# Georgia microgrid energy storage

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A partnership between the Georgia Institute of Technology and Georgia Power, a Southern Company utility, aims to study "all the questions you can ask about a microgrid" through the 1.4-MW Tech Square Microgrid, a behind-the-meter demonstration project in midtown Atlanta on the Georgia Tech campus.

Owned by Georgia Power, the Tech Square Microgrid began operating in June and will serve Georgia Tech"s Coda building, which includes research labs and a high-performance computing center. The capital cost is $4.8 million. As approved in a 2019 rate case, Docket 42516, that amount will be recovered through rates over the life of the microgrid, said Tom Krause, a spokesman for the Georgia Public Service Commission (PSC).

The microgrid is comprised of Tier 4 diesel fuel -- which meets the strictest Environmental Protection Agency emissions for off-highway diesel engines -- plus natural gas, a fuel cell and battery storage. It"s also designed to be expanded to include additional sources of power, possibly solar, said Jim Smith, chief operating officer at PowerSecure, which installed the microgrid.

"This real-time learning lab in the heart of Atlanta will look at all the questions you can ask about a microgrid," Smith said. "How does a research university work together with Georgia Power? We"ll be learning so much on the behind-the-meter load side, but also how the microgrid works with the distribution system of the utility."

In materials filed with the Georgia PSC, Georgia Power said the demonstration project aims to develop tools to evaluate the impacts of the microgrid on the utility distribution system and evaluate grid performance when a microgrid is operating. The project will also test technologies that can offer demand management through numerous resources, including smart appliances, electric vehicles and real-time building energy management systems.

The microgrid acts as a university educational tool, too. The utility sees it as a way to leverage Georgia Tech"s knowledge and experience, create a classroom for microgrid study, and provide a public "knowledge center" about distributed energy resources (DERs).

From PowerSecure"s point of view, the project offers an opportunity to dive deep into the advanced analytics and optimization of the sophisticated microgrid. When, for example, does it make sense to use the microgrid"s different resources -- as opposed to taking power from Georgia Power? And the demonstration also will study whether 2-hour batteries are more expensive than 1-hour batteries, as well as the advantages of the microgrid providing grid services to Georgia Power, said Smith.

Georgia Power, in its material filed with the Georgia PSC, said the project aims to demonstrate an urban setting microgrid connected to Georgia Power"s high-density distribution underground network, overhead

feeder distribution system and to designated building loads in the Coda building. The microgrid, the company said, was designed to incorporate numerous DERs, including a 225-kW Samsung energy storage system, a 200-kW Bloom fuel cell and a 1,025-kW PowerSecure PowerBlock, which includes a 625-kW diesel generator and two 200-kW natural gas generators.

"The multiple points of interconnection will provide a unique opportunity to test the microgrid"s ability to interact with customer electrical loads while also supporting the distribution system," Georgia Power said in the document, adding that this will help educate the utility about using distributed energy resources.

The utility"s goals are to study the microgrid"s impact on its system"s stability, reliability and resiliency. In addition, the project will test "end-to-end integration with the Coda building"s electrical load and evaluate the performance of distributed energy resources (DER) and microgrid technology to support the grid and the company"s customers," said Georgia Power.

Because of the lack of space in downtown Atlanta, Georgia Tech had to build an aboveground platform to house the microgrid next to the Coda building, said Smith. Some of the equipment that"s usually located underground was placed in that building.

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