

Solar power is growing. Now Georgia wants to store more of its energy

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A decade ago, the state's largest electric utility—Georgia Power—took its first, major step toward a future powered by the sun when it installed thousands of solar panels on 150 acres outside the town of Social Circle.

The project was the utility's first large-scale solar installation. And though Georgia still relies heavily on fossil fuels to meet its energy needs, today the state consistently ranks among the top-10 for installed solar.

Now, utilities and cities—along with local companies and universities—are seeking to turn more of that solar into an around-the-clock source for power.

The key? Massive clusters of batteries known as battery energy storage systems (BESS).

Turning solar from an intermittent source of energy into a constant, reliable part of the state's [electricity supply](#) also meshes with national climate goals of the Biden administration, which is offering billions of dollars in grants and tax credits to expand [solar power](#) and battery infrastructure.

Last year, Norwegian clean-tech startup Freyr Battery [announced plans for a \\$2.6 billion factory in Coweta County](#) to build batteries to store power produced by the sun. The company has not broken ground yet, but said it expects to begin production in late 2026.

BESS come in different shapes and sizes, from small batteries connected to rooftop [solar arrays](#) as a backup [power](#) source, to large systems that can provide electricity to hundreds of homes and businesses. Some rely on different chemistries, too, but the purpose of each is generally the same: To store large amounts of energy.

The basic technologies used in most of today's battery systems have been around for decades, experts say. What has changed is the demand, especially for large installations.

As of the middle of this year, Georgia had an estimated 5,200 megawatts of solar capacity installed statewide—[enough to power roughly 626,000 homes](#) — nearly all in the form of utility-scale arrays that cover hundreds of acres. Those facilities produce huge amounts of energy, but it is intermittent—on cloudy days and during overnight hours, generation drops off. At other times, when the sun is shining, a solar facility's electricity output can exceed demand.

Enter BESS. The battery systems can be charged with extra solar electricity at times of low usage and then pushed onto the grid instantly when demand spikes.

Matthew McDowell, the co-director of Georgia Tech's Advanced Battery Center, said it's a "no-brainer" for Georgia utilities to add more BESS.

"Solar panels work really well in Georgia, and combining [solar panels](#) and batteries at grid-scale makes a lot of sense," McDowell said.

In a clearing 30 minutes outside Columbus, Georgia Power is almost finished installing what it says will be the state's largest battery storage facility yet, a 65-megawatt system of lithium-ion batteries. It is expected to come online in the first half of 2024.

The technology isn't much to look at: The battery stacks, that sit on concrete slabs, are housed inside stark, gray metal enclosures. Inside, black batteries resembling the ones found under the hood of a car are stacked on trays. A large air conditioner is built into the door of each container to keep the batteries from overheating.

This is the first large battery system Georgia Power is adding, but many more are on the way. Last year, the Georgia Public Service Commission approved the company's plans to add 765 more megawatts of BESS to its

system. And in a recent update to its plans filed with the commission, [Georgia Power is seeking to add another 1,000 megawatts](#) of batteries—equal to the maximum output of one of Plant Vogtle's new reactors—by the end of 2027, to meet the increased demand the company says it expects as Georgia's economy booms.

On a recent visit to the site, Aaron Mitchell, Georgia Power's vice president of pricing and planning, said the company sees batteries as a valuable asset. In addition to pairing nicely with solar, he said the batteries can provide extra capacity to help meet surges in demand, like during a deep freeze. Texas, which suffered crippling blackouts during a deadly winter storm in 2021, [has since added thousands of megawatts of batteries to its system](#), helping the state [avoid a similar outcome in recent heatwaves](#).

"This is just the beginning," Mitchell said.

Georgia Power isn't the only electricity provider adding batteries in the state. With the help of new federal funding, [Oglethorpe Power plans to add three large battery storage systems](#), each with a capacity of 25 megawatts, to its fleet around the metro Atlanta area.

Meanwhile, at least one local company is working to develop the next generation of BESS.

Alpharetta-based Stryten Energy is working to advance its vanadium redox flow batteries (VRFB), a type of BESS that uses a different electrochemistry to store energy. Unlike lithium-ion batteries, VRFBs use a liquid electrolyte with ions of the chemical element vanadium dissolved in the solution to hold a charge.

Stryten is also collaborating with Georgia Tech to advance its vanadium batteries, a project that's being led by Tech assistant professor Nian Liu.

VRFB has efficiency and price hurdles to address, but McDowell—who is also participating in the research with Stryten—said they also have some advantages over lithium-ion, especially for large applications. VRFB batteries do not present a fire risk, their energy storage capacity does not degrade over time, and the tanks of liquid can be stacked on top of each other, unlocking the potential for much bigger [battery](#) systems to be built.

This summer, Stryten partnered with Snapping Shoals EMC to install its first VRFB demonstration in Georgia near Covington. Mike Judd, the president and CEO of Stryten, said he hopes the Snapping Shoals project will help the company further commercialize its proprietary technology.

"We want them (Snapping Shoals) to beat it up and give us feedback on it, because we're just going to take the one that they have and scale it bigger and bigger and bigger."

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