



Hearing 2021-7-21
Joint Legislative Committee on
Emergency Management

REPORT

CLIMATE DISASTER RISKS & INEQUITY

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Rectifying Inequities in California's Climate Resilience Strategy: A People-First Approach

Climate Disaster Risks & Inequity Hearing

Held July 21, 2021

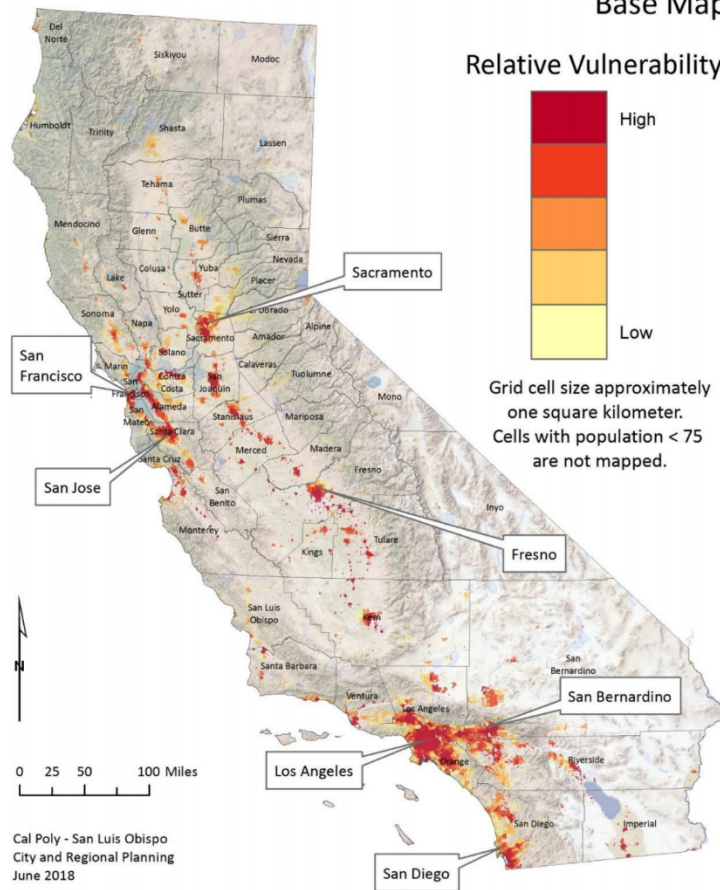
State Capitol

Senate Chamber

Sacramento, CA 95814

Map 4.J: Population/Social Vulnerability Base Map

Population/Social Vulnerability Base Map



The base map of social vulnerability and population density from the State Hazard Mitigation Plan (SHMP). This map is later overlaid with hazard risk maps to identify priority locations. California's last SHMP update in 2018 aligns with FEMA's new [National Risk Index for Natural Hazards](#).

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Introduction

In the Joint Legislative Committee on Emergency Management's first hearing on the inequities of the climate emergency, the Committee took a hard look at how California's most vulnerable populations are being disproportionately impacted during this crisis, and how to remedy these systemic risks. The very inquiry represents an acknowledgement that climate change has of necessity trifurcated the practice of emergency management. Historically we have worked to both prevent and manage emergencies. As the temperature rises and climate-related disasters increase in frequency and intensity, while we continue and accelerate the two tracks of prevention and management we must add a third track: *adapting* to the ongoing non-emergent but urgent reality of extreme heat, worsening air pollution and water scarcity--all of which hit our most vulnerable populations the hardest.

Climate author and journalist David Wallace-Wells' lead testimony corroborated the results of a recent State Auditor's report, which found California is not prepared for the scale of risk that it is facing¹.

When asked by committee chair Senator Stern if California was ready for the impending climatic conditions facing its citizens, Wells answered: "No."

He also uncategorically admitted that California is not properly prepared for the scale of risk that we're facing. He said, "we can't be imposing those sorts of impacts on the disadvantaged as we head forward into a world that will be much less forgiving."

The Gender Equity Policy Institute pronounced two 2021 legislative climate-related bond proposals to fail "the climate justice test." The Asian Pacific Environmental Network (APEN), testified to the need to build resilience through equitable, community driven infrastructure before disaster strikes. Although California and its counties have engaged in extensive planning -- Los Angeles County testified about its forthcoming comprehensive map of where vulnerable populations live and what they need -- it is increasingly clear the state has not allocated sufficient resources for local governments to carry out these plans or to prevent disasters.

Michael Wara, the Stanford Woods Institute for the Environment's Director of the Climate and Energy Policy Program testified as to how best to protect those living in rental housing from the effects of wildfire smoke and Alex Hall, Professor, Dept of Atmospheric and Oceanic Sciences;

¹ David Wallace-Wells, Editor at Large, *New York* magazine, Author, *The Uninhabitable Earth: Life After Warming*, testifying July 21, 2021 in this hearing.

