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Communities get 'smart' to protect residents from climate change

Coalition promotes heat solutions

US cities using smart surfaces, strategies to cool residents

WHEN HURRICANES MATTHEW AND IRMA tore through Jacksonville, Florida, in 2016 and 2017, the city was left reeling. Streets filled with floodwater, entire neighborhoods sat in darkness for days and recovery stretched on long after the skies cleared. The back-to-back storms exposed just how vulnerable the city was to a changing climate.

"There was a growing realization of the need for resilience work following those hurricanes," said Anne Coglianese, MPA, the city's chief resilience officer. "Flooding was obviously one of the big hazards we were looking at, but increasingly we also had to pay attention to heat. Depending on where you were in Jacksonville, you could experience a temperature differential of up to 12 degrees."

City leaders responded by hiring Coglianese in 2021 and launching Resilient Jacksonville in 2023. The groundbreaking 50-year strategy provides a roadmap for ensuring that the city grows in ways that protect residents and businesses from the effects of climate change and preserves its natural resources. Moreover, the city was among 10 selected by the Smart Surfaces Coalition, a 40-plus-member nonprofit organization that brings together experts from key sectors to advise and help cities thrive despite climate threats, and received grant funding.

The coalition promotes citywide engineering solutions to cool entire communities, such as planting more trees, installing reflective roofs and replacing dark heat-absorbing sidewalks with lighter, more reflective materials.

Courtesy Bowonpat Sakaew, iStockphoto

A checkerboard grass design offers walkability and a cooler surface temperature.

"We didn't even know the full value this was going to provide when we applied for the grant," said Coglianese, noting that the partnership has turned into one of Jacksonville's most innovative. The flexible model has allowed Jacksonville to tap into outside expertise whenever it is needed, whether on major policy work or small but critical design tweaks.

"Our budget is really tight, so our bandwidth is stretched really thin," Coglianese told *The Nation's Health*. "Having this group of really smart people that are willing to jump in at any time and help out has been a godsend. It's a model I had never experienced before, and it's been game changing."

Around the globe, climate change is intensifying extreme weather and driving more frequent and destructive heat waves, storms and floods. Experts say extreme heat is one of the most pressing public health threats tied to climate change, with impacts ranging from heart disease and heat stroke to workplace injuries and limiting learning for children in school classrooms.

Photo by Alfribeiro, courtesy iStockphoto

A worker installs a vertical garden, which replaces exposed graphite, on a building in Sao Paulo, Brazil, in 2017. Research shows greenery reduces daytime and nighttime temperatures.

Heat threatens human health

According to the Federation of American Scientists, heat kills more Americans every year than hurricanes, floods and tornadoes combined, and the number of heat-related illnesses is even higher.

"We're beyond just showing the adverse and bad impact of heat on our health, because that is established now," said Barrak Alahmad, MD, PhD, MPH, a senior research scientist at Harvard T.H. Chan School of Public Health. "The focus is now shifted

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Photo by Jeffrey Greenberg, courtesy Universal Images Group/Getty Images

Two people relax at Cummer Museum of Art and Gardens in Jacksonville, Florida, in 2023. The Florida Public Health Association is helping reduce extreme heat in the city.

Preparing cities for rising temperatures

APHA Affiliates building local resilience in six states

SIX PUBLIC HEALTH ASSOCIATIONS across the U.S. have been working to build climate resilience and improve public health in their states, thanks to a partnership with APHA and the Smart Surfaces Coalition.

The APHA Affiliates — located in Florida, Georgia, Louisiana, North Carolina, Oregon and South Carolina — are finding ways to prepare residents in their states for the growing impacts of climate change.

The Affiliates received grant funding to develop work plans, build strategic partnerships and hold focus groups to assess the impact of extreme heat in six cities: Charlotte, North Carolina; Portland, Oregon; New Orleans; Atlanta; Columbia, South Carolina; and Jacksonville, Florida. The end goal was to drive adoption of smart surfaces — such as trees, cool roofs and porous pavements — which can help cool urban areas.

For the Georgia Public Health Association, becoming part of the APHA project marked the first step in addressing extreme heat as a pressing public health issue.

"It was new territory for us," Jimmie Smith Jr., MD, MPH, GPHA president told *The Nation's Health*.

As a large agricultural state, extreme heat in Georgia threatens not only the crops the land produces, but also the health of farmworkers. At the local level, public health workers often lack protocols to address climate and health, Smith said.

The Georgia association used a series of

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Tools for protecting cities from rising heat

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Editorial

Extreme heat is an emergency — and every death is preventable

HEAT-RELATED DEATHS in the U.S. have surged 117% over the past 24 years, with a sharp increase since 2016, according to a recent study.

