

With Earthquakes and Storms, Puerto Rico's Power Grid Can't Catch a Break

The lines and poles rebuilt after Hurricane Maria held up, but some power plants did not, leading to another worrying blackout.

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SAN JUAN, P.R. — After the devastation of Hurricane Maria, the federal government set aside nearly \$2 billion to fix the electrical transmission lines in Puerto Rico, hoping to avert another epic blackout. But when the next disaster arrived this week — the strongest earthquake in a century — the island was once again plunged into darkness.

This time, Puerto Rico's precarious power system faced an entirely different problem: The lines and poles rebuilt after the storm held up, but some of the aging power plants did not, revealing yet another urgent need for the bankrupt power authority.

The facility that produces the most electricity on the island, the Costa Sur power plant, may not return to service for up to a year, officials said, raising concern as another hurricane season approaches. Even if power is fully restored by Sunday, as forecast, officials warned that the unstable system may falter at the slightest mishap.

The extent of the continuing challenges became clear on Friday, when another strong aftershock, this one with a magnitude of 5.2, rattled the island.

Puerto Rico's yearslong power woes are yet another tale of vulnerabilities in the nation's utilities laid bare by disaster, the result of mismanagement and failure to maintain equipment. From the California wildfires that prompted Pacific Gas & Electric to file bankruptcy, to the hurricanes and earthquakes that have upended the Puerto Rico Electric Power Authority, consumers are often finding themselves in the dark from power outages — and facing soaring electric bills to repair ravaged power systems.

"This really is the point at which we have to face the fact that the current institutions just aren't doing the job," said Robert McCullough of McCullough Research, a utility consulting firm based in Portland, Ore. "It really is like one of the slow-motion accidents in a movie. You really wish it would end."

Puerto Rico is especially vulnerable: The beleaguered power authority, which filed for bankruptcy in July 2017, is \$9 billion in debt, serving customers who can ill afford higher rates on an island that is also bankrupt and entering its 14th year of recession.

Few good replacement options exist for Costa Sur, the 58-year-old workhorse power plant in Guayanilla, one of the towns in southern Puerto Rico hard-hit by the 6.4-magnitude quake. The plant suffered "destruction on a grand scale," said José Ortiz, the Puerto Rico power authority's executive director. In 2018, based on the most recent federal data, Costa Sur produced about a fifth of the total power generated on the island.



Fearing additional tremors, many Puerto Ricans are afraid to sleep in their own beds. Erika P. Rodriguez for The New York Times

A blackout in Guánica. Erika P. Rodriguez for The New York Times

Jose Luis Casiano del Toro worked on a generator in Guánica by the light of a headlamp. Erika P. Rodriguez for The New York Times

Now, other plants will be forced to produce more megawatts of power. By Friday, power had been restored to 81 percent of the island's roughly 1.4 million customers.

Once the system reaches full restoration, it will have little leeway for any of the functioning plants to go offline, a frequent occurrence in Puerto Rico's aging facilities. That could lead to possible blackouts or brownouts, said Ken Buell, the director of emergency response and recovery for the Department of Energy who is working with the Federal Emergency Management Agency on its earthquake response.

To avoid such a scenario, Mr. Buell said the likeliest option is for Puerto Rico to seek federal waivers that would allow two of its older oil-fired plants, Palo Seco and San Juan, to emit more pollutants, which are capped by the Environmental Protection Agency.

"That would increase that output at those plants, which provide the power to the San Juan metro area," which consumes about 70 percent of the island's electricity, Mr. Buell said. "That would really provide a lot of stability."

A more modern facility, the privately owned EcoEléctrica plant built in 2000, was also damaged during the earthquake. EcoEléctrica, a natural gas facility, must have clearance from the Federal Energy Regulatory Commission to restart because of damage to its fuel supply equipment. It is unclear how long that process will take.

The Puerto Rico power authority's recent history has been checkered with questionable management decisions. The utility awarded Whitefish Energy Holdings, a tiny Montana firm with only a handful of employees, a \$300 million contract to rebuild the island's power grid after Maria, only to face withering criticism from members of Congress and FEMA.

The Puerto Rican government and a new contractor, New Fortress Energy, have come under fresh criticism for delays in completing projects. The conversion of two units at the power plant in San Juan from oil to natural gas was supposed to be complete in June 2019, at the beginning of hurricane season. But the project remains unfinished. The new completion date is within the first quarter of this year.

There was fresh scandal in September, when federal authorities arrested a top FEMA administrator who was in charge of post-hurricane power restoration in Puerto Rico as part of a corruption investigation. A federal indictment charged that she took bribes from one of the electrical contractors.

Tom Sanzillo, finance director for the Institute for Energy Economics and Financial Analysis, said efforts to improve Puerto Rico's electric system have been hampered by failure to complete development plans, debt restructuring and other services on time.

"The lights are on more often than they were," Mr. Sanzillo said. But the efforts of the power authority and the contractor to create a stable electric grid have fallen short. "It hasn't met any of its benchmarks. It has no support from consumers. It has no support from the labor community."

