



# MEETING HIGHLIGHTS



## EXTREME HEAT IN OUR REGION:

A Joint Meeting of the Healthy Communities Task Force and Climate Adaptation Forum

Wednesday, February 16, 2022

11:00AM—12:00PM

Presented via Zoom; 89 Attendees

All presentations and related meeting materials are located on the HCTF website:

<https://www.dvrpc.org/Committees/HCTF/>

### Welcome and Introductions

Karin Morris, Director of Community Planning with the Delaware Valley Regional Planning Commission (DVRPC), opened the meeting by welcoming everyone and encouraging attendees to complete a poll to get a better sense of who was in the “room.” She provided a brief overview of DVRPC, the Healthy Communities Task Force, and the Climate Adaptation Forum. Ms. Morris then reflected on extreme heat in our region, noting that recent years have been some of the warmest on record. She acknowledged that while rising temperatures may be uncomfortable for many of us, our region’s vulnerable populations—including persons with disabilities, the very young and the elderly, racial and ethnic minorities, and low-income residents—often bear the brunt of the effects of extreme heat. Noting that the two presenters would provide much more detail on this topic, she introduced the first presenter, Chris Linn with DVRPC.

### Municipal Management of Extreme Heat

Chris Linn, Manager of the Office of Climate and Environment, DVRPC

Mr. Linn began his presentation by providing an overview of extreme heat in our region, noting that extreme heat can vary depending on your location. Extreme heat is defined as weather that is much hotter and/or more humid than historical averages for a given area. He also noted that humidity plays a big role in how hot it feels in Philadelphia - the heat index, which is often used to determine the threshold for a heat emergency, is the combination of the temperature and the relative humidity. Mr. Linn noted that the consequences of extreme heat can be severe and the impacts can be felt more acutely by vulnerable populations. Extreme heat can degrade air quality, which also affects human health. And it can degrade our transportation and utility infrastructure, causing roads to buckle or catenary lines to sag.

Mr. Linn also noted that while high heat is nothing new, climate change is making it worse. He shared two charts showing both historical average annual temperatures and projected extreme heat days. Philadelphia is projected to have many more days with a heat index of over 90, 100, and 105 degrees, with the number of very hot days growing throughout the mid- and late-century. Mr. Linn stated that the number of consecutive hot days is very important from a human health perspective because the lack of overnight cooling, combined with the prolonged exposure to heat, has the biggest impact on the health of individuals, and that the number of consecutive heat days is expected to increase as well.

Mr. Linn then discussed urban heat island effect, which is when more developed areas see less cooling overnight due to heat being stored in buildings, sidewalks, roads, parking lots, and other hard, non-vegetative surfaces. He noted that daytime air temperatures are fairly similar across the region, whether it is an urban, suburban, or rural

area. However, the difference in nighttime temperatures across these different types of communities is pretty stark as the hard surfaces re-radiate heat during the night.

Mr. Linn then shared various maps and data from DVRPC's Municipal Management of Extreme Heat brochure, including a map of surface temperatures across the region by census tract, which he pointed out are different from the air temperatures we're familiar with in the daily weather report. However, these surface temperatures are significant because they typically correlate with areas that experience the urban heat island effect. The report also stresses that areas with high surface temperatures correlate closely with areas with high percentages of populations that are most vulnerable to high heat, such as the elderly, children, low-income households, individuals with chronic health conditions, those with limited English proficiency, pregnant women, people that work outdoors, and the homeless. The report overlays DVRPC's Indicators of Potential Disadvantage data set with surface temperature data to develop a heat vulnerability index, illustrating communities that may be most affected by extreme heat.

Finally, Mr. Linn highlighted a few mitigation measures, including increasing the tree canopy and vegetation to help reduce both surface and air temperatures. Design modifications such as white roofs and cool pavements are relatively easy to implement and are increasingly the norm in hotter climates. He also noted that covered bus shelters, shade structures, pools and spray grounds, and community centers are just some of the additional interventions that communities can implement to help mitigate the effects of higher temperatures.

## Preparing for and Responding to Extreme Heat in Philadelphia

Alex Skula, Policy, Planning, and Evaluation Manager, City of Philadelphia Department of Public Health (PDPH)

Ms. Skula began her presentation with some background information on extreme heat and the health impacts of extreme heat. She noted that heat-related deaths have largely decreased over the past decade. However, in very recent years, heat-related deaths have been increasing again due to a combination of aging populations, urbanization, and lack of access to air conditioning and other preventive measures for the most vulnerable. Extreme heat has also been shown to contribute to the onset or exacerbation of chronic health conditions.

