

# New Sulfur Flow Battery for Affordable Long-Term Grid Storage

<https://spectrum.ieee.org/energywise/energy/renewables/new-sulfur-flow-battery-could-provide-affordable-longterm-grid-storage>



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- Battery designed for low cost from start
- The high cost of batteries still prevents them from being used to store [renewable energy](#)
- [Pumped hydroelectric](#) storage is the cheapest known energy-storage technology today, but is limited by geography.
- With this new battery, researchers at MIT say they have found the sweet spot for energy storage.
- The energy-dense battery could be the first to compete with the installed cost of pumped hydro

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- The device, reported in the journal [\*Joule\*](#), is a type of [flow battery](#), in which both the anode and cathode are liquid electrolytes.
  - The anode in this case is sulfur dissolved in water
  - The cathode is an aerated liquid salt solution that takes up and releases oxygen.
  - Lithium ions move between the electrolytes, and the salt solution at the cathode takes up or releases oxygen to balance the charge.
  - During discharge, it takes up oxygen and the anode ejects electrons into an external circuit.
  - When the oxygen is released, electrons go back to the anode, recharging the battery.

# **New Sulfur Flow Battery for Affordable Long-Term Grid Storage**

- It is 500 to 1,000 times denser than pumped hydro systems.
  - Which means portable versions of this battery could be situated wherever they are needed near wind and solar farms
- Lastly as the battery size grows the more efficient it gets