This summer has once again reminded us that extreme heat is not just uncomfortable — it's deadly. More Americans die each year from heat than from hurricanes, floods and tornadoes combined. Extreme heat is not natural variablity. It is driven by human-caused climate change, primarily from fossil fuel emissions, which is making heat waves longer, hotter and more frequent, putting communities at growing risk to health, the economy and overall well-being.

A new national survey from ecoAmerica and APHA shows Americans are worried. Nearly three-quarters of Americans say they are concerned about extreme heat in their communities, and 81% support stronger preparedness and response efforts. Their concern is well-founded. Extreme heat worsens air quality, strains our power grid and drives up emergency room visits. It exacerbates chronic health conditions, from asthma to heart disease, and increases the risk of preterm births and mental health crises.

But the threat is not borne equally. Low-income families, older adults, children, outdoor workers, people who are unhoused and communities of color face disproportionate risks. They often live in neighborhoods with less tree cover, fewer cooling resources and more paved surfaces that intensify urban "heat islands." For these communities, the choice between paying an energy bill or turning off the air conditioner can mean life or death.

The economic toll is staggering as well. Heat is already costing the U.S. economy billions of dollars each year in lost worker productivity alone. Outdoor workers in construction, agriculture and delivery are especially at risk, yet their labor underpins much of our economy.

At APHA's Center for Climate, Health and Equity, we are equipping health professionals and communities with the knowledge and tools they need to act. We are also partnering with leading health organizations through the Alliance for Heat Resilience and Health to drive national awareness and elevate action on extreme heat. This summer, APHA and more than 100 allies called on the National Governors Association to take action on four urgent priorities:

- Assess extreme heat impacts statewide and invest in robust health surveillance.
- Designate a statewide heat lead and develop a comprehensive government-wide heat plan.
- Consider extreme heat to be a state of emergency, so that resources can be mobilized quickly.
- Plan and finance long-term strategies to reduce heat risks.

Preparing for extreme heat requires immediate safeguards and long-term investments, such as expanding tree canopy, updating building codes for cool roofs, and ensuring access to clean, affordable energy. While air conditioning can save lives, it alone is not enough. Passive cooling solutions like reflective roofs, green infrastructure and shaded public spaces are essential.

The bottom line is clear: Extreme heat is one of the most urgent public health threats of our time, but it is also one of the most preventable. Every life lost to heat is a failure of preparedness and every step we take now can protect our neighbors, save billions of dollars and build resilience for generations to come. ■

Shweta Arya is project manager for smart surfaces within APHA's Center for Climate, Health and Equity.

Making the case for change in cities

Tools help communities gauge benefits of smart surfaces

U.S. CITIES that want to reduce urban heat and protect residents can access a suite of data-driven, web-based tools that show the return on investment in smart surfaces. The information can help advocates craft policies to make smart surfaces a reality in their community.

The tools are available thanks to the Smart Surfaces Coalition, a group of organizations working to advance health in the face of climate change through better urban design. Smart surfaces include tools such as cool roofs, porous surfaces, trees and foliage.

Planners are taking advantage of the coalition's benefit-cost analysis tool, which allows users to see the impact adopting smart surfaces could have on their cities. If a proposal called for adopting cool roofs on city buildings, for example, the tool would take into account baseline heat exposure and expected drops in temperature and calculate financial benefits.

"This tool helps them understand on a lifecycle basis how much more beneficial it is to choose the smart surface option, whether that's because that smart surface lasts longer or provides a host of benefits associated with energy savings," Jacob Miller, a coalition senior project manager, told *The Nation's Health*.

Tool users can also break out human health benefits, such as the number of lives saved from lowering hot temperatures and air pollution emissions. In Baltimore, the coalition used the tool to find that city-wide adoption of smart surfaces could lower peak summer temperatures by 4.3 degrees in the city's hottest areas, with benefits outweighing costs 15-fold.

The findings drove city leaders to advance smart surface adoption, "including a cool roof ordinance, a study to implement urban meadows on a hundred acres of land in Baltimore, some protections for trees and a number of other initiatives that they're working on," Miller said. "Baltimore is really becoming, as a result, a smart surfaces city."

> **One tool helps city planners "understand on a lifecycle basis how much more beneficial it is to choose the smart surface option."**
>
> *— Jacob Miller*

Signed into law in 2023, Baltimore's cool roof ordinance is one of nearly 2,000 policy documents searchable in the Smart Surfaces Coalition's policy tracker, another tool available to planners.

A project of the coalition and Columbia Law School's Sabin Center for Climate Change Law, the tracker tool gives users a database to search laws, building codes and regulations across 50 states. Users can also drill down on specific goals, such as reducing extreme heat and managing stormwater, said Daniel Metzger, JD, a senior fellow at the Sabin Center.

"A city that doesn't have a stormwater fee in place can find examples of the specific language that's been enacted in many other cities and copy that or adapt that to their particular case," Metzger told *The Nation's Health*. "Having precedent to work from is, I think, the No. 1 use case."

