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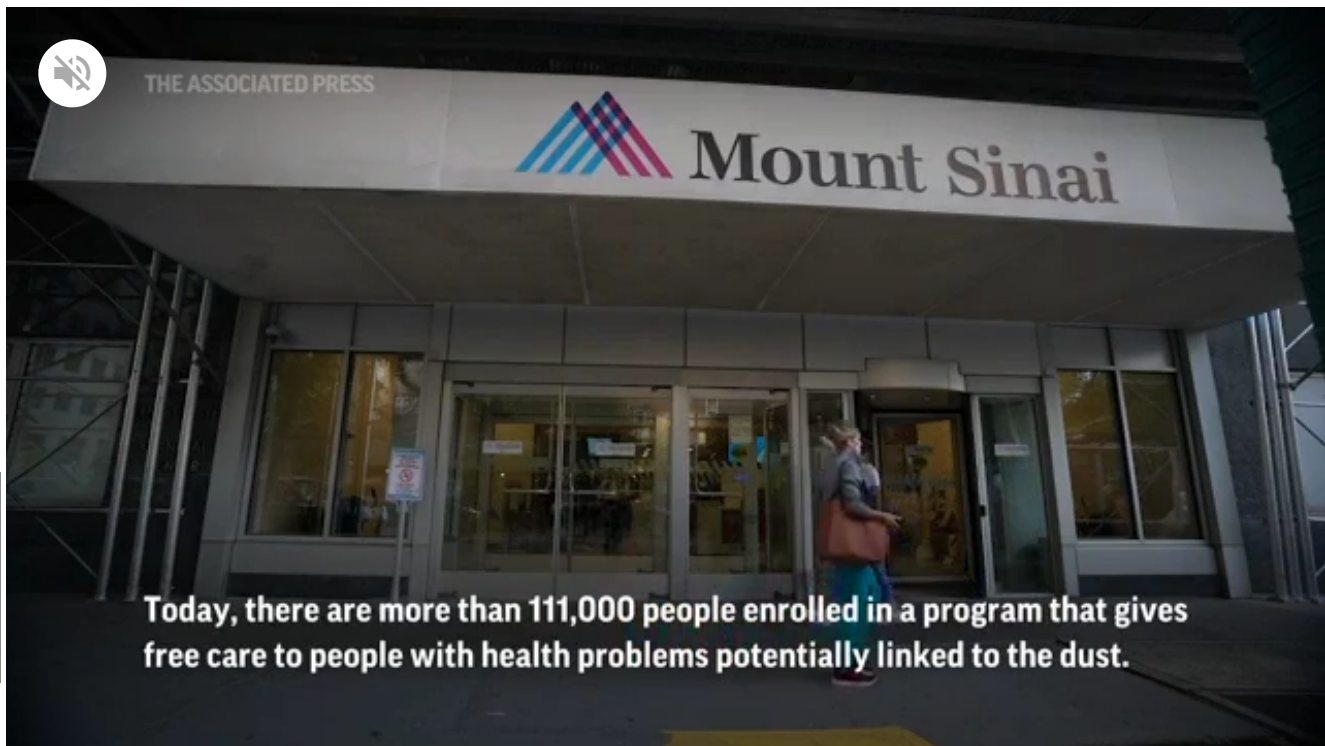


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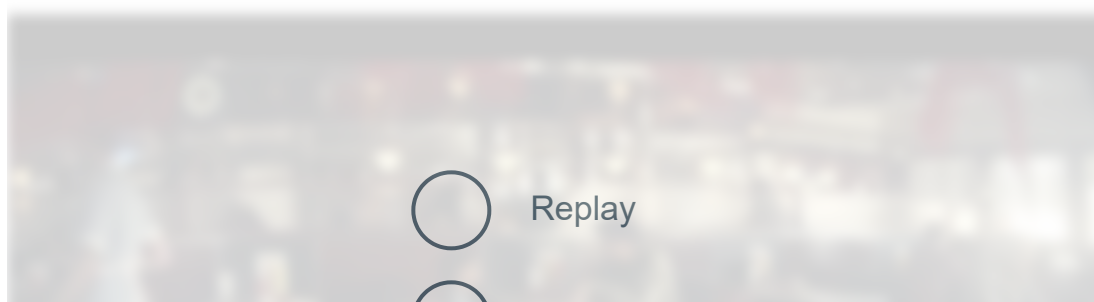


The powerful squall line known as a derecho blasted across Maryland in just half an hour but left a disaster in its wake — a million households and businesses across the state lost power that summer night nearly a decade ago. For many, it took a week to turn the electricity back on.

The chaos of that stretch of 2012, during which Baltimore-area temperatures surged into the triple digits, prompted investigations and reforms that utility leaders, regulators and critics say have improved the state's ability to bounce back from a similar crisis. But they say further steps depend on how much we are willing to spend to harden the system, and how extreme a risk we are willing to plan for.

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Weather across the country — wildfires, deadly heat waves and now the devastation wrought by Hurricane Ida — suggest Maryland could be due for another test. And as the threats multiply, so do the stakes. New research suggests that massive power outages coinciding with extreme heat could expose the vast majority of Baltimore residents to illness-inducing temperatures inside their homes.

