

# WHAT IS ENERGY STORAGE?

## Types of Energy Storage

There are many types of energy storage technologies, but each falls under one of three types:

- Electrochemical (e.g. batteries and capacitors)
- Electromechanical (e.g. pumped-hydro, compressed air, and flywheels)
- Thermal (e.g. solar thermal generation, building HVAC systems, and electric water heaters)

## Energy Storage Services

Storage can enhance reliability and help utilities manage load via:

- Microgrid support
- Variable resource integration
- Ancillary services: black start, voltage support, frequency regulation, spinning or non-spinning reserve
- Peak management: resource adequacy, distribution deferral, transmission deferral, asset optimization
- Energy arbitrage

## Economics

The economics of energy storage can be challenging to analyze. Keep in mind that:

- Costs vary widely from technology to technology
- Some technologies are better suited for certain types of services
- “Stacking” services can help maximize value streams, but is not always allowed or feasible (some regulatory environments or markets may limit services)
- Costs are coming down



Learn more about energy storage resources at [PublicPower.org/Topic/Energy-Storage](https://PublicPower.org/Topic/Energy-Storage) or contact the American Public Power Association at [Policy@PublicPower.org](mailto:Policy@PublicPower.org).

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