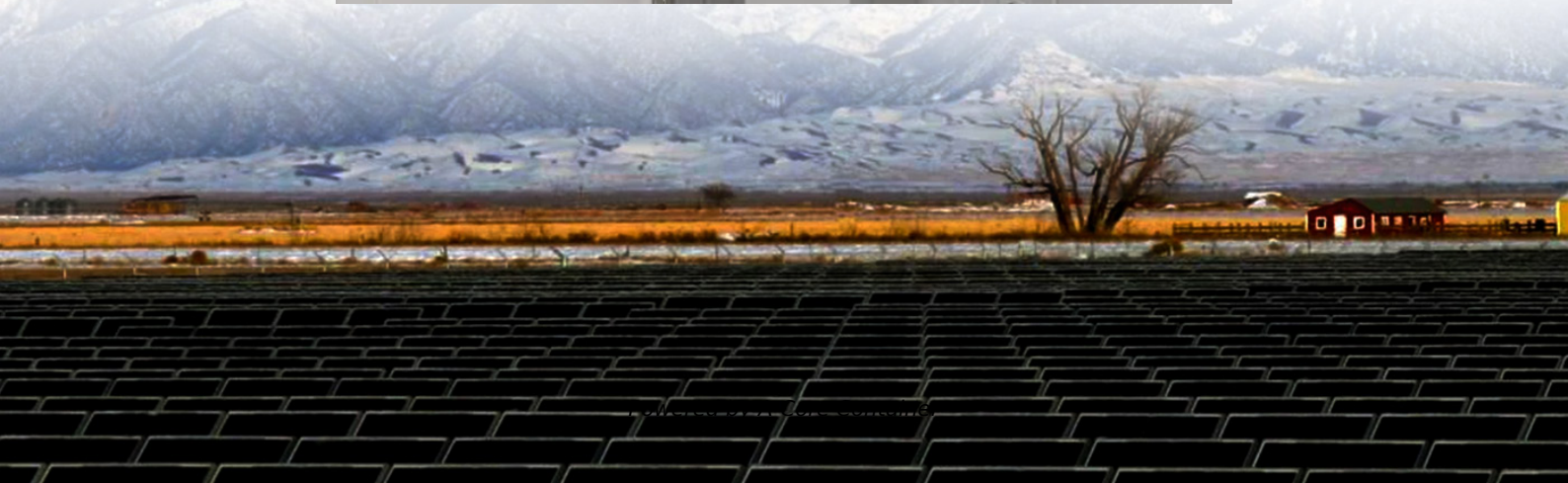


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How much energy storage is needed for renewable electricity



Overview

To fully decarbonize the electric grid, it has been argued that over 85 times the current energy storage capacity is needed, signaling a substantial transformation in energy storage strategies and technologies.

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In 2025, capacity growth from battery storage could set a record as we expect 18.2 GW of utility-scale battery storage to be added to the grid. U.S. battery storage already achieved record growth in 2024 when power providers added 10.3 GW of new battery storage capacity.

Energy storage boosts electric grid reliability and lowers costs, ⁴⁷ as storage technologies become more efficient and economically viable. One study found that the economic value of energy storage in the U.S. is \$228B over a 10-year period. ²⁷

However, these resulted in a very broad range of power and energy capacity requirements for storage, making it difficult for policymakers to identify clear storage planning recommendations. Therefore, we studied 17 recent storage expansion studies pertinent to the U.S., Europe, and Germany.

Comprehensive guide to renewable energy storage technologies, costs, benefits, and applications. Compare battery, mechanical, and thermal storage systems for 2025.

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