Director, UCLA Center for Climate Science.

Wildfire smoke has extremely negative impacts on vulnerable people, including preterm births, lung inflammation, cardiovascular disease, stroke, allergies, autoimmune disorders, diabetes, Alzheimer's disease, lower childhood IQ, autism, lung cancer, bladder cancer, and childhood leukemia².

A United Nations report released shortly after the hearing brings home the scale of the climate disaster facing California and the globe. Authored by more than 230 leading scientists from countries around the world, the report called for "immediate, rapid and sustained reductions in greenhouse gas emissions" in order to limit global temperature rise to slow and eventually reverse the effects of climate change.

This assessment of the latest science is a severe warning regarding the well-being of human society and all life on Earth. It is testimony to the fact that efforts to reduce greenhouse gas emissions over the past decades have been wholly insufficient.

"Natural disasters cannot be removed from the broader social economic and political context in which they occur."³ Today, disasters occur in a context of our ever-warming and increasingly volatile climate, which vastly increases the risk and frequency of certain disasters. At the same time, even a quick glance at the map at the beginning of this report shows that the areas of California facing the greatest risk of disaster are also the areas that have the highest density of vulnerable populations.

Los Angeles County is not only the most populous county in the country and the state but the Federal Emergency Management Agency (FEMA) has calculated the risk for every county in America for 18 types of natural disasters, including earthquakes, hurricanes, tornadoes, floods, volcanoes and even tsunamis. And of the nation's more than 3,000 counties, Los Angeles County earned the highest ranking in the [National Risk Index](#).⁴

According to the United Nations 6th Assessment Report released two weeks after this hearing, recent changes in the climate are widespread, rapid and intensifying and impacts are affecting every region on Earth, including the oceans.⁵ Many weather and climate extremes such as heatwaves, heavy rainfall, droughts and tropical cyclones have become more frequent and severe. The report provides an atlas of regional observed and future impacts, which will allow policy makers and all other stakeholders to better inform climate policies at the regional and local levels.

The UN report identifies that the level of future emissions will determine the level of future temperature rise and the severity of future climate change and the associated impacts and risks. Not only have CO₂ concentrations increased in the Earth's atmosphere, but the rate of

² The Costs of Wildfire in California: An Independent Review of Scientific and Technical Information --A Commissioned Report prepared by the California Council on Science and Technology; 10-2020 <https://ccst.us/wp-content/uploads/The-Costs-of-Wildfire-in-California-FULL-REPORT.pdf>

³ *At Risk: natural hazards, people's vulnerability and disasters*, Ben Wisner, Piers Blaikie, Terry Cannon and Ian Davis. Second edition, 2003

⁴ <https://www.latimes.com/world-nation/story/2021-01-04/watch-out-la-feds-calculate-riskiest-safest-places-in-us>

⁵ [Link to all information on 8/9/21 United Nations 6th Assessment Report](#)

the increase has also sped up. The report shows that greenhouse gas emissions from human activities are responsible for approximately 1.1°C of warming since 1850-1900, and finds that averaged over the next 20 years, global temperature is expected to reach or exceed 1.5°C of warming.

Unless there are rapid, sustained and large-scale reductions of climate change-causing greenhouse gas emissions, including CO₂, methane and others, the goal of limiting global warming to 1.5C compared to pre-industrial levels, as enshrined in the [Paris Agreement](#), will be beyond reach.

This assessment of the latest science is a severe warning regarding the well-being of human society and all life on Earth. It is testimony to the fact that efforts to reduce greenhouse gas emissions over the past decades have been wholly insufficient.

In addition, the state continues on multiple passive trajectories towards disaster, including: continuing to build housing in the Wildland Urban Interface (WUI) where it is at high risk of destruction by wildfire; failure to secure the necessary supply of energy or to decentralize power grids; failure to thoroughly examine or fund opportunities for increased decarbonization and renewable energy.

In this hearing, the Committee heard from journalists, researchers, advocates and government officials about whether they felt California is doing enough to prepare for and protect our most vulnerable residents from upcoming climate-related disasters.

Even after the hearing, there remain more questions than answers. The committee looks forward to exploring them all:

- How much money does the state need to spend to truly be ready for what lies ahead?
- Is the state spending too much time *planning* for disaster and not enough time actually building and reinforcing the necessary community infrastructure?
- How are key parts of government in this area working -- or failing to work -- together?
- Are these efforts being coordinated to maximize the use of money, resources, and time?
- If not, who should be in charge of the coordination?
- Are counties, particularly Los Angeles County given its unique risk, getting the support they need?
- What about the extended Los Angeles County region, including Ventura, Orange and parts of Riverside and San Bernardino counties?
- What else is possible?