Ms. Skula reiterated that heat becomes dangerous when high temperatures and humidity are sustained over multiple days, making it hard for people to get a break from the heat. PDPH is particularly interested in humidity because high humidity makes it difficult for sweat to evaporate off the skin, which is how people cool themselves. When heat exposure exceeds the body's capacity to cool itself, core body temperature will rise and can lead to a range of heat-related symptoms and conditions, ranging from heat cramps to heat exhaustion and heat stroke. Ms. Skula stressed that heat stroke is a life-threatening condition that usually occurs when the body temperature is greater than 105°. The high core body temperature can damage vital organs such as the brain and kidneys, which can result in serious illness and possible death. She noted that much of PDPH's extreme heat health education focuses on recognizing the signs of heat-related illnesses and educating residents on what to do if it happens. They emphasize that heat-related emergencies require a call to 911 or a hospital visit.

Ms. Skula noted that it's important to understand which populations are most at risk of heat illness to most equitably distribute educational information and other scarce resources. She outlined three different risk factor groups: exposure, social factors, and biological factors. Exposure included people who work outside or people without air conditioning. Social factors included people who live alone or are homebound. Ms. Skula referenced the 1995 Chicago heat wave, which resulted in many heat-related illnesses and deaths. Later research identified that the biggest risk factor leading to death for this event was living alone. People often did not recognize that the heat was becoming dangerous and/or didn't know what to do about it. The third risk factor, biological factors, includes older adults, young children, pregnant women, and people with some chronic medical conditions like obesity and diabetes that might experience heat-related illnesses at a lower threshold than others.

Ms. Skula then discussed how the city plans for and responds to heat emergencies. She noted that early warning systems are an important part of heat response. In 2017, the City of Philadelphia revised their heat response levels and thresholds based on decades worth of heat-related morbidity and mortality data specific to Philadelphia. For example, between July and September, they will declare a heat health emergency if the temperature is forecasted to exceed 106 for two days or 103 for three days. The city revised their thresholds to better ensure that they are activating services when they are most needed and to help reduce warning fatigue.

Ms. Skula noted that the city has two levels of heat response: heat caution and heat health emergency. When the city activates the lower level, the heat caution, PDPH will notify heat response agencies and distribute public information geared towards at-risk populations. The Office of Homeless services will also activate their Code Red response and provide outreach to people experiencing homelessness. During a heat health emergency, PDPH activates a number of services, including notifying heat response agencies, activating cooling centers, suspending utility shut-offs, and tracking and analyzing health outcomes. The Philadelphia Corporation of Aging activates the Heatline and health mobile teams and the Office of Homeless Services activates their Code Red response.

Ms. Skula then provided a more detailed overview of the city's summer 2021 heat response, noting that that 2021 was the first summer that the city had to declare a heat health emergency before July. The city activated its network of cooling resources during both heat health emergencies, including 7 Free Library branches and 6 SEPTA/City cooling buses during the June event and 10 Free Library branches and 3 City cooling buses during the August event. She also noted that the city has a map of all of its cooling resources, including spraygrounds, available on its website.

Ms. Skula shared the Philadelphia heat vulnerability index that PDPH developed in 2018 and updated in 2020 to help them better identify areas most at risk and allocate limited resources. PDPH used 18 different indicators that considered socio-demographic status, health status, environmental exposures, and infrastructure conditions. Ms. Skula noted that there are 74 census tracts with very high heat vulnerability.

Ms. Skula noted that PDPH implemented additional response measures during Covid-19 to either make it safer for people to stay inside their homes or to provide safe cooling options for those who are unable to safely stay in their homes. These included utility assistance and AC/fan provisions to help folks stay in their homes and the implementation of cooling buses.

## Questions and Answers

Amy Verbofsky, Manager of Healthy and Resilient Communities at DVRPC, moderated a brief question and answer session.

Q: Which agencies are part of the city's heat response?

A (Alex Skula): PDPH works closely with the Office of Emergency Management. They help with the planning and response, including bringing different city partners together. PDPH also works with Parks and Recreation, which operates the city's spraygrounds, Play Streets, which brings cooling resources to the block level, the Office of Sustainability on the Beat the Heat project, and the Free Library. Finally, they work with other areas of the health department including environmental services.

Q: Is extreme heat linked to domestic violence? Or maybe crime in general?

A (Chris Linn): Although I am not the expert, I recall a lot of anecdotal evidence that there are links between high heat and crime more broadly. It seems like there could be a connection between domestic violence and high heat but I cannot recall any specific data on that.

\*Attendee shared the following link in the chat regarding domestic violence and high heat:

<https://pubmed.ncbi.nlm.nih.gov/29981991/>.

Q: Is the health department partnering with other city agencies on the mitigation side? Or is most of your work on the emergency response side?

A (Alex Skula): Most of our work is on the adaptation and emergency response side. We have been involved with the Parks Department's Philly Tree Plan. They have done a lot of work to get community input on how to increase the tree canopy in Philadelphia. We had supported that effort.

## Closing

Ms. Verbofsky closed the meeting by thanking everyone for attending and encouraging attendees to complete the post-meeting survey.