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Wind turbine balancing system





Overview

Do wind turbines reduce system-wide balancing costs?

Variable renewable generation and load fluctuations induce significant balancing cost in power system operation. To overcome this issue, this paper proposes a control architecture that leverages inherent regulation capabilities of wind turbines to minimize the system-wide balancing costs.

Does wind power regulation account for system balancing needs?

In contrast to conventional methods that smooth the wind power production without considering the system-wide power imbalance, in this work, the wind power regulation explicitly accounts for the system balancing needs.

Can local resources of wind turbines mitigate system-wide power imbalances?

As a result, local resources of wind turbines are optimally leveraged in real-time to mitigate system-wide power imbalances. The proposed strategy and state-of-the-art techniques are compared in comprehensive high-fidelity case studies.

How much would a 20% integration of wind power cost?

Consequently, the system balancing cost will increase. According to a real-world study in the United Kingdom, the additional balancing costs incurred as the result of 20% integration of wind power would be £200 million per year or £3/MWh [2].



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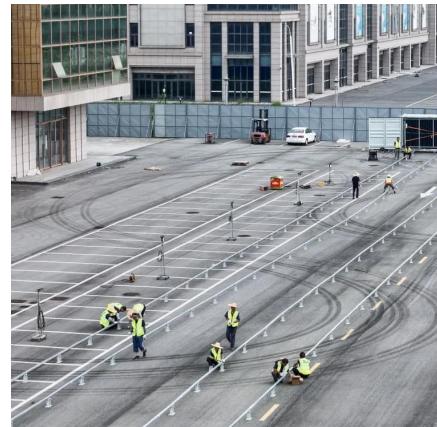
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