Climate Change and Health Equity

STRATEGIES FOR ACTION

REPORT

LA County Chief Sustainability Office
Environment • Economy • Equity

COUNTY OF LOS ANGELES
Public Health

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LETTER FROM THE DIRECTOR

In recent years, the field of public health has been launched into the foreground of public consciousness, as the COVID-19 pandemic upends the health, livelihoods, and social fabric of our communities. While public health professionals grapple with the acute challenges posed by COVID-19, a highly infectious virus, another challenge looms large: the climate crisis. Record-breaking heat, more frequent and destructive wildfires, and heat-driven air pollution are some of the most visible examples of climate impacts already apparent here.

In public health, as we analyze the current and future health impacts of climate change on the people living and working in LA County, the evidence is clear: Climate change is already negatively impacting our health, with low-income individuals and communities of color harmed the most. The COVID-19 pandemic has illustrated the cascading and interconnected impacts on underlying health inequities, as LA County residents at risk due to community conditions face more significant health and economic impacts. As the pandemic wears on, the overlap in communities at highest risk from harm due to climate and COVID-19 vulnerabilities crystalizes—with challenges related to housing, employment, age, ability, and access to healthcare front and center. While the public health field continues to work to protect those who live and work in LA County from COVID-19, we must also join with our community partners to strengthen efforts to slow climate change and protect our communities from its impacts.

LA County residents are increasingly breathing some of the worst air pollution in the country, worsened by heat and wildfires; experiencing trauma and stress from displacement after losing homes to wildfires and mudslides; and suffering illnesses from intense and lengthy heat waves. Frontline communities—those already overburdened and under-resourced, most often those of color—experience these climate impacts more intensely and recover from them less quickly and fully. Climate change magnifies existing disparities, shaped by prejudice, discrimination, and racism. To strengthen the resiliency of the communities most impacted by climate change, our work must prioritize addressing these unequal and unjust community conditions.

The LA County Department of Public Health's mission is to protect health, prevent disease, and promote health and well-being for everyone in LA County. We work with a network of public health professionals, community partners, and coalitions to advocate for public policies that protect and improve health, joining communities and stakeholders to bolster strengths, identify gaps, and address weaknesses to improve the conditions that allow communities to thrive.

The only way to address climate change in LA County meaningfully is for all sectors—communities, non-profits, private businesses, and local governments—to plan and implement strategies collaboratively that will protect and prepare our communities. To catalyze and advance our shared goals, we are reaching out to stakeholders already addressing climate change in LA County to work together to protect our communities now and in the future. Public Health looks forward to supporting you in your work and will look to you for support in ours. As you well know, the time for action is now.

BARBARA FERRER, Ph.D., M.P.H., M.Ed.
Director, Department of Public Health

✓ WE CAN START OUR WORK TODAY

It's critical that government, nonprofit, and community-based organizations in the health and sustainability sectors take additional steps as soon as possible. The State of California has recently taken important steps to address climate change as a health threat, such as releasing the California Climate Adaptation Strategy, an updated Extreme Heat Action Plan, and allocating significant funding in the State budget. This report provides detailed recommendations for taking additional action. We encourage you to consider how your department, team, or organization could begin to:

Train and equip public health professionals to engage in climate-related work.

Public health comprises many diverse areas of expertise. However, public health professionals often don't have the knowledge or training to engage in climate-related work. We need to foster a workforce ready to address the public health challenges posed by climate change.

Improve the collection, synthesis, and use of data for health-protective decision-making.

The pandemic and its related challenges have underscored the criticality of quality data collection and analysis. We must build a robust capacity in our public health system to be able to model, understand, and predict which communities are and will be in need so we can get ahead of future crises.

Review current, planned, and future public health programs and initiatives with an equity and climate lens.

Many of the initiatives and programs we run today were designed for a different world—one without as much uncertainty driven by climate change. Organizations need to revisit current activities, and build structures into the review of new initiatives to ensure that equity and climate are centered in program design.

Integrate climate change messaging into health communications pathways.

Help connect the dots between health, equity, and climate for your community. Opening a dialogue will build trust and shared knowledge in our communities.

HOW WE DEVELOPED THIS REPORT

This report was developed by the LA County Department of Public Health's Climate Change and Sustainability Program, with support provided by the LA County Chief Sustainability Office and the California Resilience Partnership (CRP).

We incorporated an analysis of the latest climate impacts and public health data across the region, leveraging the County's recent Climate Vulnerability Assessment; recent planning efforts, including the OurCounty regional sustainability plan; a scan of reports and policy and program innovations in other communities; and a series of stakeholder engagement activities, including two virtual workshops and one-on-one outreach.

The final document was informed by consultations with key stakeholders across the County. We integrated feedback and drew inspiration from:

- Meetings with Public Health leaders on potential strategies to address climate change

- Feedback from key Public Health staff members who participated in the Climate & Health Initiative workgroup and workshops over a period of five years

- Key interviews with community-based, academic, government, and private sector stakeholders on built environment interventions to address extreme heat, one of the most significant climate impacts in LA County

- Input from other County departments, as well as non-profit, public and private sector stakeholders during stakeholder workshops conducted as part of development of the OurCounty plan

- Input from two listening sessions, hosted by Public Health, with climate change and public health stakeholders to solicit feedback on the draft report.

We also drew inspiration from actions outlined in the following reports:

- Advancing Equity in California Climate Policy: A New Social Contract for Low-Carbon Transition, University of California, Berkeley

- Austin Community Climate Plan, City of Austin

- Blueprint for Addressing Climate Change and Health, Public Health – Seattle and King County

- Climate Action Plan, City of Portland and Multnomah County

- Climate Change, Health, and Equity: A Guide for Local Health Departments, American Public Health Association and the Public Health Institute's Center for Climate Change & Health

- Healthy Planning Guide, Bay Area Regional Health Inequities Initiative

- Preparing for Climate Change, City of Seattle Office of Sustainability & Environment

- Resilient Los Angeles, City of Los Angeles

- Safeguarding California Plan - 2018 Update: California's Climate Adaptation Strategy, California Natural Resources Agency

- OurCounty: the Los Angeles Countywide Sustainability Plan

- Los Angeles County Climate Vulnerability Assessment

Technical assistance for this report was provided through the County's participation in the California Resilience Partnership (CRP), a statewide multimillion-dollar public-philanthropic effort. CRP works to advance high-impact projects that tackle complex resilience challenges across the region.