Puerto Ricans already pay among the highest rates in the nation. After Hurricane Maria, the power authority's customer service offices were jammed with customers waving \$700 bills — for the period the lights were out. The average monthly electrical bill in Puerto Rico is \$250.

This week's series of powerful tremors led to a new round of invective.

"I don't believe them," said Antonia Cortés, 58, of Ponce, who has not had power or running water since Tuesday's earthquake. A diabetic worried about her insulin, she and her husband have been staying with her son's mother-in-law, but she is worried about the possibility of a lengthy outage.

"The power system is the worst," she said. "It's like they hold it together with bubble gum."

The increasing frequency of powerful storms and wildfires brought about by climate change have highlighted longstanding neglect across the country in maintaining power transmission lines and other electrical facilities — though shortfalls are often apparent even before disaster strikes.

FEMA officials inspected Puerto Rico's critical Costa Sur power plant last summer and found damage to roofing, siding and other building elements.

The utility has also failed to build new power generation facilities as older plants have been mothballed, and existing equipment has not been kept in good working order, said Ángel Figueroa Jaramillo, president of the electrical workers' union.

To cite one example, he said that Puerto Rico had 22 generators called "peakers," which can be turned on quickly — and at significant expense — to meet sudden surges in demand. They could help restore power faster, but only nine are functioning, Mr. Figueroa Jaramillo said.

"This didn't happen overnight," he said. "This has happened over six, seven, eight years."

Still, major temblors like those Puerto Rico has seen since late December would be challenging for any utility, said Lucy Jones, a seismologist at the California Institute of Technology. Even with the knowledge, resources and preparation that California's utilities have, she said, a major earthquake along the San Andreas Fault could cause so much damage to the electric grid in Southern California that it would take as long as three years to completely restore it.

Unlike utilities such as PG&E in California, which is owned by investors, Puerto Rico's power agency is a public utility run by the territorial government. The public model typically has meant lower rates for consumers. But Puerto Rico electrical managers have faced unique circumstances, most notably the fact that the utility operates on an island. Fuel for power plants must be imported, and when there is a shortage of electricity or when equipment fails, the power agency cannot draw from nearby utilities like those on the mainland.

The self-contained system has meant some higher costs, which the utility hoped to reduce with upgrades to its power plant fleet from oil and coal to natural gas, wind and solar.

Ricardo Ramos, who headed Puerto Rico's power agency during Hurricane Maria, and was ousted after the mishandling of the Whitefish contract in 2017, said every power plant was behind in maintenance when he took over as director earlier that year.

He said he created a schedule to get the work done, aware that the strapped utility might not be able to afford all of it.

Fernando Padilla, the power agency's current project management officer, said the agency's "dire liquidity condition" continues; its current restructuring plan, he said, includes some privatization.

"We are limited on making the adequate maintenance," he said. "Our system is calling for dollars to be invested."

Mr. Padilla said the earthquake recovery would not require rate hikes. Insurance would cover some of the costs, he said, and the utility plans to ask FEMA for help with the rest. A preliminary damage assessment, which is required before the island can request a bigger influx of federal aid, is still pending.

So far, Puerto Rico has requested and received approval of emergency funds only for critical needs that do not include power system repairs. Gov. Wanda Vázquez said on Friday that she spoke for the first time about the earthquake with President Trump, who promised that money would be quickly disbursed.

Thousands of Puerto Ricans remain on the streets, too scared of unsafe structures to sleep indoors, and crowded public shelters have had no running water in the bathrooms because the power outage has also shut down water pumps.

Though only one person was directly killed by the earthquake, at least three people have died of apparent heart attacks that may be related to the temblor's effects, local officials said on Friday. The deaths prompted fears that the southern part of the island could face serious health problems in the wake of the disaster, as it did in the months after Hurricane Maria in September 2017.

When customers went without electricity for as long as a year after that storm, people died of heart attacks in line at gas stations. Those dependent on oxygen machines went without lifesaving equipment, bacterial diseases spread, and seriously ill patients succumbed to their diseases.

With those memories still fresh, many Puerto Ricans expressed anger and disbelief when Mr. Ortiz, the power authority's fourth chief to be appointed since the storm, said power would return within a day or two. When it did not, some people took to social media to demand his ouster, much as they did last summer, when they pushed out the former governor.

Mr. Ortiz apologized on Thursday, saying the important message was that it would take days — and not months — for power to return. "If I was wrong, then forgive me," he said. "If we were off by a few hours, well, I'm sorry, but what are we going to do?"

Some plants looked fine when workers initially tried to turn them back on, but then problems became evident, he said.

Restoring most of the power in 72 to 96 hours, he said, was reasonable: "It's laudable work by the employees, who have worked their fingers to the bone."

Patricia Mazzei reported from San Juan, P.R.; Ivan Penn from Los Angeles; and Frances Robles from Miami. Mike Baker contributed reporting from Seattle; Alejandra Rosa from Ponce, P.R.; and Nicholas Bogel-Burroughs from New York. Susan C. Beachy contributed research.