In addition, the tool's website has a best practices tab and glossary of key terms for people unfamiliar with smart surfaces.

"The single largest piece of feedback that we got was saying it's helpful to see everything that's out there, but it would be even more helpful to be guided to which of these examples we should be following if we can," Metzger said.

A third tool from the Smart Surfaces Coalition helps users determine where smart surface infrastructure would have the most impact. Developed in partnership with the Trust for Public Land, the decision support tool maps data on tree canopy, air temperature and summer ground-surface temperatures. Users can also use the data to create and export reports, said Dale Watt, a GIS project manager for the Trust for Public Land.

For example, users can look at demographics, economic conditions and the amount of tree canopy in census tracts and compare the impact smart surface interventions would make, Watt told *The Nation's Health*.

The tools work together to advance smart surface adoption.

"If you look at the benefit-cost analysis tool and determine there's tremendous health and economic savings available from cool roofs, the decision support tool can tell you where to maximize those benefits, and the policy tracker tells you 'Here are a hundred different approaches to actually implement this and make it happen,'" Metzger said.

For more information, visit www.smartsurfacespolicy.org/policies and www.smartsurfacescoalition.org/tools. ■

— Natalie McGill

Data tools can help city planners perform an analysis of costs and benefits to test the impact of smart surfaces on their city.

Photo by Anna Frank, courtesy iStockphoto

School districts investing in smart surfaces

WITH A PROMISE that 30% of its schoolyards will be green spaces by 2035, the Los Angeles Unified School District knows that smart surfaces are no longer optional — they are the standard.

Today over 500,000 Los Angeles Unified public school children benefit from at least one smart surface intervention at their schools, whether it is reflective coatings on asphalt or additional trees planted for shade, said Christos Chrysiliou, the district's chief eco-sustainability officer.

"We know that nature itself — plantings, trees, any earthy material — is much healthier and better for the environment because it doesn't release all the chemicals and everything else on a man-made surface," Chrysiliou told *The Nation's Health*. "Anything natural is much healthier, improves the air quality, improves the air circulation."

Ensuring schools and classrooms are able to stay cool with the changing climate is important, as children are one of the most vulnerable populations under extreme heat. They have a harder time regulating their body temperature and their underdeveloped lungs are at high risk for respiratory conditions such as asthma, according to the American Lung Association's "School Guide to Smart Surfaces" report. Children also find it harder to concentrate and learn in high temperatures.

"For every degree over 80 degrees at a school, there's a measurable impact on student learning," Jill Heins, MS, the American Lung Association's senior director nationwide of health systems improvement and indoor air quality, told *The Nation's Health*.

A federal analysis found that 41% of U.S. public school districts needed upgrades in heating, ventilation and air conditioning in at least half of their buildings as of 2020.

Black and brown students in low-income areas are disproportionately affected, as their campuses tend to have fewer trees and more concrete. In addition, recent research has found that higher temperatures are keeping kids indoors and cutting into outdoor recess time.

Photo by Dania Maxwell, courtesy The Los Angeles Times/Getty Images

Students take turns jumping during a summer program in 2024 created by the Los Angeles Unified School District. Outdoor school recesses across the country are less frequent on average due to extreme heat, especially in summer.

Extreme heat in schools can have a snowball effect on students, said Greg Kats, MBA, MPA, founder and CEO of the Smart Surfaces Coalition.

"In a hot school where kids can't run around and play, test scores go down, learning goes down," Kats told *The Nation's Health*. "If learning goes down, lifetime earnings go down, which means the community in which these kids live has a lower tax base. It's a narrow self-interested reason for communities to make sure those schools have smart surfaces. They're protecting the kids, allowing them to play outdoors, reducing electricity bills, improving air quality."

Courtesy Damircudic, iStockphoto

With growing high temperatures a threat to learning, protecting schools is important.

School officials have less time to focus on excessive heat because of staff shortages and finding qualified teachers, Heins said. They often also lack funding to invest in smart surface projects.

Schools can get started with low-cost interventions, such as applying reflective film to windows on the south and west sides of school buildings, she suggested. Schools could also form partnerships with green and energy-efficient industries.

Another step to reducing heat is to determine just how much shade is available, said V. Kelly Turner, PhD, associate director of the Luskin Center for Innovation at the University of California-Los Angeles.

The Luskin Center partnered with American Forests to create a "Shade Map" for more than 360 U.S. cities and towns that lets users identify problem areas known as "shade deserts," and observe how shade cover changes throughout the day over a school playground.

The Los Angeles district also has a tool to identify which schools most need smart surfaces. The district's "greening index" uses data on extreme heat temperature, air pollution and existing green space to prioritize schools for climate-ready upgrades, such as cool roofs or permeable pavement to reduce flooding.