HOW TO READ THIS REPORT

This document is intended to catalyze discussions among County entities and community stakeholders about collaborative actions to protect and prepare our communities. In order to provide comprehensive background for these conversations, we frame climate change as a health equity issue. Next, we discuss the specific health threats that climate change is causing or exacerbating in LA County, which populations are at greatest risk for harm from them, and examples of what has been done already to address these harms. Finally, we present our guiding principles for action on climate and health equity, propose shared goals, and detail strategies to achieve them. Lastly, we describe next steps. This is a living document, with future updates reflecting ongoing input from stakeholders, new best practices, and evolving climate threats.

Photo: Alexis Balinoff (unsplash)

Climate Change's Unequal Impact

Climate change affects all LA County residents, but some communities are affected more than others. The communities that often face inequities in health outcomes, such as life expectancy, infant mortality, infectious diseases and chronic illness, are also more heavily impacted by climate change.

A - Language & Literacy Barriers

If someone cannot understand health or emergency information during climate crises like heat waves or wildfires, their health is at risk. The responsibility is on institutions to ensure everyone can understand vital information.

B - Over-burdened & Under-resourced Populations

Environmental conditions and discriminatory policies and practices contribute to people being excluded from various forms of opportunity. People experiencing homelessness, people with disabilities, immigrants, and LGBTQ individuals are examples of disadvantaged groups that may lack resources and support, and are more at risk for harm from climate hazards.

C- Housing & Neighborhood Conditions

People who live in low-resourced neighborhoods often live among conditions that result in worse impacts from climate events. Mental, emotional, and physical health can be affected by poor construction, insulation, or maintenance; lack of access to air conditioning; urban heat islands; and fewer trees.

D - Pre-existing Conditions

People with pre-existing conditions are more sensitive to climate impacts like extreme heat, wildfire smoke, air pollution, and vector-borne disease.

E - Age

The elderly, young children, and babies are more sensitive to climate impacts like extreme heat, wildfire smoke, and air pollution.

F- Race & Income

Discriminatory policies and practices negatively affect the wellbeing of residents in low-income communities and communities of color. Climate change exacerbates existing disparities, making climate hazards even more dangerous for the health of those living within these communities.

G - Occupation

Outdoor workers (e.g., construction, agriculture) are more exposed to climate events like extreme heat, poor air quality, and vector-borne disease, making them more vulnerable to illnesses caused and worsened by these hazards.

WHY CLIMATE CHANGE AFFECTS SOME COMMUNITIES MORE THAN OTHERS

Public Health is committed to working with stakeholders to sustain efforts to ensure fair and just health outcomes in LA County.[1] But what do we mean by health inequities? Why do some communities of color and low-income communities routinely experience poorer health outcomes than White and affluent communities? And how do these inequities intersect with climate change in LA County?

Health equity is when everyone has the community conditions, resources, and power needed for optimal health and well-being. Many communities across LA County have community conditions that support good health outcomes: good schools, safe neighborhoods, sustainable and healthy environments, strong social connections, and a thriving and inclusive economy. However, we continue to see stark differences in these community conditions across LA County, which drive the inequities we see in quality of life, health outcomes, and longevity. These differences are largely based on differences in income, geography, and race and ethnicity. Typically, our most under-resourced and overburdened communities are also low-income and predominately communities of color, the result of past and present policies and practices influenced by prejudice, discrimination, and systemic racism.

The communities that often experience inequities in health outcomes, such as life expectancy, infant mortality, infectious diseases, and chronic illness, are also more heavily impacted by climate change. Communities of color and low-income communities often *are more exposed to climate hazards*, such as higher temperatures and worse air quality, and *have fewer resources to weather these conditions*. This means individuals and families who already are at risk for worse health outcomes due to existing community conditions are also at greater risk from acute and long-term climate change impacts that exacerbate and trigger health issues.

Expanding efforts with partners and communities to improve community conditions so that everyone in LA County can achieve optimal health and well-being will also require concerted efforts to prevent and mitigate climate change impacts in the communities at greatest risk. Strengthening the most at-risk communities will help the entire County better prepare for and adapt to climate change.

By the Numbers

4 of the 10 cities in California with the most structures in the highest wildfire hazard zones are in LA County

49% of households in the Los Angeles and Long Beach area do not have air conditioning

8.5% of people in highly vulnerable LA County census tracts are outdoor workers, facing multiple occupational risks due to extreme heat and poor air quality

720,000 people live in an area at risk of flooding due to heavy rain

7.1% of children in LA County have asthma; at 15.1%, the prevalence among Black children is more than two times that rate

