



Clean Green
Campuses



Credit: Adam Fenster, University Photographer

Promoting sustainability for an environmentally healthy community



Student Enrollment:
12,000

Institution Type:
Private University

Institution Size:
12 million sq. ft.

Region:
Monroe County

Committed to Sustainable Operating Practices

The University of Rochester, a leading research institution located in Monroe County, has a long tradition of promoting sustainability on campus and in the community. Nearly 15 years ago, the university added 25 megawatts of cogeneration capacity and upgraded the mid-campus chiller plant to include five electric chillers. More recently, the university adapted its energy infrastructure planning to consider New York State's goal to reduce greenhouse gas emissions to 40% below 1990 levels by 2030. Through infrastructure upgrades, energy conservation projects, and a cleaner electrical grid, the university reduced greenhouse gas emissions per square foot on its River Campus and Medical Center by 38.6% since 1990. In addition, the campus is home to three LEED-certified buildings, and in 2019, a Holistic Energy Action Team was formed to monitor energy consumption across campus.

Energy to Lead

The university was one of three New York State higher education institutions to win NYSERDA's 2017 Energy to Lead Competition through Clean Green Campuses (formerly REV Campus Challenge). The \$1 million grant was used to implement the university's most notable clean energy project to date, installing solar arrays and battery storage technology atop the Goergen Athletic Center. The 960 solar PV panels lining the roof are paired with a Tesla powerpack battery stations, which allows excess solar energy to be stored for use during cloudier periods. The solar energy generated is already powering the athletic center and will offset most of the energy needs of the upcoming Hutchinson Hall Annex—the first nearly net zero building on campus. Together, the integrated solar and energy storage system will feed the university's microgrid with a clean, consistent power supply.

Various university staff and the utilities and energy management team established a coalition to contribute to the implementation of the project, overseen by the university's Center for Energy and Environment. This initiative serves to inform researchers, students, and the Rochester community about solar energy integrated with energy storage.





“We are proud to be a part of NYSERDA’s strong support for achieving New York State’s aggressive goals for reducing carbon emissions. Learning to live sustainably is the most important challenge of our time—grid-scale energy storage is essential technology for doing it—and our system shows grid-scale storage at work in the Upstate.”

– Doug Kelley, Associate Professor, Department of Mechanical

Impacts Beyond Carbon Reduction

The project goes beyond campus-wide carbon reduction to include educational, research, and community-based benefits. PV system installation has been integrated into engineering and design courses, including a power applications course that is mandatory for mechanical engineering. Students will use data from the solar and battery infrastructure to determine project effectiveness and study the design, costs, and benefits of transitioning from traditional fuels to renewable technology. System data will also be incorporated into engineering and efficiency optimization research for energy storage.

Community members will have access to a hands-on experience with this data at the Rochester Museum and Science Center and an on-campus outreach center is planned for school groups to learn about solar and battery technology. There is also a public website to view the data: www.hajim.rochester.edu/solar-array/.

A Vision For The Future

The university’s energy efforts continue. The utilities and energy management team is working on deploying an energy management information system that will expand the current submetering system. Through an incentive from Rochester Gas and Electric, the university plans to add approximately 50 submeters within the university’s medical center. Once the submetering hardware is installed, the university will focus on incorporating software to collect data, perform analytics, and publicize building energy consumption. The last component will portray a visual map of carbon intensity across campus buildings, targeting energy behavior, and facilitating conversation through user engagement.

“This grant provides us with a fantastic opportunity to have a comprehensive, realistic, and effective energy conservation plan, which will lead the way for the University of Rochester to become a more sustainable campus.”

– Timothy Vann, Energy Engineer, Utilities and Energy Management

With an additional grant from NYSERDA’s Roadmaps program, which has since transitioned to the FlexTech program, another component of Clean Green Campuses, the university partnered with Wendel Energy Services to develop a comprehensive Energy Conservation Roadmap. This 10-year roadmap will define carbon reduction targets and provide a pathway for achieving these targets through short-term measures and overarching energy efficiency opportunities. The goal was to set a precedent for strategically managing campus energy consumption and greenhouse gas emissions through improving system efficiency as infrastructure ages and as demand grows.

Going forward, the university hopes to promote future deployments of these types of systems through their educational, research, and community outreach efforts.

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