"It's a great benefit for the environment, and other social and mental health benefits for our students," Chrysiliou said.

To read the American Lung Association report, visit www.lung.org. For more on smart surfaces, visit www.smartsurfacescoalition.org. ■

— *Natalie McGill*

Even modest use of smart surfaces lowers ambient heat temperatures

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toward solutions."

Dark materials such as asphalt, concrete and traditional rooftops trap the sun's energy during the day and radiate it back into the air at night, creating urban heat islands that can make cities as much as seven degrees hotter than surrounding areas, Alahmad told *The Nation's Health*.

"We call these dark surfaces 'stupid' surfaces rather than 'smart' surfaces," he said. "They make our cities really hot, but it doesn't have to be like this. We have to present solutions. It makes sense to grow more trees and have reflective surfaces that are light and white and can reflect all the radiant heat."

"It makes sense to grow more trees and have reflective surfaces that are light and white and can reflect all the radiant heat."

— Barrak Alahmad

Modeling shows that even modest adoption of smarter options, such as replacing 20% of surfaces in a city, can lower urban temperatures by several degrees, which would translate into fewer emergency service calls, improved worker productivity and healthier, more livable neighborhoods.

Jacksonville's work with the Smart Surfaces Coalition serves as a model for how budget-challenged local governments can gain capacity to prepare for and mitigate the impacts of climate change. The coalition supports the city's resilience strategies, including integrating smart surface solutions into infrastructure and planning initiatives.

In addition to Jacksonville, other cities partnering with the coalition include Atlanta, Boston, Dallas, New Orleans, Phoenix and San Antonio, as well as Charlotte, North Carolina; Columbia, South Carolina; and Portland, Oregon. The program gives leaders immediate access to top-tier research, international experts, policy analysis and technological developments to inform their climate change mitigation strategies, which they say are crucial to understanding which strategies will be most beneficial.

With federal climate leadership weakening, states and cities are under pressure to fill the gap, said Grace Wickerson, MS, senior manager for climate and health at the Federation of American Scientists.

"States need to plan, invest and lead on extreme heat now because the problem is only getting worse," Wickerson told *The Nation's Health*. "We're really excited about the opportunities at the state and local level to move heat policies forward. State and local governments hold the keys to codes, building standards and zoning. There's a lot of potential and available levers to pull."

Aiming to cool neighborhoods and save lives and money, the Atlanta City Council in June passed a landmark smart-roof policy that is projected to cool the city by up to 6.3 degrees in some neighborhoods, prevent millions of tons of carbon emissions, reduce air pollution and generate nearly $800 million in net financial benefits.

"But more importantly, it will save lives," Jimmie Smith Jr., MD, MPH, president of the Georgia Public Health Association, said in a statement. "Atlanta leaders are known for transformational actions, not reactions."

The landmark ordinance amends the city's building code to add a new section to reduce heat produced by the city's dark and outdated heat-absorbing roofs, which place older adults, children and low-income communities at higher risk of illness and death from heat exposure.

Photo by Dimitriosfos, courtesy iStockphoto

Green rooftops with light-colored surface, such as these in Hangzhou, China, can help keep buildings cooler and can improve health for indoor workers and city residents.

Photo by AerialPerspective Works, courtesy iStockphoto

Plants adorn the front of a building in the Hague, the Netherlands. Greenery and light-colored surfaces can reduce heat.

The ordinance supports evidence-based science, is built around social determinants of health and addresses the environmental conditions that harm the most vulnerable.

In the Western U.S., Phoenix recently introduced "Shade Phoenix," a tree and shade master plan that leverages heat-mapping tools and reflective or green surface interventions to cool neighborhoods and reduce public health risks in the nation's hottest metropolitan areas. Unanimously adopted by the Phoenix City Council in November 2024, the plan aims to create a future where all community members and visitors benefit from trees and built shade.

Recognizing shade as a critical community resource, the plan prioritizes areas in Phoenix where people are outdoors the most and where populations are most vulnerable to extreme heat, said David Hondula, PhD, MS, the city's director of heat response and mitigation.

"Shade is crucial for determining how safe and comfortable people feel in outdoor spaces, reducing the net heat load on the human body by more than 30 degrees," Hondula told *The Nation's Health*.

Shade also benefits physical infrastructure by increasing lifespan of materials that degrade under sun exposure, making it easier to keep homes, vehicles and indoor workspaces safe and comfortable, Hondula said.

The plan calls for dozens of actions over the next five years, including planting more than 27,000 new trees and building hundreds of new shade structures at local schools.

Back in Jacksonville, Matt Fall, MPA, the city's senior bicycle-pedestrian coordinator, has been working with coalition experts to weave smart surfaces into nearly every major mobility and infrastructure initiative. That includes a forthcoming Green and Complete Streets ordinance requiring developers to integrate bike- and pedestrian-safe designs with green infrastructure.