27% of the state's population lives in LA County. It is home to 40% of the population considered highly vulnerable to climate risks—roughly 5 million people
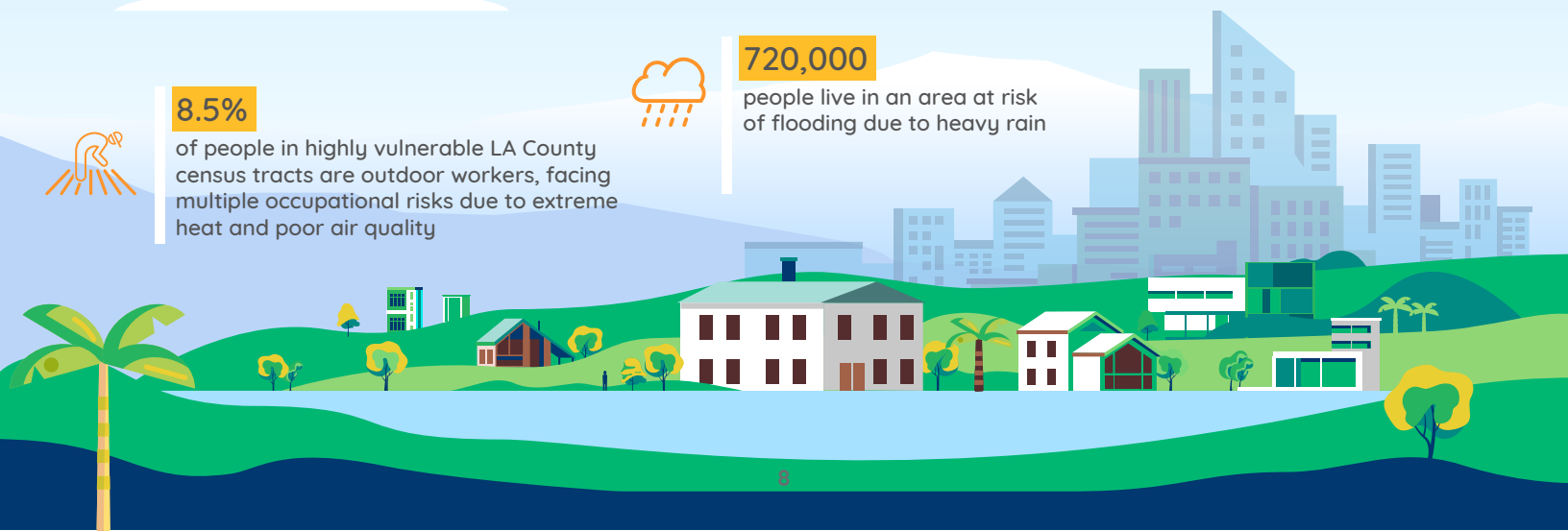
CLIMATE CHANGE DEEPENS HEALTH INEQUITIES

Everyone in LA County is impacted by climate change, but not all communities are impacted equally. Those with the fewest resources are the most exposed to, face the greatest risks from, and have the least ability to recover from climate change hazards. In particular, low-income communities and communities of color often experience greater climate change threats and have fewer resources to mitigate, adapt to, and recover from those threats due to current and historical discriminatory policies and practices. Many of these inequalities and challenges may compound as LA County residents continue to experience the economic and health impacts of the COVID-19 pandemic. The same factors that contribute to inequitable health outcomes more generally, and during the pandemic—such as where people live and work, how much money they earn, and their race and ethnicity—also shape risk for harm from climate impacts.

This section explores how climate change negatively impacts health, focusing on the disproportionate impacts felt by low-income communities and communities of color. First, we provide a snapshot of the changing climate today and in the future, outlining the changes that are affecting health. Next, we summarize the acute and chronic health impacts caused by climate change, with particular attention to why low-income communities and communities of color are disproportionately affected. And finally, we discuss how climate change negatively impacts the social determinants of health—the social conditions like income and food access that broadly influence health outcomes.

Climate Change in LA County Today and in the Future

LA County has already experienced significant changes in climate that affect the health of our residents. For example:

Average temperatures are rising and heat waves are becoming more frequent and severe

Droughts are more extreme, as are periods of heavy rainfall

Wildfires have become larger, more frequent, and more destructive

Rising temperatures, drought, and fires increasingly contribute to poor air quality

These trends are expected to worsen. By the mid-21st century, projections show average temperatures will rise by an average of 4-5°F. Heatwaves are also projected to increase up to tenfold. More concentrated precipitation is expected across the region, with some areas experiencing a projected 25-30% increase in rainfall on the wettest day of the year.[2] In addition to West Nile Virus (WNV), other mosquito-borne diseases such as Dengue Fever, Chikungunya and Zika have the potential to spread in the area. Models show that by mid-century, 47,000 people will live in areas at risk for coastal flooding due to sea level rise. More frequent, larger fires are also anticipated; conservative estimates predict a 40% increase of wildfire burn in the San Gabriel Mountains by mid-century.[3]

Photo: LAFD Photo | Harry Garvin

Climate Change Heightens Health Risks in Frontline Communities

FRONTLINE COMMUNITIES:

Frontline communities are communities that continuously experience environmental injustices and disproportionate impacts due to climate change, pollution, and toxic environments. These impacts are a result of systemic racism, disinvestment, and inequitable social structures that contribute to unsafe, unhealthy neighborhoods and limited access to quality education, public services, and economic opportunities. Frontline communities often consist of Black, Indigenous, and People of Color, immigrants, low-income individuals, and residents of rural areas.

Photo: Nacho Corbella

RESPIRATORY ILLNESSES AND ALLERGIES disproportionately affect people who live in areas with poor air quality.[4] Furthermore, respiratory issues are expected to affect more people as climate change progresses, worsening air pollution and extending the growing season for allergy-causing plants.[5]

Chronic and Acute Air Quality Hazards

While legislation such as the Clean Air Act has led to improvements in air quality in LA County over the last several decades, climate-driven events have recently caused air quality in our region to decline. In 2020, historic heat waves contributed to levels of ozone pollution not seen since the 1990s. As heat waves become longer and more frequent, high ozone days will also occur more often.

Wildfires and Air

Large wildfires in LA County cause significant smoke events that affect millions of people. For example, the Woolsey fire in 2018 and the Bobcat Fire in 2020 both caused smoke events resulting in air quality "hazardous for sensitive groups." In 2021, 50% of Angelenos avoided going outside due to poor air quality caused by wildfires; these decisions affect quality of life and other determinants of health such as physical activity.[6] As wildfires become larger and more frequent, so will smoke events.

