

DUKEENGAGE IN PUERTO RICO

Developing resilient energy systems through innovation and entrepreneurship after Hurricane Maria

Dates: May 13 – July 7, 2019

(Dates subject to change up until the point of departure.)

Program Focus

Partnering with organizations fostering innovation in the energy and environmental sectors to promote sustainable energy infrastructure and economic development.

Curricular Connections: While all students are welcome to apply, this program may be of particular interest to students studying Energy, Environmental Studies, Innovation and Entrepreneurship, Public Policy, Economics, or Engineering. (See below for additional details about connecting this program to your academic work.)

Service Themes

- Community Development & Outreach
- Economic & Workforce Development and Social Enterprise
- Environment & Conservation
- Public Policy
- Science and Engineering

Program Leader

Professor Lori Benneer studies energy economics and policy and teaches courses on environmental economics, energy economics, and environmental and energy policy.

Program Overview

In the wake of Hurricane Maria, and in light of the significant constraints on public sector resources to rebuild energy infrastructure, there has been an increased focus on innovative private sector prospects to develop a sustainable and resilient energy system in Puerto Rico. There has also been a general push toward promoting an asset-based model of community development, where communities are active participants as social entrepreneurs in the development of a sustainable and resilient economic model. DukeEngage-Puerto Rico will partner with several nonprofit organizations that foster innovation and social entrepreneurship in the energy and environmental sectors to help develop and implement strategies to promote sustainable economic development and energy resources. Within these organizations, assignments might focus on:

- Supporting communities to become more resilient and active in the creation of sustainable tourism attractions and experiences
- Strengthening local communities to spur their own recovery and build the resilient infrastructure required for growth, including renewable energy infrastructure
- Supporting the development of climate-resilient community centers
- Promoting social innovation, social capital development, data transparency, and awareness

Student Learning Objectives/Outcomes

1. Students will gain a first-hand understanding of the correlation between reliable energy access and quality of life, both generally and specifically with respect to Puerto Rico.
2. Students will understand the landscape of relief and recovery efforts, including those of federal and local governments, NGOs, and social entrepreneurs.

3. Students will apply their skills and knowledge in energy and/or innovation and entrepreneurship in service of relief and recovery efforts.
4. Students will gain appreciation for the complex demands of infrastructural re-development with limited resources.
5. Students will gain an increased understanding of the opportunities for applying methods and tools of creative problem solving, innovation, and entrepreneurship to the challenge of increasing access to energy.

Partnership Opportunities

Potential partners include:

- **Foundation for Puerto Rico:** The mission of the Foundation for Puerto Rico is to transform Puerto Rico into a destination for the world by driving economic and social development through sustainable strategies. There are three main programs run by the Foundation. The first is the Bottom-up Destination Recovery Initiative, which supports communities to become more active in the creation of tourism attractions and experiences. This community-based recovery program aims to strengthen local communities to spur their own recovery and build the infrastructure required for growth. The second program is the Small Business Support Program, created after hurricane María to help existing businesses remain open, retain employees and optimize their business through immediate assistance and relief. Likewise, this project seeks to promote the local economy in areas with a high impact to the island tourism. The final program is the Visitor Information and Experience Warehouse of Puerto Rico (“VIEWPR”) that seeks to attract more visitors to the island and extend their stays by sharing new and reliable information with travel platforms across the world. The Foundation also serves as an umbrella for many other community nonprofits working in Puerto Rico. Volunteer work might include a resiliency project for local small businesses or conducting asset-based community development surveys (data gathering and analysis) to better help communities develop sustainable economic development strategies.
- **Parallel 18** promotes innovation and entrepreneurship on Puerto Rico by supporting successful startups. Parallel 18 supports innovators from around the globe to help them scale from Puerto Rico to global communities beyond the Island. Parallel 18 supports startups by providing capital and by providing training and support through their acceleration program. Volunteer work might include partnering with funded start-ups to provide energy sector knowledge and insights to their business plans.
- **ABRE Puerto Rico** is a local NGO that works closely with Foundation for Puerto Rico on issues of government transparency. They strive to find and publish government data and documents to enhance democratic participation in decision-making about economic development on Puerto Rico. They develop new data sets, data visualization tools, and data indices on topics such as municipal fiscal health and political campaign donations. Volunteer work might include policy research and analysis, data gathering and management.
- **Para La Naturaleza** is a nonprofit that fosters ecological restoration and preservation as well as sustainable tourism in Puerto Rico. Current programs include sustainable tourism, volunteer tourism to maintain ecological gardens and restore ecosystems, and working with communities to develop more sustainable and resilient economic strategies. Volunteer work might include supporting the development of resilient community centers and supporting community-based organizations with projects related to sustainable tourism or agriculture.

