

## SolarTech Power Solutions

# Communication 5G base stations lag behind



## Overview

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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.

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.

Can 5G base stations be used as flexible loads?

Abstract: With the large-scale connection of 5G base stations (BSs) to the distribution networks (DNs), 5G BSs are utilized as flexible loads to participate in the peak load regulation, where the BSs can be divided into base station groups (BSGs) to realize zonal energy transfer.

Are 5G base stations able to respond to demand?

5G base stations have experienced rapid growth, making their demand response capability non-negligible. However, the collaborative optimization of the distribution network and 5G base stations is challenging due to the complex coupling, competing interests, and information asymmetry among different stakeholders.

What is a collaborative optimal operation model of 5G base stations?

Afterward, a collaborative optimal operation model of power distribution and communication networks is designed to fully explore the operation flexibility of 5G base stations, and then an improved distributed algorithm based on the

ADMM is developed to achieve the collaborative optimization equilibrium.

Should 5G base stations be tripled?

To cover the same area as traditional cellular networks (2G, 3G, and 4G), the number of 5G base stations (BSs) could be tripled (Wang et al., 2014). Furthermore, Ge, Tu, Mao, Wang, and Han, (2016) suggested that to achieve seamless coverage services, the density of 5G BSs would reach 40-50 BSs/km<sup>2</sup>.

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