What is a Climate Disaster Risk?

In the popular imagination, there is such a thing as a “natural” disaster,” which would seem to be separate from disasters caused by human decisions. It turns out, this distinction is actually pretty difficult to make. As disaster expert and researcher Ben Wisner put it, “natural disasters cannot be removed from the broader social economic and political context in which they

occur.”⁶ In *At Risk*, Wisner and his colleagues walked through what are sometimes known as “natural” disasters (they call them “quick onset disasters”) such as earthquakes, floods and wildfires and “slow onset disasters” such as drought, epidemics and famine (which at the time of the writing of their book, had caused much more death and economic dislocation than wildfires or flooding).

Nonetheless, the point is clear: Even before human-caused climate change was as profoundly evident and measurable as it is today, most of the disaster-caused loss of human life was due to human decisions made about where to build, where to plant, and what level of respect and deference was given to the natural environment.

California is already experiencing climate-enhanced (‘slow’) disasters

California suffered multiple climate caused or exacerbated disasters simultaneously in 2020 including:

- The worldwide COVID-19 pandemic, where rising global temperatures furthered the spread of the coronavirus
- Record-breaking heat
- Drought
- Wildfires
- Wildfire smoke, which affected regions and residents not directly impacted by the wildfires
- Mudslides caused by a combination of wildfire erosion and a disproportionately high volume of rain

The popular weather forecasting service AccuWeather has predicted that (direct and indirect) costs for the 2020 wildfire season could total between \$130 and \$150 billion⁷

Climate-enhanced disasters that scientists predict will be in our (maybe not too distant) future include

- Species extinction
- More widespread disease
- Unliveable heat

⁶ *At Risk: natural hazards, people’s vulnerability and disasters*, Ben Wisner, Piers Blaikie, Terry Cannon and Ian Davis. Second edition, 2003

⁷<https://www.nfpa.org/News-and-Research/Publications-and-media/NFPA-Journal/2020/November-December-2020/Features/Wildfire>

- Ecosystem collapse
- Cities menaced by rising seas.⁸
- Coastal erosion leading to bluff collapse and train derailment
- Earthquake destroying dams which will lead to or worsen flooding
- Extreme cold events/ice storms⁹
- ARkstorm (AR=Atmospheric River, k=1000 year level)

ARkstorm and Megafloods are now a frequent possibility

In 1862 California's Central Valley was transformed into a lake. Due to climate change, this event that is supposed to only occur every 1,000 years is now likely to occur again within the next few decades. In "California, the Flood that Could Change Everything: California is spending billions to protect the millions at risk of a megaflood, but thanks to climate change, it's too little too late," Eric Zerkel says "the unsettling bottom line is that megafloods as large or larger than the 1861-62 flood are a normal occurrence every two centuries or so. It has now been 150 years since that calamity, so it appears that California may be due for another episode soon."¹⁰ Due to other changes in the human landscape, when it does come it is expected to flood the Los Angeles basin as well. In 1861, farmers and ranchers were praying for rain after two exceptionally dry decades. In December their prayers were answered with a vengeance, as a series of monstrous Pacific storms slammed—one after another—into the West coast of North America, from Mexico to Canada. The storms produced the most violent flooding residents had ever seen, before or since. Sixty-six inches of rain fell in Los Angeles that year. Large brown lakes formed on the normally dry plains between Los Angeles and the Pacific Ocean, even covering vast areas of the Mojave Desert. In and around Anaheim, flooding of the Santa Ana River created an inland sea four feet deep, stretching up to four miles from the river and lasting four weeks.¹¹

⁸ [Link to all information on 8/9/21 United Nations 6th Assessment Report](#)

⁹ <https://www.texastribune.org/2021/02/18/texas-winter-storm-power-outage-ercot/>

¹⁰ "California, the Flood that Could Change Everything" by Eric Zerkel

¹¹ 6/23/2021 [California Megaflood: Lessons from a Forgotten Catastrophe - Scientific American](#)



From left to right, flooding in Sacramento during the Great Flood of 1861-62, a breach on the Tyler Island levee during flooding in 1986 and floodwaters overtaking a trailer park in Manteca, California, in the 1997 floods. (California State Library, Dale Kolke/DWR, DWR)

What is Inequity and how does it intersect with Climate Disaster Risks?

Since climate disasters are human-created and exacerbated by human policies and actions, this is not just an environmental problem, but also a question of social justice. The most vulnerable residents of California -- the elderly, the poor, those suffering from asthma or other chronic health conditions, those whose reading or understanding of English may inhibit their ability to be reached by existing emergency warning or communication systems -- are not only most likely to be harmed by a climate disaster but also the least likely to have access to the resources to survive it. This injustice implores the state of California to direct planning and resources to its most vulnerable residents.

