

Toyota is working with a US lab to build a fuel-cell power generator

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Toyota Motor North America is working on the installation of a hydrogen-based fuel cell power generator at the National Renewable Energy Laboratory's campus in Arvada, Colo.

The NREL, a division of the U.S. Department of Energy, will study the

performance limitations and degradation of the one-megawatt fuel cell system, as well as the way it performs when integrated with [energy storage systems](#) and renewables like solar and wind. The generator will be part of a larger system intended to study hydrogen power.

The \$6.5 million partnership between Toyota and the NREL to install the generator, which Toyota announced Wednesday, is partially funded by the DOE's Hydrogen and Fuel Cell Technologies Office.

The proton exchange membrane system, a type of hydrogen-based fuel cell technology, will be built from multiple Toyota fuel cell modules. The carmaker said it drew on 25 years of experience developing fuel cells, including for [electric vehicles](#).

"Achieving carbon neutrality requires all of us to explore new applications of zero-emission technology, including how that technology will integrate with other systems, which the project with NREL will identify," said Christopher Yang, Toyota group vice president of business development, in a statement.

The project shows how Toyota's fuel cell technology can be scaled, from a single module for an electric car to a larger system powering heavy equipment, Yang said.

In addition to the fuel cell generator, the research project includes an electrolyzer—a machine that splits water into hydrogen and oxygen—and a hydrogen storage system. It will showcase renewable hydrogen production, as well as energy storage, [power generation](#) and integration with the power grid.

The hydrogen power [project](#) is part of the NREL's Advanced Research on Integrated Energy Systems platform. Announced in 2020, the platform combines [physical infrastructure](#) and [digital tools](#) to study clean-

energy technology, with areas of focus ranging from [energy storage](#) to cybersecurity.

The ARIES platform is "the United States' most powerful research capability to support the transition to a clean energy future," its leadership team wrote in a report on the platform for fiscal year 2021.

"Another blackout from a storm or a sobering statistic about the global impacts of our energy use reminds us that change is here. We need clean and resilient energy systems right now, and that will require an accelerated path from breakthrough to real-world deployment," the team wrote.

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