High-Risk Populations

Low-income communities, which are often located near freeways and industrial areas, are already most affected by poor air quality.[7,8,9] In addition to outdoor air quality hazards, people in low-income communities are also more often exposed to indoor air pollutants in lower quality housing.[10,11] Moreover, with fewer resources, people are less able to evacuate during hazardous air quality conditions, such as those created by wildfires, which will become more frequent with climate change.[12,13] People experiencing homelessness (PEH) and outdoor workers are at higher risk for respiratory illness because they spend more time outside, with greater exposure to air pollutants.[14,15] COVID-19 has further exacerbated existing health disparities in health outcomes due to poor air quality, with an association between exposure to hazardous air pollution and deaths due to the virus.[16]

HEAT RELATED ILLNESS (HRI) is a year-round threat in LA County, due to the county's natural and built environments. As a result of LA County's changing climate, as temperatures rise, the number and severity of extreme heat events are increasing. Unfortunately, extreme heat harms some communities more than others. Some communities, such as the San Fernando Valley, the San Gabriel Valley, and the Antelope Valley, are more exposed to extreme heat because of their because of their geographic location and weather patterns. Some communities face higher risk because they are more likely to be exposed to extreme heat through:

Urban Heat Islands

In urban heat islands, artificially high temperatures result from fewer trees and green spaces and more heat-absorbing concrete and other impermeable surfaces. Due to redlining, historic disinvestment, and other discriminatory policies and practices, people living in low-income communities and communities of color often live in areas considered heat islands..

Outdoor Occupations

People are exposed to heat at work, in addition to in their homes and neighborhoods. More than 250,000 people in LA County work in outdoor occupations like agriculture and construction.[17] People who work outdoors and in places without air conditioning are more exposed to heat and are at higher risk of illness caused or exacerbated by heat, and have higher rates of hospitalizations and emergency department visits during extreme heat events.[18,19] At the same time, they may face barriers in accessing healthcare due to documentation status. As the COVID-19 pandemic reinforced, essential workers face heightened occupational risk, and should be the focus of special protections.

Overburdened and Under-Resourced Populations

The risks of heat exposure are compounded when people have fewer resources to cope with extreme temperatures. For instance, low-income households often rent and are more likely to live in housing that is more affected by extreme temperatures due to poor housing construction, insulation or inadequate maintenance.[20,21] Affordable housing is also less likely to have air conditioning, and when it does, residents are less likely to use it to avoid higher energy bills.[22,23] Transportation to cooling centers (such as libraries and community centers) or other cool spaces is often unavailable due to lack of access to a vehicle and gaps in transit infrastructure. People experiencing homelessness are even more exposed to extreme heat and may face real and perceived barriers to accessing air-conditioned spaces during heat waves. Individual risk factors also affect people's sensitivity to extreme heat.[24] Due to physiological factors, the elderly, young children, and people with chronic conditions such as heart disease are among those at increased risk of harm during heat waves.[25]

Medicare Electricity-Dependent Populations

U.S. Department of Health & Human Services.

0% - 2.1%   2.1% - 2.5%   2.5%+
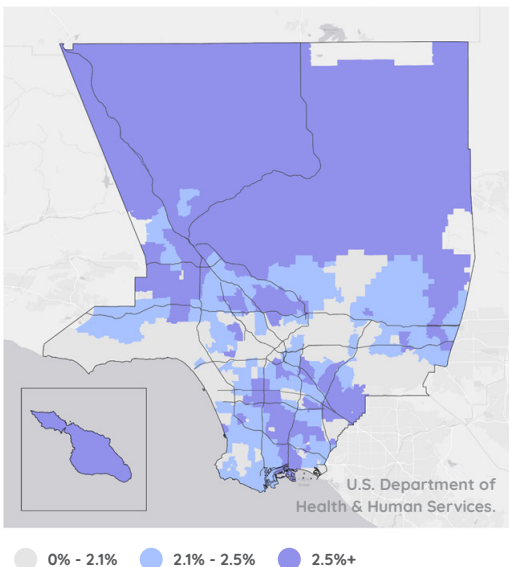
COMPOUNDING IMPACTS OF CLIMATE AND HEALTH VULNERABILITIES

This map shows the distribution of the over 43,000 Medicare recipients across LA County who rely on electricity-dependent medical devices. Severe weather incidents and other emergencies related to power outages can pose life-threatening impacts on seniors and other Angelenos who are already at risk for worse health outcomes and are dependent on electricity for health and medical needs. The County's energy infrastructure is one of the assets at greatest risk due to increasing frequency of extreme heat, wildfire, and other climate-driven events. Vulnerable areas with relatively large numbers of people who are highly exposed to extreme heat and medically dependent on electricity may need outside resources and support during extreme heat, wildfire events, and power outages.

Source: LA County Climate Vulnerability Assessment (2021)

INFECTIOUS DISEASES are transmitted through vectors (e.g., mosquitoes, fleas, rodents) and contaminated air, food and water. These pathways for disease transmission are affected by the climate.

Vector-borne illness

Climatic factors like temperature, rainfall, and humidity affect the number and geographic range of vectors that transmit diseases to humans. Rising temperatures and, in some cases, increased rainfall, have contributed to the expanding geographic range and population size of mosquitoes that transmit diseases to humans.[26] The *Aedes* mosquito, which thrives in hotter temperatures, is a potential carrier of diseases, including West Nile Virus, Dengue Fever, Chikungunya, and Zika, and is now established throughout LA County.

