



# Puerto Rico microgrid controller cost

What is a microgrid in Puerto Rico?

A microgrid is like a miniaturized, tightly controlled version of a power grid. Each microgrid includes generation, loads, transformers, distribution lines, protective devices, and, typically, energy storage. Several factors combine to make Puerto Rico an ideal place for solar power and microgrids.

Are solar-based microgrids a viable alternative to the central grid in Puerto Rico?

Following Maria, businesses in Adjuntas struggled to obtain enough diesel and spent thousands of dollars on fuel to keep their generators operating--an expense that sorely tested them. Sunlight, though, is a free and abundant energy source in Puerto Rico, and solar-based microgrids have proven to be a reliable alternative to the central grid.

Is Puerto Rico a good place for solar power and microgrids?

Each microgrid includes generation, loads, transformers, distribution lines, protective devices, and, typically, energy storage. Several factors combine to make Puerto Rico an ideal place for solar power and microgrids. The island gets on average nearly 3,000 hours of sunshine per year, putting it on a par with Honolulu and Brisbane, Australia.

How much does electricity cost in Puerto Rico?

Business owners pay a rate that's lower than the main grid rate on the island, which is one of the highest in the United States. The average cost of electricity for commercial users in Puerto Rico is about 29 U.S. cents per kilowatt-hour; in May, the rate on the United States mainland was about 13 cents per kilowatt-hour.

How many kilowatts can a microgrid power?

The microgrids, which have a total capacity of about 200 kilowatts, as well as two large battery-storage systems with more than 1 megawatt-hour of capacity, are designed to power these businesses. The Solar Forest, a novel installation of PV panels, doubles as a public charging station in the town square of Adjuntas. Heather Duncan/ORNL

How do local microgrid controllers work?

Instead, the local microgrid controllers maintain full control of their assets, such as PV panels, and they react to the pricing signal and make their own decisions about buying or selling power to one or more neighboring microgrids. This approach preserves the autonomy and privacy of each microgrid.

The barriers to developing microgrids in Puerto Rico include policy delays, investment uncertainties and lack of financing. Puerto Rico is a relatively small market for microgrids, in which few large projects account for the majority of installed capacity.

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Rural communities in Puerto Rico are banding together to host solar-powered microgrid systems for emergencies like Hurricane Fiona and for day-to-day use. Electricity prices have increased to 33 cents per kWh in 2022--almost double the 2020 rate--due to global increases in the cost of natural gas, which needs to be imported to the island.

Eaton works with customers offering turnkey services on the concept, design, cost, implementation and maintenance of the entire system. View this update on our Puerto Rico microgrid with Enel X project.

Three microgrid design alternatives for a rural community that consider centralized and decentralized diesel generation, energy storage, and photovoltaic (PV) generation are ...

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This study has shown that the first costs of a solar PV-battery microgrid can be reduced significantly by reducing microgrid availability for three locations in Puerto Rico. The results from Figure 5 and Table 9 can be used to estimate reductions in cost of similar microgrid systems for other analyses of coastal regions in Puerto Rico.

Puerto Rico with recommendations for hundreds of locations where microgrids will have the greatest resilience benefits. Aros-Vera et al. (2021) perform another island-wide study of Puerto Rico and how microgrids could increase infrastructure resilience. Both studies call for cost-benefit analysis of microgrids in Puerto Rico.

Researchers are now working to demonstrate the orchestrator in Adjuntas and scale up the technology to handle more microgrids through a partnership with New Sun Road, a small business developing a low-cost microgrid controller for community microgrids.

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Siemens developed the minigrid plan to inform Puerto Rico's next IRP, which is expected to guide efforts to create a more storm-ready grid. The minigrids would make the island's power supply 35 percent renewable energy, and only cost 7 percent more than a base case plan that integrates 20 percent renewables.



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