



BUHLE POWER

## Base station power reuse





## Overview

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How to reduce power-intensive base stations?

To address the issue of power-intensive base stations, proposed a combined approach involving base station sleep and spectrum allocation. This approach aims to discover the most efficient operating state and spectrum allocation for SBS to minimize power consumption and network disturbance.

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.

Are base station sleep and power allocation related?

Each SBS  $n$  is considered an agent, and each agent can make decisions based on the surrounding environment to get the reward value for the next round of exploration. In this paper, the base station sleep and power allocation are two closely related mechanisms that jointly optimize the resource management of SBSs through DQN.

How does the number of base stations affect network performance?

Comparative analysis of performance with respect to the number of base stations. With an increase in the number of SBSs, both the network coverage and spectrum reuse ratio also increases. From Fig. 5 (d), it is evident that as the quantity of SBSs increases, so does the quantity of active SBSs.



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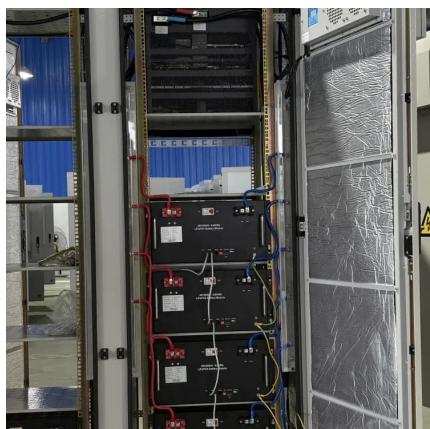
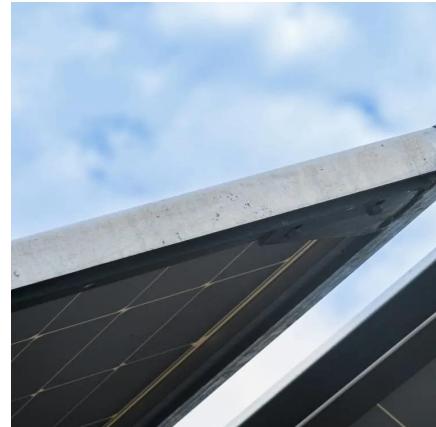
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## Final draft of deliverable D.WG3-02-Smart Energy Saving ...

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