Valley Fever

Drought conditions exacerbated by climate change may increase the risk for Valley Fever, an infection caused by a fungus in desert soils. Valley Fever cases increase when dry, dusty conditions spread the fungus in the air. Most people who get sick from Valley Fever in LA County are in the Antelope and San Fernando Valleys. The Valley Fever case rate in LA County increased steadily between 2013 and 2019, possibly due in part to changes in the weather.[27] Valley Fever primarily affects workers in agriculture and construction and people living and working in desert areas.[28] Black and Latino residents are more likely to become ill with Valley Fever, are often diagnosed and treated later in the disease's progression, and are more likely than White people to die without ever being diagnosed.[29,30]

Food and Waterborne Illnesses

Climate change increases the likelihood of illness due to contaminated food and water, because pathogens are sensitive to climatic factors such as humidity, rainfall, and higher temperatures.[31] Higher temperatures and more flooding events are expected to increase the spread of foodborne pathogens.[32]

Photo: Scott L (flickr)

MENTAL HEALTH and feelings of well-being are directly and widely affected by climate change.[33] The long-term trends and acute weather events caused by climate change affect mental health through pathways such as trauma, general anxiety, chronic stress, post-traumatic stress disorder, depression, sleep disorders, and "ecoanxiety."[34]

Populations Most at Risk

People at heightened risk for mental health impacts from climate change include low-income populations, the elderly, children, pregnant and postpartum women, first responders, people already living with mental health conditions, and people experiencing homelessness.[35] People with existing mental health conditions can be particularly affected by climate events that lead to social isolation, such as extreme temperatures and some disasters.[36] Recently, youth have been identified as a demographic experiencing anxiety, stress, and despair related to climate change.[37]

Climate Change and Chronic Stressors

Low-income communities and communities of color often experience chronic stressors related to financial insecurity, which climate change can compound.[38,39] For instance, impacts of climate change that unfold over the long-term—such as extended periods of drought and rising temperatures—can negatively affect people's livelihoods in climate-dependent sectors such as agriculture and construction, where low-income people and people of color are disproportionately represented. Chronic and

Photo: StudioRomantic (twenty20)

acute stress, depression, and suicide are associated with exposure to climate-related disasters, drought, and extreme heat. Farming and rural communities affected by natural disasters have shown consistent trends towards severe depression and suicide related to loss of livelihood.[40]

Climate Change and Trauma

Lower-income populations experience climate shocks more severely than affluent communities. With more chronic daily stressors and fewer resources to prepare for and recover from disasters, lower-income communities are at greater risk for mental health impacts from climate-related events such as extreme heat, wildfires, droughts, and extreme weather.[41,42,43,44,45] LA neighborhoods' preparedness for natural disasters is related to the percentage of households above the median income.[46] These events are likely to cause anxiety for anyone, but they can devastate those who are employed in climate-dependent sectors, live and work in areas with increased risk for exposure, or are less likely to have insurance or get loans for recovery.[47,48] These situations can lead to a loss of livelihoods, property, other assets, and social networks that can trigger an increased risk for post traumatic-stress, depression, anxiety, and suicide.[49] Safety risks, the loss of sense of place, and witnessing deaths or injuries due to climate shocks can also intensify trauma.[50]

Ecoanxiety

Ecoanxiety is a fairly new term to describe general anxiety, depression, and malaise over the current climate instability.[51] A person's sense of self and security can corrode, and people feel at risk even when no tangible climate-related harm has yet occurred.[52,53] Emotions such as fear, grief, and guilt are also commonly associated with climate change.[54] Survey data show that almost 90% of Americans are somewhat or very worried about climate change, and over 72% of Los Angeles residents believe climate change is a threat to their wellbeing.[55,56]

Climate Change Threatens Social Determinants of Health

In addition to causing harm to individual and community health directly, climate change threatens the social determinants of health. Social determinants are the conditions that shape health, such as income, education, and neighborhood environment. For example, determinants like substandard housing, high levels of air pollution, and violence all disproportionately affect low-income communities. In this way, income, and all other social determinants of health, influence the health of LA County's residents. Social determinants such as economic security and food security are impacted by climate change.

Climate change increases financial instability

Warmer temperatures, more intense droughts, and flooding caused by climate change can lead to crop failures, livestock deaths, and destruction of fisheries and tourist attractions. These events negatively affect land-dependent industries and jeopardize the livelihoods of people who own and work on lands used for these purposes.[57]

Additionally, the increasing frequency of extreme climate conditions can negatively affect work productivity. Smoke danger from fires can prevent farmworkers from working outside, resulting in lost income. Lost income affects low-income communities much more than individuals with a financial "cushion" or "safety net".[58] Outdoor workers and those without temperature-controlled work environments are also more likely to suffer dehydration, heat exhaustion, or heat stroke on the job, which can force them to take unpaid time off to recover, further negatively affecting their income.[59] Importantly, low-income households are more likely to slide into chronic poverty and homelessness as a result of extreme or unpredictable events, in part because they are particularly negatively affected by climate hazards.[60]

Climate change increases food insecurity

Food security depends on the availability of and access to healthy, affordable foods.[61] Climate change is already affecting food production globally.[62] Drought, extreme weather, and disasters triggered by changing temperatures affect the quantity and quality of available food; agricultural varieties across regions; and crop, fishery, and livestock yields. Changing temperatures and rainfall patterns introduce pests that destroy crops, and extreme weather conditions can disrupt food transport systems. All of these threats to our food supply have a greater impact on low-income and under resourced communities who are more vulnerable to rising food costs and reduced access to healthy foods in their neighborhoods.[63,64,65] Recently, inflation has been threatening more households with food insecurity and making food prices more sensitive to climate shocks.[66]

Climate change worsens learning outcomes

There is growing evidence that extreme heat affects academic achievement, as students that experience more hot days may attain lower test scores. Moreover, lack of air conditioning in classrooms widens the gap between students of color and their White counterparts, exacerbating educational inequities.[67]

Photo: Joel Muniz (unsplash)

RECENT PUBLIC HEALTH RESPONSES TO CLIMATE IMPACTS

Innovative Examples from around California, the United States, and the Globe

Addressing climate change will require a multi-faceted, cross-sectoral approach that protects the public from immediate health impacts, while also promoting actions that slow climate change, improve health, and promote equity. Local jurisdictions are already taking on this challenge by implementing policies and programs that address climate change from a health and equity perspective. Examples from across the state, country, and world provide inspiration from which our County can draw.

