



# How much does compressed air energy storage cost

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Our base case for Compressed Air Energy Storage costs require a 26c/kWh storage spread to generate a 10% IRR at a \$1,350/kW CAES facility, with 63% round-trip efficiency, charging and discharging 365 days per year.

What is compressed air energy storage?

Compressed air energy storage (CAES) is one of the many energy storage options that can store electric energy in the form of potential energy (compressed air) and can be deployed near central power plants or distribution centers. In response to demand, the stored energy can be discharged by expanding the stored air with a turboexpander generator.

What is compressed-air-energy storage (CAES)?

Compressed-air-energy storage (CAES) is a way to store energy for later use using compressed air. At a utility scale, energy generated during periods of low demand can be released during peak load periods. The first utility-scale CAES project was in the Huntorf power plant in Elsfleth, Germany, and is still operational as of 2024.

Where can compressed air energy be stored?

Compressed air energy storage may be stored in undersea caves in Northern Ireland. In order to achieve a near-thermodynamically-reversible process so that most of the energy is saved in the system and can be retrieved, and losses are kept negligible, a near-reversible isothermal process or an isentropic process is desired.

How much does stored electricity cost?

A number of recent techno-economic studies have estimated CAES-based stored electricity costs at \$0.15 to \$0.60/kWh. The Framework Study identifies promising RD&D pathways to reduce the levelized cost of storage (LCOS) of key storage technologies.

Is compressed air cheaper than a mass-produced battery?

Compressed air costs are potentially lower; however, advanced pressure vessels are costly to develop and safety-test and at present [when?] are more expensive than mass-produced batteries. As with electric storage technology, compressed air is only as "clean" as the source of the energy that it stores.



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