

# 5g relay base station power consumption





## Overview

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Does a balanced dataset improve energy prediction of 5G base stations?

For energy prediction of 5G base stations, this thesis finds that using a more balanced dataset, in terms of the number of samples for each product, has a positive impact for the ANN and the Gradient Boosted Trees model while the linear regression performs worse.

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).

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).

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.



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### [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 ...

### [Power Consumption Modeling of 5G Multi-Carrier Base ...](#)

Jan 23, 2023 · However, there is still a need to understand the power consumption behavior of state-of-the-art base station architectures, such as multi-carrier active antenna units (AAUs), ...



### [Throughput and coverage based Base Station-Relay Station ...](#)

Apr 11, 2024 · Energy efficiency-based approaches also impact network coverage and throughput. Therefore, developing an energy-efficient network with optimal coverage and ...

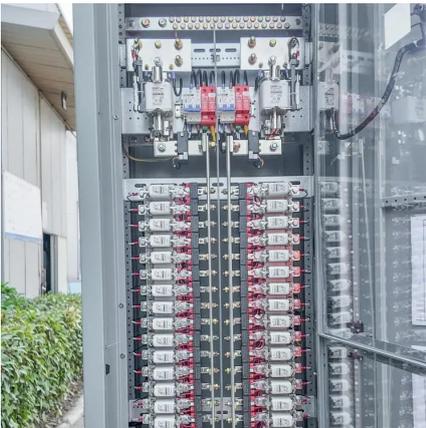
### [A Power Consumption Model and Energy Saving Techniques for 5G ...](#)

May 28, 2023 · 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 ...



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

Dec 1, 2025 · 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 ...



### [Modelling the 5G Energy Consumption Using Real-world...](#)

Sep 15, 2025 · Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource utilization while maintaining network ...



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

Nov 15, 2024 · Why is 5G Power Consumption Higher? 1. Increased Data Processing and Complexity These 5G base stations consume about three times the power of the 4G stations. ...





### [Energy Consumption Modelling for 5G Radio Base ...](#)

Mathematical optimization of energy consumption requires a model of the problem at hand. In this thesis linear regression is compared with the gradient boosted trees method and a neural ...



### [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 ...

### **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 ...



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