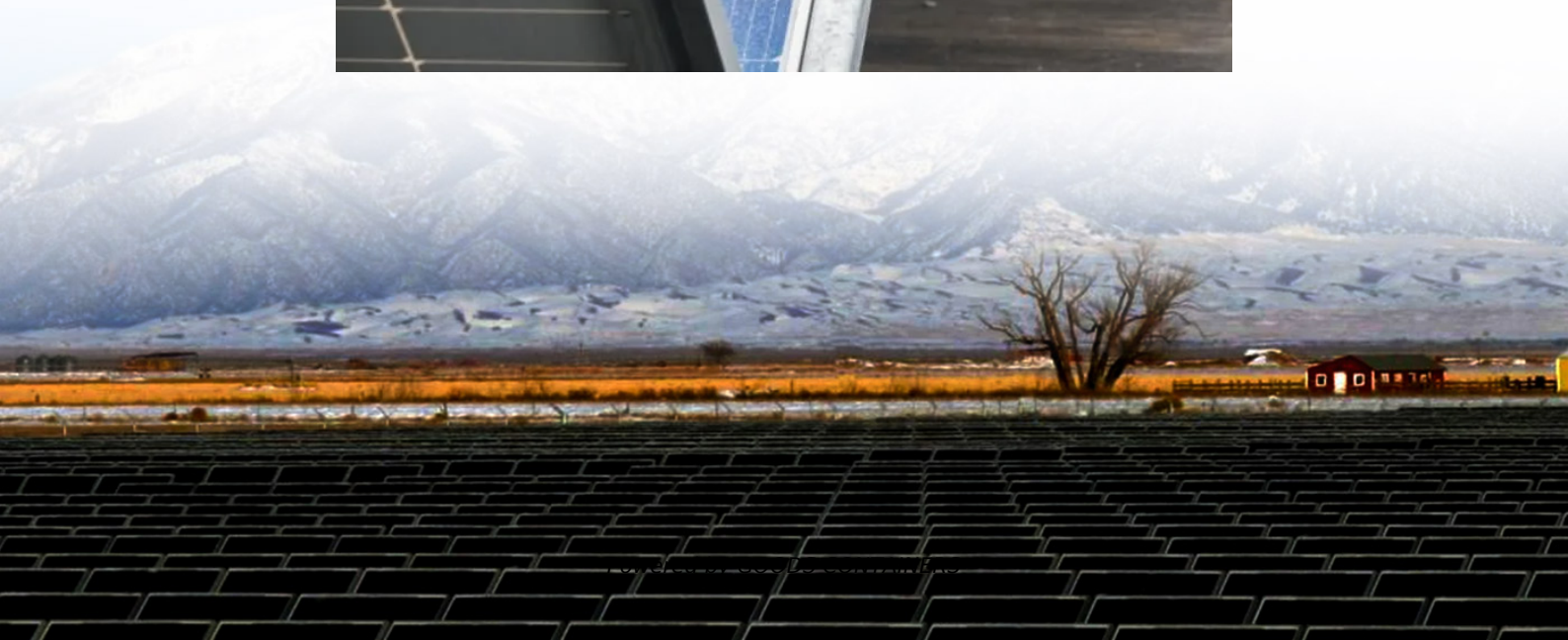


# **Why 5G base stations consume so much power**





## Overview

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The 5G NR standard has been designed based on the knowledge of the typical traffic activity in radio networks as well as the need to support sleep states in radio network equipment. By putting the base sta.

How does mobile data traffic affect the energy consumption of 5G base stations?

The explosive growth of mobile data traffic has resulted in a significant increase in the energy consumption of 5G base stations (BSs).

Can 3GPP reduce base station energy consumption in 5G NR BS?

Aiming at minimizing the base station (BS) energy consumption under low and medium load scenarios, the 3GPP recently completed a Release 18 study on energy saving techniques for 5G NR BSs . A broad range of techniques was evaluated in terms of the obtained network energy saving (NES) gain and their impact to the user-perceived throughput (UPT).

What is 5G BS power consumption?

The 5G BS power consumption mainly comes from the active antenna unit (AAU) and the base band unit (BBU), which respectively constitute BS dynamic and static power consumption. The AAU power consumption changes positively with the fluctuation of communication traffic, while the BBU power consumption remains basically unchanged , , .

Should power consumption models be used in 5G networks?

This restricts the potential use of the power models, as their validity and accuracy remain unclear. Future work includes the further development of the power consumption models to form a unified evaluation framework that enables the quantification and optimization of energy consumption and energy efficiency of 5G networks.



## Why 5G base stations consume so much power

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### [Why does 5g base station consume so much power and how ...](#)

Apr 3, 2025 · The power consumption of the 5G base station mainly comes from the AU module processing and conversion and high power-consuming high radio frequency signals, the ...

### [How Much Power Does 5G Base Station Consume? , Huijue ...](#)

Aug 26, 2023 · The Silent Energy Crisis in Mobile Networks Have you ever wondered how much energy our hyper-connected world is consuming? 5G base stations, the backbone of next-gen ...



### **Comparison of Power Consumption Models for 5G Cellular Network Base**

Jul 1, 2024 · This paper conducts a literature survey of relevant power consumption models for 5G cellular network base stations and provides a comparison of the models. It highlights ...

### [Power consumption based on 5G communication](#)

Oct 17, 2021 · At present, 5G mobile traffic base stations in energy consumption accounted for 60% ~ 80%, compared with 4G energy consumption increased three times. In the future, high ...



### [What is the Power Consumption of a 5G Base Station?](#)

Nov 15, 2024 · Compared to its predecessor, 4G, the energy demand from 5G base stations has massively grown owing to new technical requirements needed to support higher data rates ...

### **What is the reason for the high energy consumption of 5G base ...**

Oct 24, 2024 · Let me explain it to you. The energy consumption of 5G base stations is mainly concentrated in four parts: base stations, transmission, power supply and air conditioning in ...



### [Energy consumption optimization of 5G base stations ...](#)

Aug 1, 2023 · An energy consumption optimization strategy of 5G base stations (BSs) considering variable threshold sleep mechanism (ECOS-BS) is proposed, which includes the initial ...



## A Power Consumption Model and Energy Saving Techniques for 5G ...

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