CONTRA COSTA
SAN FRANCISCO

SAN LUIS OBISPO

PHOENIX, ARIZONA

ATHENS, GREECE

The San Francisco Department of Public Health compiled sociodemographic, health, and environmental exposure indicators to develop heat and flood vulnerability assessments for the city, followed by San Francisco's Climate and Health Adaptation Framework in 2017.

The San Luis Obispo County Health Department developed its Outside in SLO campaign on climate change and health to educate the public about the health impacts of climate change and the health benefits of mitigation.

Contra Costa Health Services conducted a pilot program leveraging public health nurses to connect low-income residents to home weatherization services.

In the rapidly warming City of **Phoenix, Arizona**, the new Office of Heat Response and Mitigation is tasked with supporting heat-vulnerable residents by addressing the growing hazard of the City's urban heat islands and advancing cooling strategies. This department is the first publicly funded entity of its type in the country and advances heat mitigation strategies

to protect all residents, including at-risk populations such as people experiencing homelessness and outdoor workers. Some examples of initiatives include installing cool pavement and reflective roofs, enhancing tree canopy coverage, and working with the City's Parks Department to increase availability of water on trails.[68]

Athens, Greece recently appointed the city's—and Europe's—first Chief Heat Officer. This role was created in response to a 111 degree day in Athens—the hottest day on record for the Greek capital—and after wildfires burned over 200,000 acres of forest. The Officer is working to install reflective asphalt and expand the number of air-conditioning units in homes, cooling centers, solar roofs, and roof gardens. Within the next five to ten years, other planned initiatives include planting thousands of trees—critical for a city with limited green space.[69]

These examples demonstrate how local jurisdictions are using existing expertise and capacity in the areas of assessment, education, direct community outreach, policy, and infrastructure development to achieve climate, health, and equity goals.

The LA County Department of Public Health's Climate Change and Sustainability Program focuses on applying our department's expertise to prevent and mitigate climate change's health impacts. We seek to protect LA County residents by promoting actions that slow climate change and build community resilience. In 2014, Public Health adopted the **Four Point Framework to Reduce the Health Impacts of Climate Change**:

1 Inform and engage the general public about the nature of climate change and the health co-benefits associated with taking action to reduce greenhouse emissions;

2 Promote local planning, land use, transportation, water, and energy policies that reduce greenhouse gas emissions and support the design of healthy and sustainable communities;

3 Provide guidance on climate preparedness to local government and community partners to reduce health risks and create more resilient communities; and

4 Build the capacity of Departmental staff and programs to monitor health impacts, integrate climate preparedness, and improve climate responses.

Since adopting the plan, Public Health has trained our workforce to face mounting climate change challenges through outreach and education, implemented solutions in partnership with other government entities and stakeholders, provided a public health voice in sustainability planning, and participated in legislative discussions. However, the innovative climate work taking place at Public Health and other local health departments pales in comparison to what we could accomplish with more resources and stronger partnerships with local organizations. Many nonprofits and community-based organizations have led the way with important and innovative work to improve built environment conditions,

organize communities, change policies, prevent further unsustainable land uses, and improve community readiness for disasters, among other actions. Yet there is much that still needs to be done to protect the public from the health impacts of climate change.

This report outlines our proposed goals and strategies, based on our Four Point Framework, to expand our work on climate change in collaboration with local stakeholders. We look forward to using this report as the foundation for future collaborations on a bold and unified vision to address the health impacts of climate change in LA County over the next decade.

Photo: Joel Muniz (unsplash)

GUIDING PRINCIPLES FOR CLIMATE CHANGE AND HEALTH EQUITY

To develop this report, we built upon the Department of Public Health Center for Health Equity's conceptual framework of health equity while adding a climate change focus. Our climate and health equity approach prioritizes communities at greatest risk and frames discussions about climate change mitigation, adaptation, and resilience as opportunities to reduce disparities and advance health equity. We applied the following five principles when evaluating strategies for inclusion in this report:

1 Systems Over Individual Behavior
To effectively reduce greenhouse gas emissions and protect our communities' health from climate hazards, Public Health prioritizes strategies that tackle the root causes of environmental and health inequities. This means focusing on fixing systems over individual behaviors (e.g., develop and implement transit-oriented development, active transportation, and complete streets, rather than focusing on individual behavior change such as telling people to drive less).

2 Environmental Justice and Racial Equity
Communities of color and low-income communities are exposed to greater harm from climate impacts, due to unjust systems and policies and unequal access to resources. Public Health prioritizes strategies that reexamine systems with an eye toward who is most harmed by them, and implement systems change to prioritize and protect those who are most impacted by climate change.

3 Health in All Policies
Health in All Policies is a collaborative approach that integrates health considerations into policymaking across sectors to improve the health of all communities and people. Public Health's mission is to protect health, prevent disease and injury, and promote health and well-being, and we apply this lens to all decisions. All strategies integrate a consideration of health impacts and health benefits.

4 Community-Driven Strategies with Public Accountability
Communities most impacted by climate change must be in the lead on developing health protective interventions. Public Health prioritizes strategies that are community-driven and transparent.

5 Investment in Partnerships
Addressing climate change requires sustained actions. Public Health prioritizes strategies that invest in and strengthen the long-term capacity of organizations and communities to engage in climate action.

Photo: CicLAvia Los Angeles (flickr)

CLIMATE CHANGE AND HEALTH EQUITY GOALS

The goals and strategies outlined below are designed to initiate new and support existing collaborations between Public Health and climate change and health equity partners in LA County.

Informed, Empowered, and Well-Resourced Residents

The public and key stakeholders understand the impacts of climate change and the health benefits associated with taking action to reduce greenhouse gas emissions. Communities most at risk for poor health outcomes due to climate change have the information and resources needed to act.