It also extends to Jacksonville's first-ever Vision Zero Action Plan, aimed at enhancing pedestrian and cyclist safety and eliminating traffic fatalities. Jacksonville is among the most dangerous U.S. cities for walking and biking, ranking third for cyclist deaths and 15th for pedestrian injuries from impacts.

Permeable pavers do not just soak up stormwater — they make intersections safer by being less slippery for walkers and cyclists, Fall said. Moreover, reflective pavements and shade structures keep cyclists and pedestrians less vulnerable to heat-related health risks.

The city's integrated approach is one of the first of its kind in the country.

"Implementing smart surfaces into our Vision Zero Action Plan dovetails into safety and resilience," Fall told *The Nation's Health*. "We had to do a virtual high five with the coalition on that one."

For more information, visit www.smartsurfacescoalition.org. ■

— Teddi Nicolaus

Metropolitan AME Church supports cooling via smart surface solutions

ROOTED IN FAITH and a commitment to justice, the Metropolitan African Methodist Episcopal Church has emerged as a leading advocate for implementing cooling technologies in marginalized communities in cities across the U.S.

Since 2022, the Metropolitan AME Church, located in Washington, D.C., has partnered with the Smart Surfaces Coalition, helping lead climate adaptation and mitigation efforts at the local level.

Many AME-affiliated churches serve communities that were previously subject to redlining, a discriminatory housing practice that denied mortgages and investment in predominantly Black communities. While the practice has long since ended, long-term inequities in infrastructure and resources remain.

To build climate resiliency in the neighborhoods, the Metropolitan AME Church has awarded grants to churches and nonprofit organizations, helping them adopt smart surfaces technology.

"The kind of work that's being done is not the kind of work that's going to make major transformation, but it's a kind of work that's designed to spark innovation," Jon Robinson, MDiv, DMin, smart surfaces senior program director with the Metropolitan AME Church, told *The Nation's Health*.

In Atlanta, grants have helped local congregations support climate resilience. One church retrofitted its sanctuary with a cool roof, designed to reflect more sunlight and absorb less heat than a traditional roof. Another congregation is developing a community garden with new tree plantings, where both church members and neighborhood residents can adopt plots to grow herbs and vegetables.

Smart surface initiatives vary from state to state to reflect local needs, Robinson said. Their success depends on being community-driven and tailored to the priorities of the people they serve.

In New Orleans, a local nonprofit organization was able to build three rain gardens to capture stormwater thanks to funding from the Metropolitan AME Church. The group's primary rain garden can capture up to 7,000 gallons of water per storm event.

In Jacksonville, Florida, work has been directed in neighborhoods around the polluted Ribault River, where tree canopy has suffered from industrial pollution.

"It's been about sort of understanding some of the environmental challenges in this part of Jacksonville," Kristopher Smith, MPA, senior community development program officer at the Local Initiatives Support Corporation Jacksonville told *The Nation's Health*.

With a two-year grant from Metropolitan AME Church, the group organized quarterly stakeholder meetings with community members living near the river to better understand how to implement their efforts effectively.

The organization has been working to reconnect residents with the river through boat tours, partnered with a local nonprofit organization to improve the river's water quality and has invested over $40,000 in tree planting on its banks.

Thanks to the support of the Metropolitan AME Church, Smart Surfaces initiatives are also underway in Dallas and San Antonio.

