

PROTECTING OUR ENVIRONMENT

Air Conditioning Use Could Exceed Electric Capacity

(NAPS)—The day may come soon when you turn on the AC—and it won't be there. That's because climate change could mean such an increase in summer air conditioning use in the United States as to cause prolonged blackouts during peak summer usage—but that doesn't have to be, if states expand capacity or improve efficiency, according to a new study of household-level demand.

The Problem

The study projected summertime use as global temperature rises 2.7 to 3.6° F above preindustrial levels, finding demand in the United States overall could rise 8% at the lower end to 13% at the higher end. The new study was published in the AGU journal *Earth's Future*, which publishes inter-disciplinary research on the past, present and future of the planet and its inhabitants.

The increase in demand was calculated without adding in possible population increases, changes in affluence, behavior or other factors that can affect air conditioning demand.

"We tried to isolate just the impact of climate change," said Renee Obringer, an environmental engineer at Penn State University and lead author of the new study. "If nothing changes, if we, as a society, refuse to adapt, if we don't match the efficiency demands, what would that mean?"

A Possible Solution

Technological improvements in home air conditioners could supply the additional cooling needed to achieve current comfort levels without increased demand for electricity, the study found. Increased efficiency of 1% to 8% would be required.

"It's a pretty clear warning to all of us that we can't keep doing what we are doing or our energy system will break down in the next few decades, simply because of the summertime air conditioning," said Susanne Benz, a geographer and climate scientist at Dalhousie University in Halifax, Nova Scotia, who was not involved in the new study.

The heaviest air conditioning use with the greatest risk for overloading the power grid comes during heat waves, which also present the high-



The average U.S. household can expect up to 8 days without air conditioning during summer heat without expansions in capacity, increases in efficiency and mitigation of climate change.

est risk to health. Electricity generation tends to be below peak during heat waves as well, further reducing capacity, Obringer said.

Without enough capacity to meet demand, energy utilities may have to stage rolling blackouts during heat waves to avoid grid failure, as California's energy providers did in August 2020 during a record heat sometimes topping 117° F.

"We've seen this in California already—state power suppliers had to institute blackouts because they couldn't provide the needed electricity," Obringer said. The state attributed 599 deaths to the heat, but the true toll may have been closer to 3,900.

The consequences of cascading electrical grid failures are likely to impact already vulnerable populations, including affecting low-income, non-white and older residents, first, Obringer noted.

It's also most likely the largest increases in electricity demand will occur in the already hot South and Southwest and in the Midwest.

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