Nuclear Power for Puerto Rico

In September of 2017, Hurricane Irma and Hurricane Maria hit the island of Puerto Rico within a span of two weeks, bringing widespread and catastrophic damage including a 100% power failure across the island. The hurricanes left residents with no drinkable water and killed thousands of people, creating the deadliest U.S. disaster in over 100 years. The disaster left some residents of Puerto Rico without access to clean drinking water or electricity for months—and even years—and the impacts of the hurricanes are still seen today. Due to its size and location, Puerto Rico will continue to be particularly susceptible to the effects of climate change as warmer sea temperatures and higher sea levels are expected to intensify hurricane strength and impact.

Recognizing the vulnerability of the aging Puerto Rican energy grid that relies heavily on energy imports, a group of Puerto Rican professionals began working together after the hurricanes to bring nuclear energy to Puerto Rico, founding the Nuclear Alternative Project (NAP). In May of 2020, the NAP collaborated with nuclear energy leaders like the Pacific Northwest National Laboratory and Pillsbury to conduct the "Preliminary Feasibility Study for Small Modular Reactors and Microreactors for Puerto Rico." They found many socio-economic motivations to pursue advanced nuclear technology. Approximately 98% of the electricity generated in Puerto Rico comes from fossil fuel imports (primarily oil) and the island has a poor record of power operations reliability with an outage rate 12 times higher than the United States. This combination of dependence on fossil fuel imports and poor reliability puts the Puerto Rican economy under extreme stress, especially when global oil prices spike. The aftermath of natural disasters has also led Puerto Rico's residents to seek firm energy sources that are resilient under extreme weather conditions.

According to the study, the Puerto Rico Electric Power Authority (PREPA), the commonwealth's governing body responsible for delivering energy, expects the retirement of a total of 3,600 megawatts of electric generation over the next 10 years—74% of PREPA's total electric portfolio. Advanced nuclear reactors can offset the required retirement of PREPA's aging power plants with an expeditious installation of new capacity to ensure a reliable energy grid. The study also found that electricity from microreactors or SMRs can be cost competitive when compared to imported diesel and natural gas. Thus, Puerto Rico can benefit economically and gain energy security by adopting nuclear energy resources.

Bringing nuclear energy to Puerto Rico would not only benefit the island's residents, but could also serve as a model for other U.S. states and territories, including those with military bases. The U.S. has four additional territories outside of Puerto Rico—the U.S. Virgin Islands, Northern Mariana Islands, Guam, and American Samoa—all of which consume petroleum products to produce electricity at relatively high costs. These remote communities can reduce their dependence on expensive petroleum products while also reducing pollution and greenhouse gas emissions from fossil fuels by investing in advanced nuclear technology. Similarly, the military is considering the use of microreactors at military bases in the U.S. to increase base resilience and energy security. As the Department of Defense explores advanced nuclear energy technologies, states and territories are well positioned to support these mission-critical energy projects.