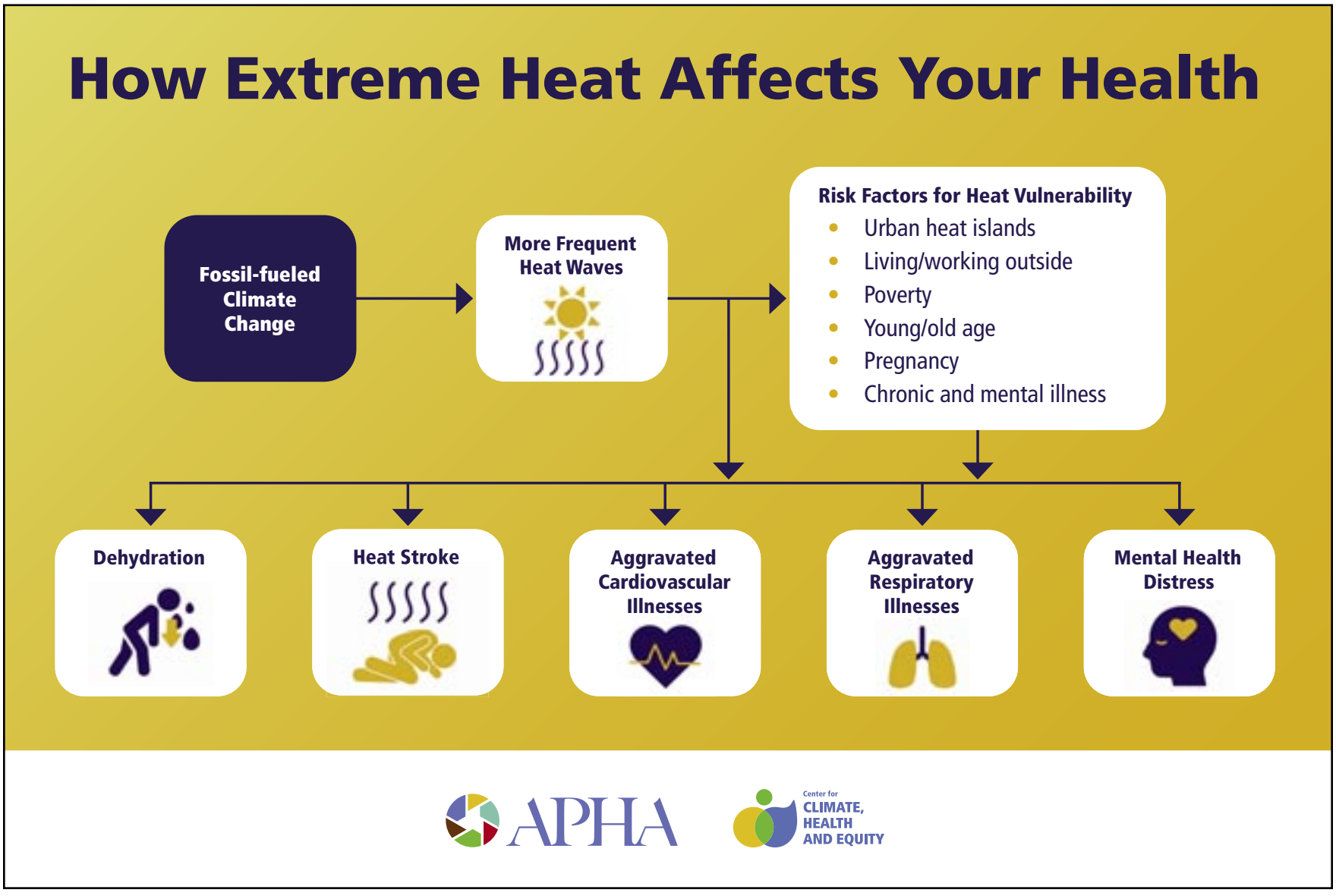
"When God was passing out trees, God did not decide to stop planting trees in Black neighborhoods and brown neighborhoods," Robinson said. "So that means...it's got to be public policy."

For more information, visit www.smartsurfacescoalition.org. ■

— Sophia Meador

Photo courtesy Metropolitan AME Church

Residents construct a community garden in an Atlanta neighborhood with funding from the Metropolitan AME Church.



APHA Affiliates strengthen heat reduction in US cities

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focus groups to assess the impact of extreme heat on public health in Atlanta. Participants said they were forced to sit outside due to unbearable indoor temperatures in buildings without air conditioning, worsening asthma and other chronic conditions.

"They may speak about it in very different terms than someone with a medical or public health background," Smith said. "Whereas we study it, they feel it."

Four key recommendations came out of the focus groups in Atlanta: increasing visibility of energy assistance programs, promoting renewable energy initiatives, strengthening community education and outreach, and developing policy interventions.

In June, the city gained a major smart surfaces win with the adoption of a "cool roof" ordinance that requires all new and replacement roofs to be built with light-colored, reflective materials. The victory was made possible thanks in part to support from the Georgia association.

Photo by Blulz60, courtesy iStockphoto

Children play in a Centennial Park fountain in Atlanta in 2014. The Georgia Public Health Association conducted focus groups to learn ways to tackle extreme heat in Atlanta.

"We can certainly take those lessons learned from Atlanta and from the other states that have been part of this coalition, and then move that work into different parts of the state," Smith said.

Another coalition member, the South Carolina Public Health Association, has been engaging with residents from Columbia on how extreme heat is impacting their health.

The city is no stranger to the urban heat island effect, which causes downtown temperatures to rise 18.5 degrees above outlying areas. In focus groups hosted by the association, Columbia residents reported relying heavily on public spaces that have air conditioning, such as movie theaters and libraries. They also said extreme heat hampered their physical ability to pick up medications at a pharmacy and then store them safely in a cool place.

As part of its action plan, the South Carolina association held outreach events in Columbia, hosted webinars, gave presentations and connected with local news media.

When many environmentally focused nonprofit organizations in Columbia lost federal funding this year, SCPHA stepped in, providing minigrants to local organizations and neighborhoods to implement nature-based solutions to heat, such as rain gardens and urban meadows.

