

Environment Subcommittee Testimony Overview

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Thank you so much for this opportunity to testify about a topic that I've spent the better part of the last two decades studying. I'll admit that when I first started studying urban heat, in the early 2000s, it was based on funding from the National Science Foundation, and largely an academic exercise about refining measurement systems, and advancing mapping technologies, and getting myself tenure at the university. In that early work, we relied largely on satellite derived descriptions about how heat varied across the continental U.S., maintaining a rather technical approach to the field. Over the past decade however – perhaps because my observations about the devastating impacts of urban heat on historically marginalized communities are evident, including my own family in California, Maryland, Texas and several parts of India – I've turned my attention to building local capacity for heat-preparedness planning. As you likely know, heat kills more people than any other natural hazard – yet FEMA still doesn't recognize it as a natural hazard – though less known is the fact that it's a very discriminating killer. We published work last year (and continue to build on this) that shows that historical segregation policies -- such as redlining – that were promulgated by Franklin Roosevelt and Congress in the 1930s, have enduring effects that, to this day, isolate communities of color, immigrants, and lower income folks into areas of cities that are today are upwards of 20-degrees Fahrenheit hotter than other parts of the same city.

Just this month we learned that human-caused climate change was directly implicated in the 'heat dome' event in the Pacific Northwest, were during that event I measured temperatures that were 25-degrees warmer than other parts of the city. I've seen first-hand that with increasingly hot days, the temperature differential also increases across a region. Our earlier understanding of the discriminating impact of urban heat was certainly corroborated when I learned about the demographics and lived experience of the 600+ people who died across Pacific Northwest. We can now say those who died during the recent 'heat dome' event, were arguably the first climate-related deaths in Oregon and Washington. Those who died lacked access to financial capital, social networks, and had aging or injured bodies. We knew who was going to die – a report I wrote in 2009 stated as much -- yet local agencies had little capacity or understanding for taking swift action.

These and most all other heat-related deaths were preventable, though we are not connecting the dots. I'd like to offer you my opinion about the three things needed for reducing the excess mortality and morbidity from urban heat. First, because we know that people die in their households, we need hyper-local data about the way air temperatures vary at the scale of the city block. While we've already mapped with unprecedented detail over 30 cities through a community-based civic science heat campaign, most cities are currently lacking evidence to take swift action. I'd like to propose supporting these cost-effective and highly effective campaigns so that communities can socialize the concept of heat as a 'silent killer', collect the

necessary local data, and then begin taking immediate actions to develop the necessary social and infrastructure programs that center historically marginalized communities.

Second, we need to integrate our understanding of heat with the social and infrastructure vulnerabilities that urban regions face. U.S. cities generally were not designed for the kind of heat we are beginning to see – whether in the Phoenix, Portsmouth, Portland or Peoria – community health and infrastructure quality are tightly coupled to determine if the next heat wave will bring a heightened number of casualties. As our infrastructure ages and we have an opportunity to upgrade them to be more heat, and more generally climate resilient, we need to be collaborating with community-based organizations, hospitals, utilities, and public health programs, among others, to identify the mechanisms through which urban heat impacts are mediated through our urban infrastructure to amplify impacts on those most vulnerable in our country. The physical infrastructure necessary to meet the anticipated level of air conditioning demand alone is formidable, though if we focus on those opportunities to advance cooling options, whether through energy assistance programs, the establishment of weather refuges, and the upgrading of the electrical grid, we have an urgent need to take swift action.

Finally, one of the most important parts of addressing urban heat is a coordinated response. Currently, most municipalities do not have a single office that coordinates heat action planning, which then falls upon nobody, making our ability to stave off heat-related mortality more challenging. The emerging evidence from the recent PNW heatwave is case and point. The same is true at the Federal level. While both NOAA and EPA have extensive resources for communities to understand urban heat, we still have very limited coordination across Federal bureaus. The National Integrated Heat Health Information System is a mechanism that is already established and seems like an ideal entity for improving coordination at the Federal level. Engaging members of the individual science advisory boards also seem like ideal candidates for ensuring coordination across the different federal bureaus, each of whom can have a direct role in addressing urban heat. I'll conclude with a suggestion that if we have an increasingly coordinated response at the Federal level, local communities will also take notice and find ways to ensure relevant roles and responsibilities.

Thanks again for the opportunity to testify today, glad to address any questions, and I yield the floor.