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# Addis Ababa 5G base station and power grid sharing

What is a 5G base station?

At the same time, a large number of 5G base stations (BSs) are connected to distribution networks, which usually involve high power consumption and are equipped with backup energy storage, giving it significant demand response potential.

What is a distributed collaborative optimization approach for 5G base stations?

In this paper, a distributed collaborative optimization approach is proposed for power distribution and communication networks with 5G base stations. Firstly, the model of 5G base stations considering communication load demand migration and energy storage dynamic backup is established.

Can a 5G base station enter a hibernation state?

If the communication load can only connect to one 5G BS, the base station cannot enter a hibernation state by load migration. In addition, the capacity of 5G BS to carry the communication load has an upper limit, dependent on the transmission traffic constraints and transmission power constraints, as shown in Equations (10), (11).

What is the architecture and coordination optimization model of 5G base station?

The architecture and coordination optimization model composed of a 5G communication network and distribution network is proposed in Section 3. Afterward, a distributed coordination algorithm is designed in Section 4 with simulation results presented in Section 5. Finally, Section 6 concludes the paper.

## 2. Model of 5G base station

A significant number of 5G base stations (gNBs) and their backup energy storage systems (BESSs) are redundantly configured, possessing surplus capacity...

Therefore, 5G base station dispatch can achieve a win-win situation between communication systems and power systems.

The large-scale deployment of 5G base stations has provided improved communication quality but has also led to significant increases in power costs for communication operators. Utilizing ...

Recently, 5G communication base stations have steadily evolved into a key developing load in the distribution network. During the operation process, scientific dispatching and management of ...

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