

A major leap forward in the development of virtual front-of-the-meter microgrids

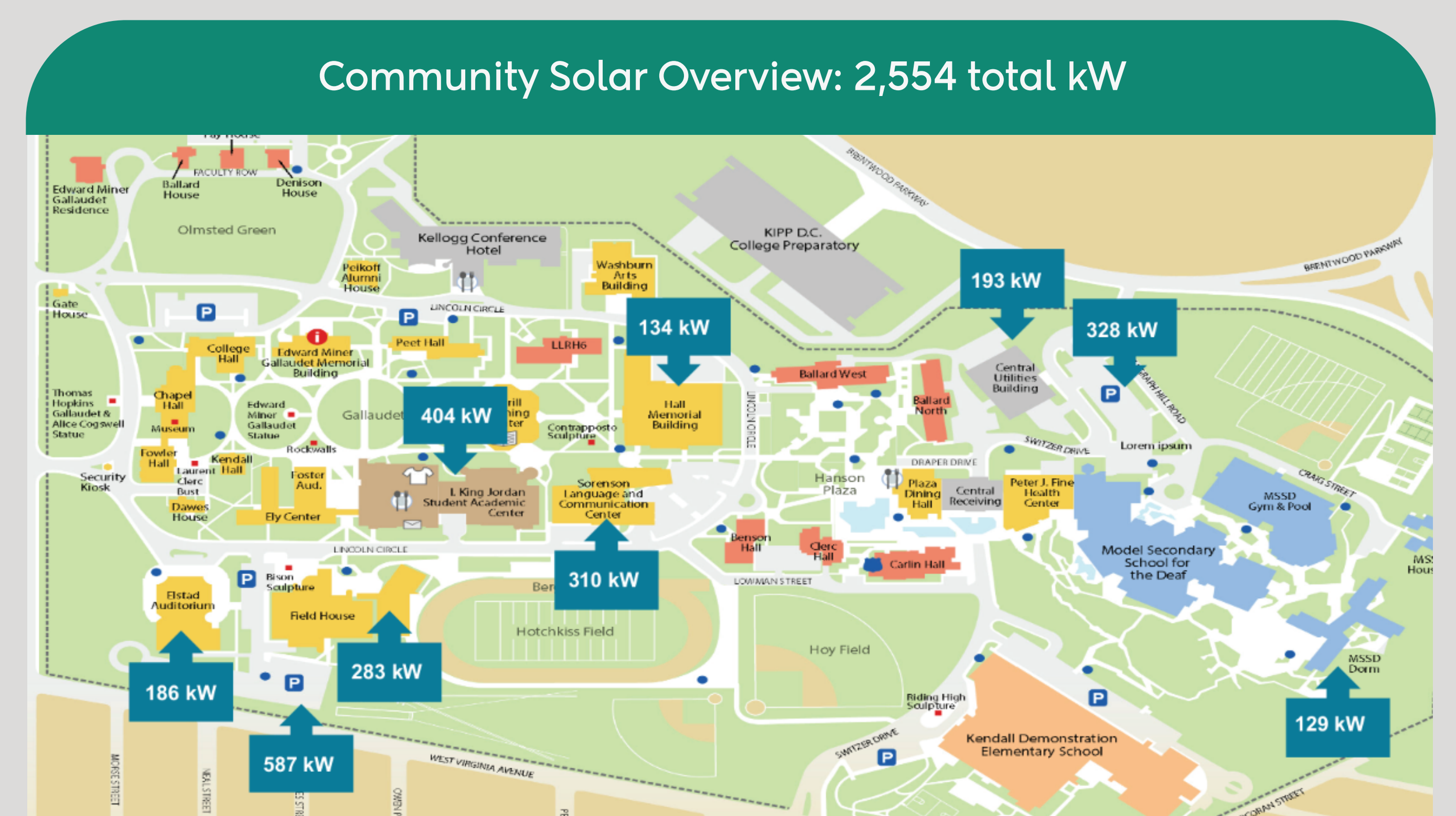


“With this ground-breaking project, Gallaudet University is demonstrating that clean and resilient infrastructure offers a vital source of innovation and growth for the National Capital region and the nation. As a flagship educational institution for Washington, D.C. and as a cornerstone of the global deaf and hard of hearing community, Gallaudet deserves tremendous credit for providing the vision and leadership required to build climate solutions, while ensuring a more just and resilient local community. We are honored to be part of this world-class team.”