Healthy and Sustainable Communities

Local policies on planning, land use, transportation, water, and energy address systemic inequities to reduce greenhouse gas emissions and support healthy and sustainable community design or redesign in historically overburdened and under-resourced areas.

Prepared and Resilient LA County

All communities are prepared for and resilient to climate change and the associated health risks.

Effective and Engaged Public Health Programs

The Public Health workforce has the capacity to address the health impacts of climate change in our programs, with a focus on building an institutional infrastructure that would support the climate and health needs of the highest risk communities.

Photo: maginnis (twenty20)

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PROPOSED STRATEGIES FOR CLIMATE CHANGE AND HEALTH EQUITY

Items denoted with a '*' appear in or are adapted from the OurCounty Sustainability Plan.

1 Informed, Empowered, and Well-Resourced Residents

The public and key stakeholders understand the impacts of climate change and the health benefits associated with taking action to reduce greenhouse gas emissions. Communities most at risk for poor health outcomes due to climate change have the information and resources needed to act.

1a. Convene a community advisory council to shape the development and implementation of Public Health's climate and health equity actions.

1b. Integrate climate change messaging into health communications pathways.

- Engage communities on resilience topics through direct outreach at fairs, community events, community meetings, and other venues.
- Work with public health home visitation programs to refer residents for energy assistance programs, home weatherization, and tree giveaways. Integrate climate change messaging into Nutrition Education Campaigns.
- Integrate climate change messaging into Nutrition Education Campaigns.
- Train health care providers to recommend individual actions that mitigate climate change and promote health, and institutional actions to improve the sustainability of their practice and the health care sector.
- Incorporate multilingual climate-related information into public information services, including 2-1-1, the Environmental Health Customer Call Center, and City of Los Angeles and LA County's One Degree as appropriate.

1c. Develop a community-informed messaging campaign on climate change and health using best practices.

1d. Collaborate with K-12 schools to incorporate health elements into existing climate and health education curricula.

2 Healthy and Sustainable Communities

Local policies on planning, land use, transportation, water, and energy address systemic inequities to reduce greenhouse gas emissions and support healthy and sustainable community design in historically overburdened and under-resourced areas.

2a. Work across local government agencies and with community stakeholders to encourage and support existing and new initiatives to improve tree coverage throughout the county.

- Implement locally tailored, youth-based tree planting projects in collaboration with community based organizations to reduce the impacts of urban heat in low canopy areas.*
- Create a protected tree ordinance.*
- Support the development of an urban forest management plan.
- Work with other County departments and other entities such as cities, non-profits, and utilities to develop a residential tree giveaway program for County unincorporated areas that prioritize underserved communities with low tree canopy.

2b. Explore policy mechanisms for incentivizing food retail business practices that create living wage jobs in historically impacted communities and expand access to high quality, healthy, sustainable food.*

- Partner with the Department of Public Works to enhance and expand the County's existing Food DROP food donation and redistribution program to divert edible food waste from landfills and make it available to food insecure communities.*
- Implement the Good Food Purchasing Policy and/or other model policies promoting local, sustainable food, prioritizing vendors with certifications for sustainable agricultural practices related to water, public health, energy use, pesticides, and workers' rights.*
- Promote plant-based menu options through nutrition and food procurement policies in food service settings, such as County facilities, hospitals, higher learning institutions, school districts, and other food settings.*

2c. Provide guidance to policymakers and the general public on the health benefits of a just transition to a green economy.

- Provide information on the health benefits of transitioning workers from fossil fuel industries into green, healthier, and higher wage jobs.
- Promote LA County as a green employer with safe, healthy, and sustainable job opportunities.
- Collaborate with the Chief Sustainability Office and other County departments to develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities.*

2d. Work with school districts to incorporate sustainable practices that support community health into school settings.

- Encourage schools to implement climate-friendly practices, such as clean energy procurement, energy efficiency, healthy and sustainable school menus, and active transportation policies that promote walking and biking to school (e.g., Safe Routes to School and Complete Streets/Neighborhoods).

2e. Promote transit-oriented development, active transportation, and Complete Streets policies that prioritize underserved communities and actively prevent displacement in unincorporated LA County.

- Partner with the Department of Public Works and other local jurisdictions and transit agencies such as the City of Los Angeles and Metro to develop and implement a "Transit First" policy and mobility advocacy campaign that is consistent with and supportive of the County's Vision Zero Plan to eliminate traffic-related deaths and serious injuries.*

3 Prepared and Resilient LA County

All communities are prepared for and resilient to climate change and the associated health risks.

3a. Improve the built environment and County infrastructure to promote climate adaptation and resilience.

- Reduce barriers and increase accessibility to alternative water sources (rainwater, greywater, stormwater, and recycled water), including incentives for residential and commercial/small business greywater systems and streamlining permitting pathways.*
- Work with other County departments to improve cooling center operations, such as equipping all cooling centers with renewable back-up power.
- Develop minimum requirements and best practices for amenities, programming and accessibility of cooling centers.*

- Work with the Office of Emergency Management to plan for "clean air" shelters equipped with adequate filtration and advertise during smoke events.
- Develop a comprehensive heat island mitigation strategy and implementation plan that addresses cool pavements and roofs, pavement reduction, and urban greening.

3b. Develop and implement institutional policies and practices to protect health in a changing climate.

- Work with schools to protect students from climate-related health impacts, including by adopting school policies that prevent heat-related illness.
- Review and revise Environmental Health policies and procedures, such as the requirements for monitoring small water systems during drought conditions, to account for climate impacts to environmental health.
- Build capacity for monitoring and controlling the spread of vector-borne illness through increased resource allocation and improved partnerships with cities and residents.
- Expand the role and authority for Public Health in the initial permitting process, and ongoing enforcement of regulations for industrial facilities.*

3c. Reach populations at risk during extreme events with health-protective messaging and resources.

