

ENVIRONMENTAL LAW

Expert Analysis

Legal Tools for Cities to Cope With Extreme Heat

Heat causes more deaths in the U.S. than any other natural hazard—more than floods, hurricanes, or tornadoes.

As a result of climate change, it is getting worse. Average annual temperatures are now about 1.8°F higher than they were over the period 1895-2016, they will go up to about 2.5°F by mid-century, and if greenhouse gas emissions continue on the current path, they could rise almost 12°F by 2100, and heat waves that now occur once every 20 years could become annual events, according to the U.S. Global Change Research Program.

It is even worse in cities due to the urban heat island effect. Dark pavement and rooftops, cement, and other artificial surfaces absorb



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the heat of the sun; vehicle engines and air conditioning exhausts spew heat; soil that has been paved over can no longer retain and then evaporate water. Many U.S. cities and suburbs are up to 10°F warmer than the surrounding countryside. Even one or two degrees can make a significant difference in mortality.

This column discusses legal tools that could help cities and their residents cope with this dangerous phenomenon.

Housing

In every state, residential leases are legally deemed to include a “warranty of habitability,” meaning that the apartment or house is livable, safe and clean. This always requires heat to be provided when

it is cold, but it rarely means that there must be air conditioning when it is hot, though if the landlord has provided an air conditioner, it should be in working order. An exception is Phoenix, where the city code requires rental housing to have cooling that keeps the temperature no greater than 86°F.

Air conditioning is generally not required in public housing. Sometimes the government will pay for the machines but rarely for the electricity. In New York City, almost 90 percent of all households have AC, but less than half of those in public housing. Many people who have AC cannot afford the electricity to run it.

State legislatures should expand the warranty of habitability to require that tenants be provided protection against heat as well as cold. Low-income energy assistance programs should be fully funded and should cover both the purchase of ACs and the electricity to run them (as they now help pay for

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heating oil and gas). As is now the case with military family housing, public housing in all but the coolest areas should have AC.

ACs are, of course, major energy consumers. The U.S. strengthened its energy efficiency standards for ACs in 2017, but they still fall short. The average AC sold in the United States is less efficient than the average sold in Europe, Japan, South Korea, and China. The U.S. has the most efficient ACs available for sale anywhere, but they are not legally required and they only get about 3 percent of the market. Governments at all levels should buy only the most efficient air conditioners to help drive the market. The federal government should progressively tighten the efficiency standards for AC to help drive the technology.

Roofs, Streets and Trees

Dark roofs absorb 90-95 percent of the sun's heat. Simply painting the roofs white, or (even better) using especially reflective materials, significantly lowers temperatures within the building. Green roofs—those covered with vegetation—may be even better, though more expensive to build and maintain.

Under Mayor Michael Bloomberg, New York City launched its NYC °CoolRoofs program in 2009 to paint rooftops for free on buildings belonging to non-profits, affordable housing projects, schools, museums and hospitals, and to help with

the costs for other buildings. Job trainees and volunteers do much of the painting. The Building Code requires that 75 percent of the roof area or setback surface on all new or substantially renovated low-slope roofs meet solar reflectance criteria. Since the average roof lifespan is about 20 years, most roofs will be light-colored in the next decade or two.

Dark asphalt absorbs heat. Some cities are replacing it with lighter-colored pavement. Some new forms

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of pavement are porous and can absorb stormwater, addressing (as do green roofs) another climate-related problem—extreme precipitation.

Trees make a big difference. In 2007 New York City launched its Million Trees NYC program; it planted its millionth new tree in 2015, two years ahead of schedule, and two years later (in the wake of a heat wave) committed an additional \$82 million to plant street trees, especially in areas facing the greatest heat risks. (Low-income neighborhoods tend to have fewer trees.)

New York City has issued detailed guidelines for how city-funded capital construction should minimize the urban heat island effect, including light-colored or green roofs; light-colored pavement; trees;

allowances for thermal expansion, warping, softening, or other changes to materials; passive ventilation; and backup generators in case of blackouts. All these requirements could be expanded to private construction projects as well. In general, paved surfaces should be minimized, and when they are necessary, light-colored and preferably porous pavement should be used. Cities should also require private developments to preserve as many trees as possible, and to have extensive landscaping where space permits.

Occupational

The Occupational Safety and Health Administration (OSHA) has the statutory authority to set general standards for worker exposure to heat, but it has not done so, despite longstanding and repeated recommendations from the National Institute for Occupational Safety and Health. OSHA rejected a 2011 petition to issue such a standard from the group Public Citizen, which petitioned again in July 2018. OSHA has used its “general duty clause” to issue regulations on personal protective equipment and on drinking water for employees, and it has posted nonbinding advisories on heat.

States may adopt their own programs for occupational safety and health; 28 have done so. California, Washington and Minnesota have

rules on heat exposure. California has gone the furthest, including with standards for outdoors work, which becomes especially perilous when it is extremely hot. One model that others could follow is the Department of Defense's Technical Bulletin on Heat Stress Control and Heat Casualty Management, including "Hot Weather Deployment Tips," which addresses acclimatization and physical fitness; hydration and nutrition; work/rest cycles and the reduction of heat exposure; clothing, equipment, and supplies; and first aid.

Vulnerable Populations

In past heat waves with high mortality (such as Chicago in 1995 and Paris in 2003), elderly and disabled people living alone were those most likely to die. Social service agencies should encourage programs to check in on these most vulnerable people during heat waves. Heat warnings and tips should be widely announced through broadcast and social media. All-night cooling centers should be established, and their locations well publicized. Nursing homes and assisted living facilities should be frequently checked during heat waves.

Schools

Air conditioning is generally not required in schools, and most are closed all summer. The federal Individuals With Disabilities Education

Act (IDEA) requires school districts to make reasonable accommodations for disabled students. Many children with special needs are sensitive to the heat, and the Individual Education Programs given these children sometimes require air conditioning in classrooms and school buses. A New York City regulation requires buses for disabled students to have air conditioning.

Prisons

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More than 2.3 million inmates are incarcerated in around 1,800 federal and state prisons and 3,100 local jails across the United States. Nearly half a million correctional employees work there, so in all nearly 2.8 million people endure prison conditions. If they were all together, they would be about tied with Chicago as the third largest city in the country.

Many prisons are overcrowded, and inmates often have serious physical and mental health problems. One in 10 is 55 or older. In 1991 the Supreme Court recognized warmth an essential human need and observed that "a low cell

temperature at night combined with a failure to issue blankets" could amount to a violation of the Eighth Amendment prohibition against cruel and unusual punishment. *Wilson v. Seiter*, 501 U.S. 294, 304 (1991). Since then numerous federal courts have applied the same logic to excessive heat, finding potential violations of the Eighth Amendment as well as of the Americans With Disabilities Act of 1990 and the Rehabilitation Act of 1973.

Texas prisons have received particular attention. More than 20 state prisoners died from the heat between 1998 and 2017. Just 29 of 104 Texas prisons have air conditioned units. In 2017 a federal judge found that state officials had been "deliberately indifferent" to the heat in a prison for elderly inmates, and in 2018 he approved a settlement under which air conditioning will be provided.

As New York City prepares a plan to replace the Rikers Island facilities with jails in each borough, it should include ways to keep them at least cool enough to meet constitutional requirements.