

Kongres Container

The Future of Grid-Side Energy Storage



Overview

Energy storage is a potential substitute for, or complement to, almost every aspect of a power system, including generation, transmission, and demand flexibility. Storage should be co-optimized with clean generation, transmission systems. Energy storage is a potential substitute for, or complement to, almost every aspect of a power system, including generation, transmission, and demand flexibility. Storage should be co-optimized with clean generation, transmission systems, and strategies to reward consumers for making their electricity use more flexible.

Goals that aim for zero emissions are more complex and expensive than net-zero goals that use negative emissions technologies to achieve a reduction of 100%. The pursuit of a zero, rather than net-zero, goal for the electricity system could result in high electricity costs that make it harder to achieve economy-wide net-zero emissions by 2050.

The need to co-optimize storage with other elements of the electricity system, coupled with uncertain climate change impacts on demand and supply, necessitate advances in analytical tools to reliably and efficiently plan, operate, and regulate power systems of the future. Important areas include system stability and dispatch, resource adequacy, and.

Lithium-ion batteries are being widely deployed in vehicles, consumer electronics, and more recently, in electricity storage systems. These batteries have, and will likely continue to have, relatively high costs per kWh of electricity stored, making them unsuitable for long-duration storage that may be needed to support reliable decarbonized grids.

The intermittency of wind and solar generation and the goal of decarbonizing other sectors through electrification increase the benefit of adopting pricing and load management options that reward all consumers for shifting electricity uses with some flexibility away from periods when the balance between supply and demand is tight to periods of abun.

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