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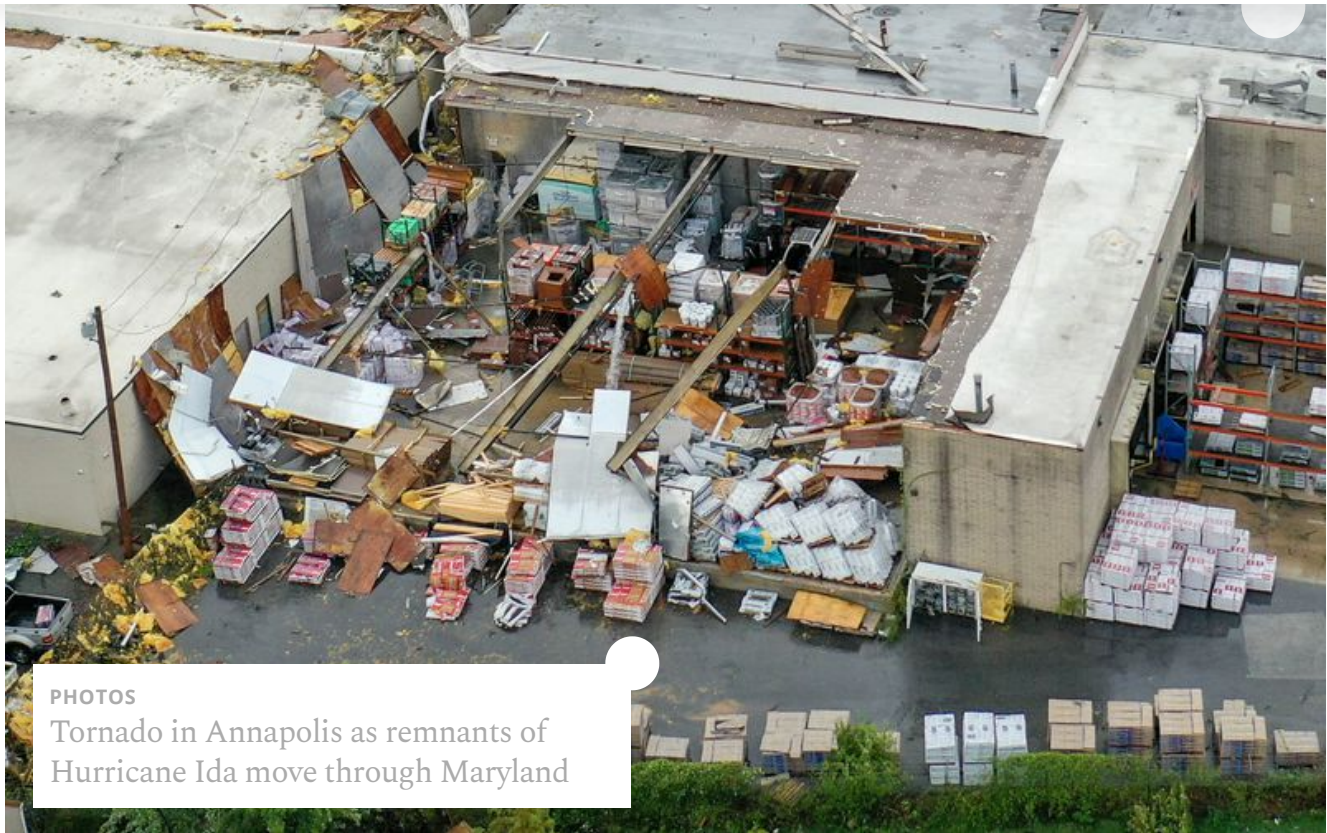
“Things could potentially be worse than what happened during the derecho,” said Del. Dana Stein, a Baltimore County Democrat who serves on the Maryland Commission on Climate Change. “How prepared are we for a heat dome that lasts for a week? We haven’t been tested by a major storm for a while.”

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In some of the most vulnerable or storm-ravaged areas, **climate change adaptation** means replacing wooden poles with concrete ones or building massive retention basins to contain flash floods. But the level of investment needed outside areas such as Florida or Louisiana can seem more debatable

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PHOTOS

Tornado in Annapolis as remnants of Hurricane Ida move through Maryland

Tropical Depression Ida hits Maryland with tornado and flooding
(Jerry Jackson/Baltimore Sun)

“If price was no object, you could build yourself the most resilient system. But price is an object,” said Steve Woerner, president and chief operating officer of [Baltimore Gas and Electric Co.](#)

Storms like Ida, which brought heavy rain and tornadoes to Maryland this month, show threats to grid reliability have changed. New Orleans-area utility Entergy said the hurricane damaged or destroyed more than 22,000 power poles and knocked out more than 5,200 transformers, blacking out some 902,000 homes and businesses when it hit last month. Entergy estimated that it will be a month before it fully restores power.

