



## NREL + EPRI

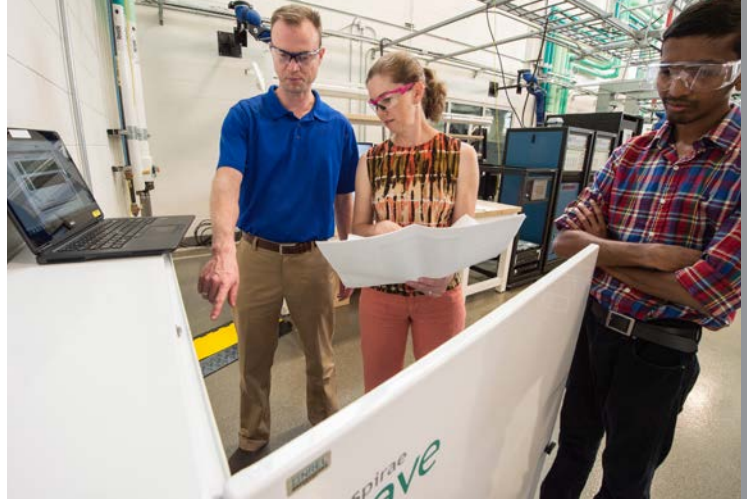
NREL is collaborating with the Electric Power Research Institute (EPRI) to validate the performance of a Spiraе-developed advanced microgrid controller capable of managing 1–10 megawatts of aggregated generation capacity. The aim is to develop a commercially viable and flexible microgrid controller, easily adapted to different end-user applications and to a range of electric grid characteristics. EPRI is leading a team that includes Spiraе, NREL, a microgrid system analytics consultant, 15 utilities, and target communities. This project is sponsored by the U.S. Department of Energy’s Office of Electricity Delivery & Energy Reliability.

### R&D STRATEGY

NREL is validating and testing the functions of the controller by installing it in the ESIF and connecting it to a virtual model of a microgrid, embodied within a real-time digital simulator (RTDS). The controller is also being connected to a utility-scale battery inverter, which interacts with the virtual model through an AC power amplifier, adjusting its output to the simulated electric grid demand. For one targeted community, the controller is undergoing detailed testing to verify that it meets the technical functional requirements for that community.

### IMPACT

Microgrids can create a more resilient electric grid by disconnecting from the main grid during disturbances, such as outages, and continuing to operate independently. They may also need to operate with high penetrations of renewable generation in addition to traditional distributed energy resources. NREL’s work can confirm the performance of a microgrid and microgrid controller before they are actually deployed.



NREL researchers (from left) Brian Miller, Annabelle Pratt, and Kumaraguru Prabakar work to validate the performance of a Spiraе-developed advanced microgrid controller. *Photo by Dennis Schroeder, NREL 38489*

### Partner with NREL at the ESIF

User facility access to the ESIF is awarded through the review and approval of user proposals, depending on the scientific merit, suitability of the user facilities, and the appropriateness of the work to DOE objectives, and includes a signed user agreement for the facility.

For more information, please visit:

[www.nrel.gov/esif/work-with-us.html](http://www.nrel.gov/esif/work-with-us.html)

or contact:

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The Energy Systems Integration Facility (ESIF) at the National Renewable Energy Laboratory (NREL) provides the R&D capabilities needed for private industry, academia, government, and public entities to collaborate on utility-scale solutions for integrating renewable energy and other efficiency technologies into our energy systems.

To learn more about the ESIF, visit: [www.nrel.gov/esif](http://www.nrel.gov/esif).

### National Renewable Energy Laboratory

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