"It just made perfect sense to support our community partners with some of the initiatives that they have going on," Beata Dewitt, MPH, project coordinator for the SCPHA team, told *The Nation's Health*.

Across state lines, the North Carolina Public Health Association has been working with a diverse range of Charlotte residents affected by extreme heat — including community members, faith leaders and health care professionals such as doulas, nurse practitioners and emergency responders.

Many people voiced concerns about rapidly intensifying extreme heat, Bethany Milford, MPH, strategic initiatives program manager for the North Carolina Public Health Collaboration, which represents the NCPHA, told *The Nation's Health*.

"It's definitely a shift in how people are socializing and building community because they're having to stay home," Milford said.

The South Carolina team held its last focus groups in August and plans to use the findings to shape awareness efforts, health education and outreach, and advocacy in Charlotte.

Besides the connections with residents, many of the Affiliates involved in the smart surfaces projects said there was another benefit to the work: partnership.

For Keisha Long, project manager for the SCPHA Smart Surfaces Team, building a diverse and extensive network of partnerships and friendships in South Carolina was essential.

"'Friend raising' is just as powerful and helpful if you have a project or initiative you want to accomplish," Long told *The Nation's Health*.

Milford, who collaborated closely on its focus groups with CleanAIRE NC — a nonprofit organization that focuses on climate change, air quality and environmental justice in the state — echoed the value of building strong relationships across networks.

"Having these relationships built has just been incredible," she said. "And that is one thing I will definitely take away."

For more information on APHA's smart surfaces work, visit www.apha.org/smart-surfaces. ■

— *Sophia Meador*

Photo courtesy South Carolina Public Health Association

The South Carolina Public Health Association held outreach events in Columbia, including a planting event emphasizing how trees and gardens can reduce the city's urban heat effect.

Q&A with Greg Kats, CEO of Smart Surfaces Coalition

Creating cooler cities through smart urban design: lighter surfaces, greener spaces

Solar panels and vegetation can combat heat. Photo by Kymny, courtesy iStockphoto

FROM PERMEABLE PARKING SPACES to cool roofs, smart surfaces are a way to lower hot temperatures and prevent flooding in cities where concrete buildings and asphalt streets can trap extreme heat. For cities that feel lost in the dark about making an investment, the Smart Surfaces Coalition is a beacon of light.

With public health, urban design and academic partners, the coalition has been providing 10 cities technical support and policy guidance to create cooler spaces. *The Nation's Health* spoke to Greg Kats, MBA, MPA, the coalition's founder and CEO, about how APHA and others in the coalition can equip cities with the tools to lower temperatures.

What are smart surfaces and how do they work?

A smart surface is any surface of a city that allows the city to better manage sun and rain. Right now, city surfaces make cities hotter, more flooded, more prone to mold and illness. So the term "smart surfaces" is really intended to allow cities to think about surfaces differently and manage all of their surfaces as one integrated solution.

What inspired the creation of the Smart Surfaces Coalition?

The way cities manage surfaces is very piecemeal. You want to do parks? Parks and recreation. You want to do roads? It's the department of transportation.

It's highly fragmented. And it's frustrating, because we know from a lot of data that the surface of your city has an enormous impact on quality of life, health and whether people can get outside and run and play and be part of a community.

We also know from the writing of the great Jane Jacobs and her book "The Death and Life of Great American Cities" that what allows a city to be livable is people outside, which she calls "eyes on the street."

If you have eyes on the street, crime goes away, and if crime goes away, you have more people outside because it's safe, which means more eyes on the street, which means crime goes down.

If you can intervene in a city and make surfaces more reflective so it's cooler and greener, and more trees, more bioswales, more rain gardens — the city becomes a much more attractive place.

Who is most at risk from heat and climate dangers in cities and why?

The people most at risk are people with less money and who live in hotter areas.

In our work in Baltimore, for example, three of the communities we looked at were low-income communities which had 5-7% tree coverage. There are other areas of the city that have up to 35-40% tree coverage. Not surprisingly, those are wealthy white areas. And not surprisingly, the lower tree areas were predominately minority. And because of dark and impervious surfaces, that's radiating heat.

The people who suffer are people who are less well off; they are children, infants, elderly, sick and unfortunately that tends to concentrate in lower-income areas that are traditionally minority.

It's absolutely a racial disparity issue and it's absolutely an economic disparity issue.

What public health organizations are you partnering with?

We have three public health-oriented partners that we were fortunate in raising funding for and with: the American Public Health Association, the American Lung Association, and the Harvard T.H. Chan School of Public Health.

One of the things APHA has done, which is really pathbreaking and exciting, is they provided competitive grants to their state partners who then in turn provide sub-grants, small grants to community-based health groups.