The [heat dome that struck the Pacific Northwest](#) this summer with an unheard of stretch of high temperatures strained its grid and caused rolling blackouts as energy demand soared at the same time the heat put stress on the equipment.

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And it's not just high winds and heat. A series of severe winter storms swept Texas in February, bringing much colder than normal temperatures. That overwhelmed the electrical and natural gas infrastructure, causing blackouts that resulted in people losing heat at home.

Given what's been happening, neither utilities nor their regulators nor their critics are debating whether to prepare for more extreme weather.

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"We're realistic about the fact that climate change is occurring, and we need to plan for it," Woerner said.

The [derecho](#) storm that hit Maryland on June 29, 2012, followed major tropical systems, including Isabel and Irene in earlier years. Each helped expose shortcomings in the region's electric grid. For nine days after the derecho blew through with sustained 70 mph winds, more than 762,000 BGE customers lost power at some point, for an average of 38 hours each.

It prompted more aggressive and strategic trimming of trees, as well as investments in transmission lines to areas with limited connections to the grid, including the many peninsulas along the Chesapeake Bay and its tributaries.

That work continues, Woerner said, citing projects to replace an underground transmission line that spans the Baltimore harbor alongside the Francis Scott Key Bridge, to replace aged wooden poles that carry transmission lines that run through Annapolis, and to upgrade underground cables beneath Reisterstown Road near Owings Mills.

BGE says it has improved reliability to the point that the average number of power outages each customer experiences in a year is at the second lowest the utility has ever reported, at 0.7 outages per year. The utility says it has cut the average duration of each outage by more than a third since 2010, to about 90 minutes.

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At the same time, BGE has asked utility regulators for permission to charge more for delivery of gas and electricity seven times over the past decade. It said it needed more money “to improve reliability, safety and resiliency in the face of severe weather.” The delivery portion of customers’ bills has grown by 14% over that period, though the utility said bills overall are lower because of decreased energy costs and increased efficiency.

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BGE officials said the utility spent \$1.4 billion on infrastructure improvements and the operations and maintenance of the electric system in 2020, but that it was difficult to quantify how much of that work was tied to climate resilience. The price tag for tree trimming, which helps prevent outages during storms, is expected to surpass \$40 million this year, a 50% increase since 2016, they said.

The Maryland Public Service Commission, which regulates the state’s utilities, [in December approved a one-year freeze on BGE delivery rates](#) for 2021, but said it may allow the rates to rise starting in 2022. BGE had proposed a two-year freeze followed by an increase of more than 8% in 2023.

Maryland People’s Counsel David S. Lapp, who serves as an advocate for customers, said that while his office pushes to rein in rate increases, he feels BGE and other utilities have “done a good job” preparing for potential hazards. And he acknowledged that costs will rise as companies improve grid resilience.

“As the system gets more and more reliable, each increment gets more and more costly,” Lapp said.

Jason Stanek, chairman of the Maryland Public Service Commission, said the agency has not yet seen rate increase proposals from the state’s utilities that include projects that appear directly tied to climate resilience. He suggested that’s

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because extreme weather threats here don't appear to be as urgent as they are along the Gulf Coast or in the drought-stricken West.

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In Florida, for example, utilities have been installing concrete poles in recent years to reduce tropical cyclone-caused outages. In California and other parts of the West that have suffered devastating wildfires, conversations are ongoing about how to build a more redundant system of transmission lines and to promote a more distributed network of renewable energy generation.

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Stanek said he expects similar discussions and strategies to reach Maryland eventually.

"It should be clear, these expenses to increase our resilience are only going to be going in one direction, and that's up," he said.

As that occurs, Lapp said he expects to watch closely how well utilities balance resilience against their profit going forward. For example, helping customers invest in energy storage could be an alternative to replacing wires or substations. But, Lapp suggested, a utility may not have an incentive to pursue such a strategy if storage systems are built outside the distribution network it can charge customers to maintain.

Keeping the fridge going and the fans spinning is perhaps most important amid extreme heat, as the 2012 derecho showed. Maryland reported a near-record number of 46 heat-related deaths that summer.

A study released in April found that massive power outages can magnify the risks of heat-related illnesses and deaths in cities. Researchers modeled temperatures inside homes in Atlanta, Detroit and Phoenix and concluded that at least two-thirds of residents could find it hard to escape temperatures high enough to potentially trigger heat exhaustion or heatstroke

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At the same time, they found that the number of outages of at least an hour, and affecting 50,000 utility customers or more, had increased by more than 60% over a recent five-year period.

Brian Stone, a professor and director of the Urban Climate Lab at Georgia Tech who is the study's lead author, said the heat illness risks the researchers estimated "can be generalized probably to almost every U.S. city."

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"Electricity is becoming equivalent, in some instances, to life support," Stone said.

That doesn't mean it's any simpler to decide how best to protect the grid — and, by extension, the vulnerable — from climate threats. Until recently, the Federal Energy Regulatory Commission had been exploring that debate since 2017.

But the question of how much to prepare may be so difficult to answer that the commissioners decided in February that it was impossible. They voted to end the discussions.

The Associated Press contributed to this article.

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