*– Bracken Hendricks
Chief Executive Officer
Urban Ingenuity*

Gallaudet University’s unique microgrid will work in parallel with the district’s local utility to power the campus in Washington, D.C. **In the event of a grid outage, the system will provide nearly all the University’s electricity needs**, allowing campus operations to continue with minimal disruption.

In addition, electricity generated by the solar arrays will be available to Washington, D.C. residents, nonprofit organizations, and small businesses through the District of Columbia community solar program. Through this offering, **as many as 1,500 nearby households or small businesses that lack the roof space or capital to install solar panels will be able to purchase solar energy generated at Gallaudet.**



Author: Scale Microgrid Solutions

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Summary

Gallaudet University, the world’s premier institution of higher education for deaf and hard of hearing students, has partnered with Scale Microgrid Solutions and Urban Ingenuity to build a world-class, clean energy microgrid on its campus in Northeast Washington.

The project sets a new standard for clean, resilient energy in the heart of the Nation’s Capital. The microgrid will deliver reliable energy for the campus and significantly reduce the university’s utility costs. Expected to go online by Fall 2023, the project will meet much of the university’s energy demand, provide clean power to the surrounding community, and relieve congestion on the city’s electricity grid.

The microgrid project is the culmination of several years of careful planning to ensure that the project delivers significant economic, resiliency, and environmental benefits.

Project Goals:

- Reduce GHG emissions
- Maximize financial benefit to the University
- Improve facility maintenance and operations
- Improve the performance of facilities
- Provide resiliency and community support
- Provide real-world learning opportunities

Partners:

- Gallaudet University
- Urban Ingenuity
- Potomac Electric Power Company (PEPCO)

The Solution

The microgrid consists of 2.5 megawatts (MW) of solar photovoltaic panels spread across numerous campus rooftops and parking garages, a 1.2MW/2.5MWh lithium-ion battery energy storage system, and a 4.5MW combined cooling, heat, and power (CCHP) system. Advanced microgrid controls ensure that these components work seamlessly together and with the broader power grid.

The system can be adjusted to match a moving setpoint by the microgrid control system in real time, allowing them to respond quickly to real-time changes in demand, or to mask a sudden reduction in solar output caused by a storm. The battery energy storage system, with its ability to change output (or input) nearly instantaneously, helps to smooth the generation profile and ensure system stability. In addition to constructing the microgrid, Scale and its partners undertook a sizable effort to modernize the university’s electrical distribution system.

The solar arrays will be enrolled in an innovative program called Community Renewable Energy Facility (CREF). Through this structure, the energy produced by these rooftop arrays will be utilized and metered locally at the buildings on Gallaudet’s campus, but customers can buy into the program and get credits on their energy bill. This structure allows the solar arrays to directly benefit both Gallaudet and subscribers in the community.

Quick Stats:

Project consists of:

- 2.5 MW of solar panels spread across campus rooftops and parking garages.
- 1.2 MW/2.5 MWh Tesla Megapack energy storage
- 4.5 MW combined cooling, heat and power system.
- Advanced microgrid controls.
- 1,500 community solar subscribers



What is virtual front-of-the-meter?

Typically, on-site community solar projects connect to the grid directly, skipping the home or building’s power infrastructure entirely. However, the electricity production from the solar panels distributed across Gallaudet’s campus is being tracked and allocated for community solar credits, despite being connected to the university’s own electrical infrastructure.

This “virtual front-of-the-meter” approach lets Scale develop the project without the need for extensive cabling costs that would be required to aggregate these many distributed solar systems and connect them directly to PEPCO’s grid. Instead, they simply connect to the nearest power panel and PEPCO tracks the output through sensors and software.