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CODRINGTON, Barbuda -- After Hurricane Irma struck Barbuda in 2017, Lyndon Prosper stepped outside to take in the devastation. Only afew utility poles were still standing, and broken pieces of solar panels were strewn far and wide. The hurricane had devastated the Eastern Caribbean island -- quite literally shattering its efforts to build aclean energy system.

When Irma made landfall, the Antigua Public Utilities Authority had been building a1-megawatt solar PV plant, working with the government of Antigua and Barbuda and private company PV Energy. According to Prosper, the superintendent of the island"s power plants, 400 panels had been installed and another 250 were awaiting installation before they were all damaged or washed away.

Prosper had been hopeful that the plant would survive Irma, as it was being built to withstand 160 mph wind. But Irma brought sustained winds of up to 185mph.

Now nearly four years later, amid its ongoing recovery from Irma, Barbuda is once again close to completing asolar PV plant -- this one built specifically to survive another storm of Irma"s intensity.

Islands across the world are making the switch to solar to save money on expensive imported generator fuel and to play apart in reducing the carbon emissions responsible for climate change.

But if these plants are going to withstand the more frequent and intense hurricanes that are also an outcome of the changing climate, engineers and contractors will have to consider hurricane resiliency throughout the design and construction process.

The solar plant now near completion on the island is called the Green Barbuda project. In addition to about 726kilowatts of solar PV, the project will include a750kW/900 kWh battery system and 800kW of diesel generation capacity, according to John Caruso, project manager for Masdar, the United Arab Emirates-based renewable energy company overseeing construction.

Construction started in December 2020, and the hybrid plant is expected to begin operating later this year. The project is backed by $4 million from the United Arab Emirates Caribbean Renewable Energy Fund, with additional funding from the government of Antigua and Barbuda, the New Zealand Ministry of Foreign Affairs and Trade"s Aid Programme, and the Caricom Development Fund, which supports agroup of economically cooperative Caribbean member states.

Ali Nouri is the managing director and COO of Middle East at Idsud Energies, the engineering and construction contractor on the project. He said his company simulated the high wind load of Hurricane Irma in alab with the materials it would be using in the hybrid plant to ensure it could withstand afuture hurricane of

the same strength.

"All components starting from the material of the structure, which is aspecific stainless steel with very high resistance to corrosion, to dimensions and number of piles, then the depth into the soil, the concrete formula...were all calculated to withstand the hurricane type of uplift winds," Nourisaid.

The Green Barbuda solar project is being built inland at one of the highest points on the island, unlike the first solar plant in the region, which was situated alongside alagoon. That waterside location rendered the previous plant vulnerable to asaltwater storm surge that damaged equipment, according to Prosper.

The new location is "100% more resilient," said Christopher Burgess, projects director for the Global South at think tank RMI. In an email, he added that "the power station with solar and battery is not only the most resilient option. It [is] also the cheapest, [with the] best [levelized cost of energy]."