- Develop and launch an opt-in countywide emergency alert system with tailored alerts available for extreme heat, smoke, and other events.
- Develop and launch an early warning and targeted notification system for populations at risk for extreme heat and smoke events.
- Train Public Health Emergency Volunteer (PHEV) teams to mobilize during extreme heat events. Coordinate with other jurisdictions to adopt and disseminate consistent, multilingual health-protective messaging for smoke events, including smoke events that occur during extreme heat.

3d. Improve emergency preparedness and response plans.

- Work with the Department of Health Services and the Department of Mental Health to expand resources for and train providers to assist clients seeking care for climate-related trauma, ecoanxiety, and other mental health impacts of climate change.
- Strengthen preparedness and response plans for climate-related emergencies and ensure that they include multilingual communication tools for use in specific climate-related emergencies. Ensure that the plans address specific barriers faced by the elderly, people with developmental and physical disabilities, and people with pre-existing health conditions, including those who require medications or medical equipment.
- Support and resource neighborhood preparedness plans for climate events.

3e. Conduct a climate-focused community needs assessment.

- Conduct a climate-focused community needs assessment of adaptive interventions related to extreme heat, air quality, wildfires, flooding, vector-borne disease, and the mental health impacts of climate change that prioritizes communities most at risk.

4 Effective and Engaged Public Health Programs

The Public Health workforce has the capacity to address the health impacts of climate change in our programs, with a focus on building an institutional infrastructure that would support the climate and health needs of the highest risk communities.

4a. Train and equip professionals to engage in climate-related work.

- Require all Environmental Health Specialists to complete the Climate Resilience, Equity, and Food Waste Reduction training developed by the California Conference of Directors of Environmental Health and the Public Health Institute.
- Develop and launch a mandatory web-based training on climate change, with community involvement, for County and Public Health staff that features community voices and stories.
- Train Public Health field staff to inform and engage residents on climate concerns, the health impacts of climate change, and the health benefits of taking action to address climate change.

4b. Bolster the capacity of climate-critical programs.

- Increase the staff, funding, and training capacity of programs that will become increasingly involved with and vital to addressing climate change impacts. These include the Emergency Preparedness and Response Division, Community and Field Services, and the Vector Management Program.

4c. Strengthen collection, synthesis, and use of data for health-protective decision-making.

- Strengthen partnerships with research institutions to promote applied research and use the best available science to inform health-protective decision-making.
- Develop systems to routinely collect, synthesize and employ data to better understand health trends related to climate change, project future impacts, and inform planning and real-time health protective decision-making.

4d. Build long-term capacity of organizations to address climate change.

- Develop the next generation of climate and health professionals by actively recruiting and hosting interns and fellows.
- Develop a funding strategy for a comprehensive public health and climate change program. Advocate for a dedicated, sustainable funding stream for public health work on climate change.

4e. Institutionalize climate change considerations into Public Health programs

- Develop climate-related indicators with community input and integrate the indicators into existing public health initiatives and health assessments.
- Develop and track public health indicators related to climate change.
- Mandate that relevant Public Health bureaus and divisions designate a climate change liaison.

4f. Pursue shared legislative goals

- Collaborate, communicate, and coordinate with community-based and non-profit organizations that serve underserved communities on specific climate-related legislative priorities.

Photo: Grid Alternatives

KEY THEMES FROM STAKEHOLDER FEEDBACK

Here are some key takeaways from stakeholder interviews, listening sessions, and written comments incorporated into the final report.

Enhancing collaboration to inform plans and policies

"Supporting strong coalitions advocating for climate-related legislative priorities at the federal, state, and local levels are critical."

"Contract with community organizing groups to run public engagement and education programs – not just on the topic of climate change and public health, but in terms of getting community residents involved in decision-making processes."

Prioritizing data sharing and collection to drive meaningful change

"Make sure data sharing is publicly accessible to reduce barriers. For example, making data available on publicly accessible websites, in multiple languages, and on different platforms (websites, apps, print materials, public service announcements, etc.). Both macro and micro data should be accessible and tailored for specific communities."

Institutionalizing approaches to build prepared and healthy communities across government

"Workforce development should be a priority. This would help build a sustainable pipeline of climate and health professionals. Explore paid opportunities for interns and fellows in partnership with community-based organizations, governmental entities, and academia."

"Effective and engaged public health programs can include technical assistance. While training, staffing, and funding are all important, having access to a technical expert available for live consultation on specific climate change and resilience matters may strengthen capacity."

Garnering community-driven input to inform strategies, plans, and funding

"Strategies must engage in direct organizing efforts to inspire, engage and support climate resilient communities. Additionally, such strategies must define specific plans of action for effectively creating information feedback and communication loop between communities and decision makers (government officials, public agencies, stakeholders, etc.) that leads to long-term planning, new policies, and additional funding for resilience implementation that aligns with community needs."

"Ensure community be involved at every step from development to implementation through robust outreach that can be conducted by local CBOs."

"Use equitable, inclusive, non-gendered language in messaging."

"Ensure that messaging is culturally relevant."

NEXT STEPS

Along with the ongoing COVID-19 pandemic, climate change is a public health emergency, and the Climate Change Program is committed to protecting all county residents from its health impacts, especially those most at risk for harm. This document is meant to advance conversations among key players around these challenges and solutions, while serving as a catalyst for inter-agency partnerships and cross-sector collaboration on advancing climate action and health equity. In the coming months, the County will begin to:

1 Use this report as the basis to support local government and community stakeholders in taking a holistic approach towards addressing health, equity, and climate change.

2 Strengthen program goals and strategies that place health and climate at the core.

3 Identify and support partners for implementation who can ensure that program design is rooted in equity and climate.

4 Develop performance metrics tied to equity and climate, along with a projected timeline for implementation.

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