

Alliant Energy's

Columbia Energy Storage Project

Long-duration energy storage system

Alliant Energy and its project partners, including WEC Energy Group, Madison Gas and Electric, UW-Madison, Madison College, Shell Global Solutions US and the Electric Power Research Institute, are teaming up to construct one of the first carbon dioxide-based energy storage systems in the United States. The Columbia Energy Storage Project is an innovative new battery system that will advance a more sustainable, reliable and cost-effective energy future.

Fast facts

Location: Town of Pacific, Columbia Co., Wis. | **Size:** 18 MW/180 MWh | **Homes powered:** about 18,000

Community benefit

The Columbia Energy Storage Project extends Alliant Energy's historic presence in Columbia County while also inspiring a coalition of partners committed to a more sustainable energy future. This project will create new construction jobs as well as ongoing positions in operations and maintenance once the system is placed into service.

Project information

The town of Pacific is an ideal location for an energy storage system due to the availability of existing electric grid infrastructure. The project, part of a multiphase site redevelopment effort, will increase energy reliability and resilience while delivering incredible value to customers. Pending approval, we expect the energy storage system to be operational by the end of 2027.



Energy Dome's CO₂ battery located in Sardinia, Italy.

What is energy storage?

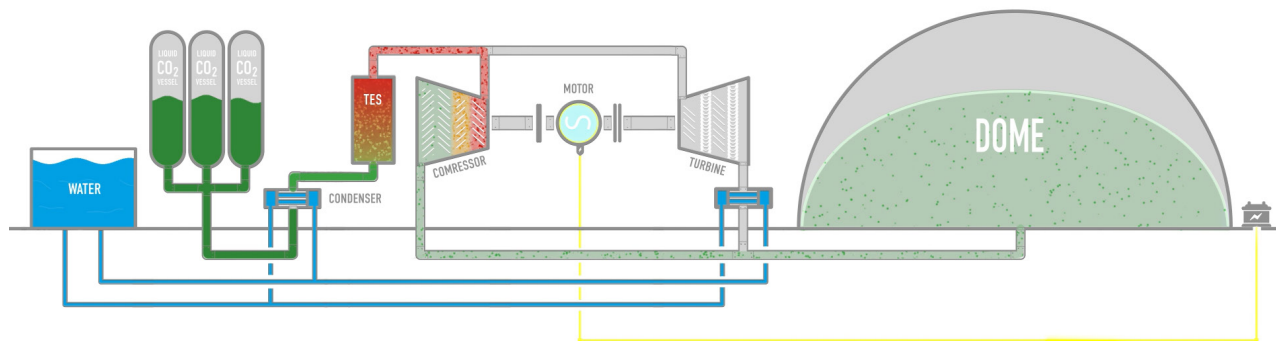
Energy storage systems help balance electricity generation with customer demand, improving the efficiency of the electric grid. Similar to how batteries in a cell phone or laptop can be charged and discharged, the utility-scale storage systems being developed can deliver energy to power homes and businesses when it's needed.

These systems typically charge from solar, wind and other generation sources at times of the day when they produce excess energy or energy demand is low. Then they discharge when customer use increases. Energy storage systems optimize the way electricity is delivered to customers and provide improved security in the event of an outage, fuel supply disruption or severe weather.

How does a carbon dioxide-based energy storage system work?

This innovative and efficient approach to long-duration energy storage is both simple and sustainable. The system takes energy from the grid and stores it by converting CO₂ gas into a compressed liquid form. When that energy is needed, the system converts the liquid CO₂ back to a gas, which powers a turbine to create electricity.

CO₂-based energy storage is a proven technology that delivers exceptional efficiency compared to many other long-duration energy storage systems. Using mainly steel, and an initial supply of water and CO₂ to construct the system, it is highly sustainable and easily recycled at the end of life.



System illustration for conceptual reference. Diagram not to scale.

Energy storage safety

Safety is a top priority at all of Alliant Energy's energy storage sites. The company's current and future energy systems are designed and maintained with great care to ensure the safety of employees, the community and the environment. On-site sensors and off-site monitoring enable operators to respond in real time to any anomalies in system operation. Alliant Energy's facilities are built to withstand extreme weather events and their highly skilled operators partner with local officials and first responders to ensure proper site safety and response planning.

