FEMA Supports Partnership with Local Universities to Address the Island's Energy System

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The collaboration is carried out with the UPR Mayagüez Campus and Ana G. Méndez University

San Juan, Puerto Rico –As part of the island's rebuilding efforts, the Federal Emergency Management Agency (FEMA) is working in partnership with a national laboratory and two local universities to support the design of resilient energy systems for Puerto Rico.

Through the alliance, the Mayagüez Campus of the University of Puerto Rico (RUM) and the Gurabo Campus of Ana G. Méndez University (AGM-Gurabo) are working hand in hand with Sandia National Laboratories to bring together the laboratory's tools with the technical expertise and local knowledge of university professors and students.

This U.S. Department of Energy (DOE)-endorsed laboratory supports the federal government's efforts to modernize the energy grid and encourages the use of renewable energy for critical infrastructure.

“We are proud that the research of Puerto Rican students and faculty is contributing to the development of cutting-edge technologies for resilient energy systems. Once again, local talent is at the center of recovery in their communities,” said Federal Disaster Recovery Coordinator José G. Baquero.

There are many outcomes from the research that emerge through these collaborations, such as workforce development, community engagement, and the refinement of tools and data. On the RUM campus, for example, the team led by Erick Aponte Bezares, a professor in the Department of Electrical and Computer Engineering evaluated the feasibility of microgrids to support rural energy systems.

From January 2021 through June 2022, faculty and student researchers from the Department collaborated with Sandia Labs on tools aimed at identifying the infrastructure needed to increase resilience in communities; and determining the microgrid options the community has to energize that infrastructure.

As part of the collaboration, the RUM worked with Caño Martín Peña in San Juan and the Corcovada community in Añasco. In both places, they discussed the studies developed with Sandia and then presented the options that exist for the design of microgrids, mainly with renewable energy.

From the research aspect, RUM undergraduate students use these tools for their design projects; and graduate students use them for their master's theses.

For Professor Aponte Bezares, the research has been very productive as it gives a better understanding of what the needs of specific sectors are. "This experience adds to the students' education because they are dealing with problems that are unique to the communities. The tools also provide technical assessments that they share with community leaders."

Meanwhile, the contribution of the AGM-Gurabo from January 2021 to the present is focused on educating people about the opportunities provided by microgrids and guiding them through the initial stages of their design.

For example, after seminars offered by the university on microgrids and solar-based systems, residents of Brisas del Torro in Cayey developed a proposal for the U.S. Department of Agriculture's Rural Development Resilience Program, which was successful and will now help fund a microgrid in that community.

Sandia Labs research analyst Amanda Wachtel explained that “using these tools puts students on the path to becoming the next generation of top researchers. Their input to the lab helps us improve our tools and ensure they have a greater impact in the future.”

Sandia is part of the Puerto Rico Power Grid Resilience Study and Transitions to 100% Renewable Energy (PR100) initiative, a DOE project funded through a collaborative agreement with FEMA. This study enlists RUM's expertise to incorporate residential renewable energy adoption into the PR100 study.

For more information about Puerto Rico’s recovery from Hurricane María, visit fema.gov/disaster/4339 y recovery.pr. Follow us on social media at Facebook.com/FEMAPuertoRico, Facebook.com/COR3pr and Twitter @COR3pr.