That's super important, because they already look to APHA for guidance on policy, but this gives them the ability to fund local programs that address heat risk, for example, and we're hoping in our next cohort of 20 cities to expand funding for that substantially.

What are some resources or tools available for cities or municipalities?

One of the most important steps has been to develop a complete national database of all of the policies and regulations and ordinances related to smart surfaces.

Kats

For the first time with our partners, we aggregated that. We're fortunate in getting the help of the Law Firm Antiracism Alliance. They provided 30 volunteer lawyers around the country, so now we have that data for all 50 states and the 300 largest cities. That is now publicly available.

The Cities for Smart Surfaces Project is wrapping up — how do you see this work evolving?

We're now in the city adoption phase. That will continue for more than six months. We had 14 cities — new big cities like Chicago, Philadelphia, Newark, Albuquerque — send us letters of intent saying, "Hey, we want to do the same thing. We want to protect our citizens. We want to cool our cities. We want to reduce our climate footprint."

What's really exciting is that cities have seen the benefits. They are really keen to participate in the next round, which is another 20 metro areas and cities, so impacting around 85 million people.

We can give them the technical support for those cities to be able to control their future, to be able to say, "The world's getting hotter, we're going to make our city cooler."

What is your takeaway from the project?

A lot of cities are facing this really big problem, which is that people don't want to live in a city that's too hot to be outdoors. We need to make sure our cities stay livable and safe and people want to move here and want to work here. Because if you don't do that, and young people don't want to live there and companies don't want to invest, your city's future is at risk. ■

— Natalie McGill

For more information on the benefits of smart surfaces, visit www.smartsurfacescoalition.org.

This interview has been edited for length, style and clarity.

A skywalk at the Sukhumvit Line in Bangkok is surrounded by trees, shade and other foliage, which urban planners use to reduce heat absorption and lower temperatures.

Photo courtesy FredFroese, courtesy iStockphoto

Cities, communities pursue energy justice for low-income residents

NEARLY ONE-THIRD of U.S. households consider cost before turning on a heating system during winter or powering up a cooling system during summer, potentially endangering their health.

Each year, more than 12 million American households receive disconnection notices for failure to pay utilities, according to the Center on Global Energy Policy at Columbia University. Extreme cold or heat in a home can exacerbate people's existing health problems and sometimes cause death. In January, a 59-year-old Pennsylvania man died of hypothermia in his home after his utilities were cut off, with indoor temperatures averaging 18 degrees.

People without energy can also lose access to refrigeration for medication, power for medical devices and even their phone service.

People of color, older adults and those with low incomes are more likely to be energy insecure, Ranjani Prabhakar, MCRP-MSCE, legislative director of healthy communities at Earthjustice, an environmental law nonprofit, told *The Nation's Health*.

Meanwhile, extreme heat is accelerating. Over 170 Americans died in 2024 from high temperatures — more than from flash floods, tornado, winter storms or thunderstorms, according to the National Weather Service.

The urban heat island effect — in which concrete, metal and other human-made materials amplify heat — can raise temperatures by double-digits in metropolitan areas, making conditions particularly dangerous, especially for low-income people of color.

"These households are required to spend, on average, a disproportionate amount of their household income on energy," Chris Dobens, director of communications at WE ACT for Environmental Justice, told *The Nation's Health*.

WE ACT has advocated for improvements to New York City's cooling center program and legislation requiring landlords to keep apartments at 78 degrees or below during summer.

In the past, low-income Americans have been able to rely on help through the Low Income Home Energy Assistance Program, a federal program that allocates $4 billion annually to states so they can help vulnerable people pay their energy bills. But this year, Trump administration officials eliminated all of the program's staff and proposed zeroing out its funding in the fiscal year 2026 budget.

Over 7 million households receive assistance each year through LIHEAP, part of the U.S. Department of Health and Human Services' Administration for Children and Families. In July, a Senate appropriations committee proposed increasing funding for the program in the next budget.

In the long run, cities and communities can subsidize smart surfaces, such as reflective and green roofs, which can lower indoor temperatures, Diana Hernandez, PhD, associate professor of sociomedical sciences at Columbia University's Mailman School of Public Health, said. And as utilities are stakeholders in energy security — it is in their interest that energy bills get paid — they can create discount programs and notify energy-insecure customers that discounts are available.

"Utilities are an important player, and I think that they need to be among the actors finding solutions," Hernandez told *The Nation's Health*.

For more on energy security, see APHA and Columbia University's new "Understanding Energy Insecurity in the Field" toolkit at www.apha.org/extreme-heat. ■

— *Mark Barna*

Photo by Brett Coomer, courtesy The Houston Chronicle/Getty Images

Feast Bennemie,77, wipes his face in his home, which lacks central air conditioning, on a hot day in Houston in 2021. High indoor temperatures can exacerbate people's health conditions, especially for older people, health officials say.