IDEAS

Heat waves like this one demand a rethinking of air conditioning

Intense heat is a growing threat across the country. Here's how city leaders should make sure we stay cool indoors.

By **Joseph G. Allen and Kari Nadeau** Updated June 19, 2024, 3:00 a.m.

A woman was silhouetted against the setting sun on a day with a triple-digit heat index last August in Kansas City, Mo. CHARLIE RIEDEL/ASSOCIATED PRESS

Seventy million Americans faced dangerous heat during last summer's "heat dome," and now Boston is feeling the burn, too.

Thankfully, there are efforts underway to federally mandate protections for outdoor workers. Yet there's another threat lurking: During extreme heat events, our buildings can turn into ovens, creating a heat crisis indoors that can pose serious health hazards.

For those of us who can retreat indoors, the solution seems straightforward enough — just go inside and cool off in a building with air conditioning. But for many, that's not an option.

An estimated 90 percent of Americans have AC systems — whether central or window units — in their homes. In places like Georgia and Texas, air conditioning is nearly universal. But in historically cool-weather cities like Seattle and San Francisco, only 50 percent of households have air conditioning. For those living in poverty, just 31 percent of households do. Boston has 90 percent coverage, including among low-income households. But don't get lost in percentages: There are still thousands and thousands of homes without AC.

And it's not just about having an air conditioner; it's about whether or not you can afford to use it. The AC usage rate is lower for renters than it is for owners of single-family homes.

Extreme heat is deadly. A new study by our colleagues at the Harvard T.H. Chan School of Public Health found that one out of every 500 stroke deaths globally is caused by extreme heat, and right here in Boston the risk of dying is a whopping 37 percent higher on a 90-degree day than it is on a 75-degree day.

Deaths also do not capture the full health impact of extreme heat. As the body tries to defend itself and lower its core body temperature, the heart beats faster and muscles fatigue, affecting coordination and balance. Dehydration becomes a threat, and even the brain starts slowing down. All of this taxes emergency services across the country. For Boston, we found that on hot days, police, ambulance, and fire truck responses went up by 2, 9, and 10 percent respectively. In some mid-Atlantic cities this year, the heat forced schools to close — in May!

Too many cities are lax about this threat.

When heat waves roll in, cities scramble to get people to cooling centers. This is good

but inadequate. First, it requires that people recognize the threat to their health and safety in the first place. A study we conducted of seniors in public housing showed that they failed to take even basic measures like drinking more water during a heat wave. Second, it requires people to leave their home, travel outside (in that heat!), and find one of these cooling centers.

New York City offers a good example for how to approach the threat of indoor heat waves. The city will establish a "maximum summer indoor temperature policy" no later than 2030. For what it's worth, if that sounds new or wild or extreme, it's not. This is the hot-weather equivalent of what New York and Boston do in the winter, when landlords are required to keep apartments above 68 degrees during the day and at 62 degrees at night. The City of New York is also requiring that all new construction include cooling by 2025. To address the increased costs of installing and using AC, New York is expanding its Home Energy Assistance Program to include cooling, not just heating, support.

If we're going to cool people while not overheating the planet, cities must focus on keeping people safe from heat *and* address AC's significant energy use. The electricity used for cooling and heating damages the climate and our health if it's derived from fossil fuels, so we must replace dirty energy sources with renewable ones.

We also need to take a hard look at air conditioners themselves. Thankfully, the refrigerants used in them that contain hydrofluorocarbons (particularly potent greenhouse gases) are being phased out. But we must improve energy efficiency and lower the cost of air conditioners too. A report a few years ago by the International Energy Association found that around the world, people were often buying older or cheaper units that were way less energy efficient than the best on the market. There is

innovation happening, but we have a long way to go to make better options affordable for all consumers.

In the meantime, there are low-tech options like fans, which provide cheap, energy-efficient cooling. World Health Organization guidance recommends they not be used above 95 degrees, but new research is challenging that benchmark.

There's more. "Passive house" designs result in homes with lower cooling — and heating — demands, a more comfortable and stable indoor temperature, and low to no energy bills. We can also help cool our buildings and reduce energy use by what we do around our buildings. Simple things like white roofs can reflect heat and incoming solar radiation. Planting more trees adjacent to buildings helps shade them and the pavement, reducing the "urban heat island effect" — a phenomenon that often makes cities hotter than their surroundings.

The narrative out there is polarized as either "we need more AC" or "more AC is bad for the planet." Both are true. We need more, but better, air conditioners, paired with other energy-efficient cooling mechanisms and strategies in, on, and around our buildings. And we need them now.

Joseph G. Allen is an associate professor and director of the Healthy Buildings program at Harvard University's T.H. Chan School of Public Health, where Kari Nadeau is a professor and chair of the Department of Environmental Health.