IMPORTANT: While applicants may express preferences for specific opportunities, and those preferences will be taken into account, accepted students must be open to any placement in the program.

Program Requirements

Language: Conversational Spanish is highly recommended, but not required.

Coursework: No specific coursework is required before participation. However, applications will be stronger from students with background and training in energy and/or innovation and entrepreneurship. Students are encouraged to take at least one of the following courses: Energy and the Environment ENVIRON/ENERGY 231, Engineering Sustainable Design and the Global Community (CEE 315/ENVIRON 365/PUBPOL 211), Innovation & Entrepreneurship (I&E 352), and Social Innovation (I&E 261/PUBPOL 256).

Other skills: Students most interested in working with ABRE Puerto Rico and the Foundation for Puerto Rico should have data analysis skills including ability to work with data in Excel. Experience with data visualization tools such as Tableau and GIS would be helpful.

Personal Qualities:

- **Self-motivation:** Students will be expected to work on projects with autonomy. Ability to stay self-motivated will be critical to project success.
- **Problem-solving:** Students will be expected to solve problems in the work with minimal oversight. Students should be able to be creative and identify solutions themselves. At the same time, it is critical to know when you cannot solve a problem yourself and need to seek help. For example, if you encounter a problem with data, you should be able to troubleshoot the problem by using available help tools, but you shouldn't spend days trying to solve a problem if one question to a supervisor could solve the problem. The key is to know when you cannot solve a problem by yourself.
- **Undogmatic:** The goal of DukeEngage-Puerto Rico is to empower communities to develop sustainable and resilient economic development plans. What works for a particular community may not be a "traditional" approach and students must be open to non-traditional ideas and solutions. Your job is to listen and help, not to tell people what they should do.
- **Collaborative:** Students will be living and working with one another in a close environment, therefore they must be open to working closely with other students and community partners who may have differing thoughts and ideas.
- **Flexibility:** Enrichment schedules will be determined based on timing and opportunities and are subject to change. Students should be comfortable with ambiguity and remain flexible to schedule and program changes throughout the summer.

Curricular Connections

- **Energy and Environment Certificate**--Gateway course: Energy and the Environment ENVIRON/ENERGY 231, offered every fall). Related: Engineering Sustainable Design and the Global Community (CEE 315/ENVIRON 365/PUBPOL 211, offered every spring); Economic Analysis of Current Energy Issues (ECON 325S, offered every spring). These courses may be taken before or after the program.
- **Innovation and Entrepreneurship Certificate**--Gateway course: Innovation & Entrepreneurship (I&E 352, Fall 2019). Related: Economics of Entrepreneurship (ECON/I&E 375; offered every fall); Social Innovation (I&E 261/PUBPOL 256, offered every fall); Hacking for Conservation and Development (I&E 590, offered every spring). Participation in this DukeEngage program can count toward the 300-hour experience required by the I&E Certificate. These courses may be taken before or after the program.
- **Bass Connections in Energy and Environment:** Duke's Energy Access Project (EAP) sponsors Bass Connections research with many parallels to work that will be done in Puerto Rico. A 2018-2019 project will examine the business and policy landscape for promoting energy access in east Africa; this project was so popular that it could only admit about 30% of applicants. We expect to offer energy access-related projects again in 2019-2020. Independent studies may also be available with faculty affiliated with the EAP, and the Global Energy Access Network, an interdisciplinary group of graduate and undergraduate students housed at Duke, offers regular co-curricular learning opportunities. Students may participate in a Bass Connections project before or after the DukeEngage experience.
- **Spanish/Latin American Studies:** Students are encouraged to have conversational Spanish language skills. Students may be native Spanish speakers or have successfully taken Spanish language courses, including AP credit. Further Spanish courses exploring the Latinx experience in the U.S. will complement this Duke Engage experience. Examples include: Intro to Latino/a Studies (Spanish 160), Latino/a Voices in Duke/Durham (Spanish 308S), Bridging Cultures (Spanish 313), Intro to Contemporary Latin America (LATINAMER 239), and Political Economy of Latin America (LATINAMER 349). These courses may be taken before or after the Duke Engage experience.

Program Details

Description of community: The communities we will be working in were severely impacted by Hurricane Maria's trajectory. Most of the communities are in the greater San Juan area although students may also engage with some more remote communities, all within 1.5 hours of San Juan. These communities face significant infrastructure challenges (telecommunications, water and energy resources, streets and waste management). They have a high percentage of poverty and unemployment levels – but also a high potential for commercial density and for a “visitor economy,” given assets such as natural and cultural attractions/resources/infrastructure. The four local partners have been working with marginalized communities in Puerto Rico for years. There are many assets in these communities upon which the DukeEngage projects will build: prior successful business developments, a high level of community awareness, community support for a new entrepreneurship-based economic environment, a strong desire to develop resilient community centers, and a robust infrastructure of sustainable energy sources that can provide power in the aftermath of a natural disaster.

