

Urban emergency energy storage power station





Overview

Do urban agglomerations need emergency backup power planning?

This paper focuses on robust emergency backup power planning for urban agglomerations with high renewable energy penetration under extreme disaster scenarios. The planning involves numerous binary-coded decision variables, where sparsity simplifies the model but increases the challenge of achieving a global optimum.

What is mobile energy storage?

Mobile energy storage (MES) is a typical flexible resource, which can be used to provide an emergency power supply for the distribution system. However, it is inevitable to consider the complicated coupling relations of mobile energy storage, transportation network, and power grid, which can cause issues of complex modeling and low efficiency.

Are urban power outages caused by natural disasters?

Abstract: In the last decade, a number of severe urban power outages have been caused by extreme natural disasters, e.g., hurricanes, snowstorms and earthquakes, which highlights the need for rethinking current planning principles of urban energy systems and expanding the classical reliability-oriented view.

How can urban agglomerations optimize emergency backup energy configurations?

The ideal optimization speed is unachievable, and fully satisfying optimization constraints is difficult. From an engineering perspective, this approach effectively optimizes emergency backup energy configurations for urban agglomerations with large-scale renewable energy, reducing the risk of widespread power outages during extreme disasters.



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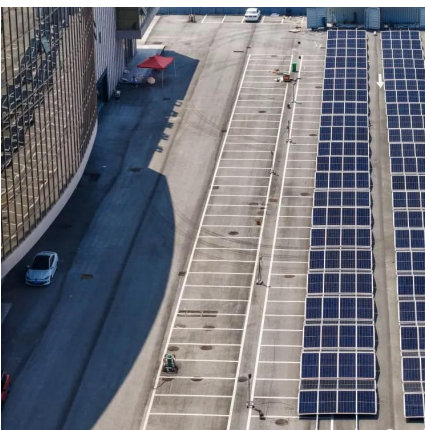
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