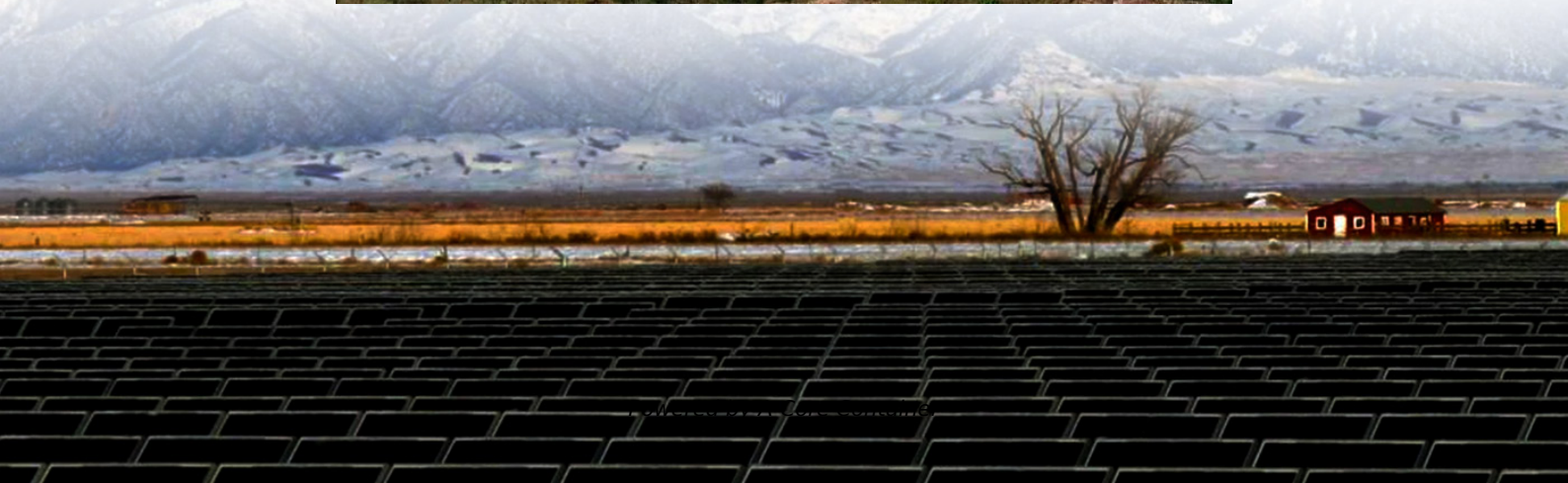


A-Core Container

Reasons for reducing base stations in long-distance communication



Overview

Will communication base stations reduce electricity consumption?

Our findings revealed that the nationwide electricity consumption would reduce to 54,101.60 GWh due to the operation of communication base stations (95% CI: 53,492.10–54,725.35 GWh) (Figure 2 C), marking a reduction of 35.23% compared with the original consumption. We also predicted the reduction of pollutant emissions after the upgrade.

How to reduce the energy consumption of a base station?

So when the inter-cell distance is too large, it is necessary to increase the distance between cells, thus reducing the power consumption of the base station. In the actual network, in order to reduce the energy loss caused by frequent switching, the following two methods can usually be used: increase the distance between cells.

How can base stations be improved?

Currently, limited research (Tala't et al., 2017) is focused on improving the power supply mode of base stations, such as replacing traditional thermal power generation with renewable energy (photovoltaic systems, wind power) and equipping micro base stations with solar cells.

Can low-carbon communication base stations improve local energy use?

Therefore, low-carbon upgrades to communication base stations can effectively improve the economics of local energy use while reducing local environmental pollution and gaining public health benefits. For this research, we recommend further in-depth exploration in three areas for the future.

How effective are communication base stations in reducing air pollution?

In Figure 5 A, after implementing optimization measures to communication base stations, the cases of COPDs related to air pollution caused by communication base stations in 2021 would be reduced to 13,004 (65%

reduction). The effectiveness of these optimizations becomes more pronounced in the following year.

How does a communication base station upgrade affect emissions?

(D) Total emissions of major pollutants (CO₂, NO_x, SO₂, and PM_{2.5}) generated by the electricity consumption of communication base stations before and after the upgrade. Paired bars with the same color represent pre- and post-upgrade comparisons for the same pollutant. Emissions of all pollutants are significantly reduced after the upgrade.

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