Housing and meals: Students will be living in close proximity to one another housed either in university dormitories or apartment-style housing in a safe neighborhood in San Juan. Rooms will likely be shared doubles. Housing will have electricity and indoor plumbing, including toilets and hot showers. Emergency and medical facilities are of high quality and are located very near student housing.

If students are in dorms, meal plans will be provided for breakfast and dinner and a stipend will be provided to purchase lunch. If students are in apartments, a stipend will be provided to purchase groceries and prepare meals.

If you do not eat certain types of food for cultural, religious or personal reasons, please contact the DukeEngage office, dukeengage@duke.edu, to discuss whether or not your dietary needs can be reasonably accommodated at this program site.

Transportation: DukeEngage provides or arranges transportation to and from service placements and all scheduled program activities. In this program, students will likely use public transportation to get to their workplaces.

Communication: Currently all major U.S. cell phone carriers provide coverage in Puerto Rico. Therefore, we assume all students will have a personal cell phone for program-related and emergency communication. Students will have reliable access to the internet at work and at accommodations.

Local Safety and Security; Cultural Norms, Mores and Practices: DukeEngage strongly advises all applicants to familiarize themselves with the challenges travelers commonly encounter at this program site in order to make an informed application decision. We recommend starting with the Diversity, Identity and Global Travel section of the DukeEngage website.

Opportunities for Reflection: Students will be required to reflect in person, as a group, once per week with the program leader(s). Topics for weekly reflections may include the impact of Puerto Rico's territorial status on energy and innovation initiatives, the role of the private sector and innovation/entrepreneurship in the rebuilding of Puerto Rico infrastructure, group dynamics, the process of service work for the clients, personal goals and expectations. Students will also be required to write one blog post during the summer. Students will be assigned a week to write their blog post at random such that one student writes a post each week. Finally, students will be required to complete an e-portfolio in PebblePad. The e-portfolio is a web-based summary of the student's activities as well as the student's reflection on the process of learning through DukeEngage. Students will be expected to complete reflection exercises in PebblePad at least once per week. If students do not have a personal laptop or tablet we will provide access to a computer for this work to be completed.

Other Opportunities: The group will participate in enrichment activities such as meeting with community leaders to learn about the history of their neighborhoods and the difficulties they have endured since Hurricane Maria, learning about the legacy of colonialism and the relationship between the U.S. and Puerto Rico from University and community

leaders, visiting communities with unique energy systems, as well as visiting the local rainforest and participating in cultural activities. Students will also have opportunities to meet with Duke alumni and friends of Duke working in Puerto Rico. Some of these activities may occur in the evenings and on weekends and students will be required to attend. We guarantee at least one free day per week and two free weekends during the program. Open water swimming will not be a sponsored activity in any DukeEngage program.

More Information

Community partner websites:

- Foundation for Puerto Rico: <https://www.foundationforpuertorico.org/>
- Parallel 18: <https://parallel18.com/>
- ABRE Puerto Rico: <http://abrepr.org/>
- Para La Naturaleza: <http://www.paralanaturaleza.org/en/>

Other relevant websites:

- Puerto Rico Energy Commission: <http://energia.pr.gov/en/>
- Puerto Rico Electric Power Authority (PREPA): <https://www.aeepr.com/INVESTORS/Default.aspx>
- Department of Economic Development and Commerce of Puerto Rico: <http://ddec.pr.gov/en/>

Recommended readings:

- Mack, Doug. 2017. *The Not-Quite United States of America: Dispatches from the Territories and Other Far-Flung Outposts of the USA*. (New York, NY: W.W. Norton Company). **This book will be required and will be purchased for all selected participants.**
- A Land They No Longer Recognize—Time Magazine: <http://time.com/a-land-they-no-longer-recognize/>
- Nearly a Year After Hurricane Maria, Puerto Rico Revises Death Toll to 2,975: <https://www.nytimes.com/2018/08/28/us/puerto-rico-hurricane-maria-deaths.html>
- Puerto Rico Power Utility Board Quits Leaving Leadership Void: <https://www.reuters.com/article/us-usa-puertorico-prepa/puerto-rico-power-utility-board-quits-leaving-leadership-void-idUSKBN1K22QS>
- Judge Rules in Favor of Puerto Rico Oversight Board Authority: <https://www.npr.org/2018/08/08/636603584/judge-rules-in-favor-of-puerto-rico-oversight-boards-authority>