The map on the first page of this report powerfully illustrates the problem.¹² Notice that the very same geographic areas which combine social vulnerability and population density (as identified by the State Hazard Mitigation Plan (SHMP)) mirror the exact same areas of the state that are most at risk to hazards. For FEMA, **hazard** means an event or physical condition that has the potential to cause death, injury, property and infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss.

¹² Prepared by the California Office of Emergency Services (Cal OES) for its Prepare California program proposal. California's last SHMP update in 2018 aligns with FEMA's new [National Risk Index for Natural Hazards](#).

Cal OES has also provided a table that lists and categorizes those who are socially vulnerable:

Appendix Table N.1: Social Vulnerability Index Conceptual Model and Associated Variables

Sub-Index	Indicator	Variable
<i>Differential Access to Resources and Information</i>	Poverty/ Income	Annual housing costs to income ratio
	Education	Percent of the population 25 or older without a high school diploma or equivalent
	Housing Tenure	Percent renter occupied housing units
	Gender	Percent female population
	Food Access	Modified Retail Food Environment Index (mRFEI)
<i>Cultural or Linguistic Isolation</i>	Linguistic Isolation	Percent of population 5 or older who speak English less than very well
	Minority Status	Percent non-white or Hispanic population
<i>Access and Functional Needs</i>	Disability	Percent of population with a disability
	Long-term care facility residents	Beds in licensed long-term care facilities per person
	Age	Percent of population 65 or older, or younger than 5
	Vehicle Access	Percent of households with no available vehicles

“Appendix Table N.1: Social Vulnerability Index Conceptual Model and Associated Variables”¹³

“California Is Not Adequately Prepared to Protect its Most Vulnerable Residents From Natural Disasters”

Author David Wallace-Wells opened our hearing with the blunt assessment that “California is not prepared for the risk it is facing.” He is in good company. Nearly 2 years ago, in December 2019, the California State Auditor similarly concluded in its “California Is Not Adequately Prepared to Protect Its Most Vulnerable Residents From Natural Disasters” report¹⁴ that the state is far from being equipped to handle the multitude of problems it faces. Had the COVID-19 pandemic not hit shortly after this report was released, one might imagine a greater focus on this issue. Tragically, the pandemic itself highlighted the very problem it distracted lawmakers from addressing. The pandemic, a climate-exacerbated disaster, has fallen and continues to fall the hardest on our most vulnerable residents, the elderly, front-line workers and those who are culturally and socially isolated.

The Auditor reviewed the emergency planning for residents and their functional needs in Ventura, Sonoma and Butte, counties that had recent wildfires. Under state law, people with access and functional needs include older adults and people with disabilities, chronic conditions, and limited English proficiency.”

¹³ *ibid*

¹⁴ California State Auditor Report 2019-103 “California Is Not Adequately Prepared to Protect Its Most Vulnerable Residents From Natural Disasters” See Appendix X Fact Sheet on the Report. <https://www.auditor.ca.gov/reports/2019-103/index.html>

The report made several recommendations for Cal OES to increase its oversight in several specific areas. It further recommended counties also “fully prepare to protect all residents during a natural disaster by aligning their emergency plans with best practices for alerting, evacuating, and sheltering all residents including vulnerable populations.”

The report concluded that despite available guidance for emergency planning for people with access and functional needs from FEMA, Cal OES, and other disaster response entities, the three counties reviewed were not adequately prepared to protect vulnerable residents during natural disasters. The report faulted the counties for failing to assess their populations’ ability to receive, understand or respond to emergency notices, including failure to send critical warning messages in multiple languages and lack of ability to reach all cell phones. The report also found the counties don’t have complete or up-to-date plans for key emergency functions.

The report stated that Cal OES “has not done enough to fulfill its mission to protect lives and support communities’ abilities to withstand and recover from natural disasters” and provided a number of specific examples to support its findings:

The report recommended that the Legislature require Cal OES to:

- » Review counties’ emergency plans to ensure they align with best practices.
- » Involve organizations that represent people with access and functional needs to develop state emergency plans and guidance for local jurisdictions.
- » Annually distribute lessons learned from natural disasters.

The auditor further recommended that Cal OES issue sufficient guidance for local jurisdictions to fulfill “access and functional needs” and that counties fully prepare to protect all their residents during a natural disaster by aligning their emergency plans with best practices for alerting, evacuating, and sheltering all residents, including vulnerable populations.

Unfortunately, the audit report did not evaluate the Cal OES budget priorities or the budgets in the three counties to determine whether any of the entities have sufficient resources to implement these best practices.

Failing the Climate Justice Test

In June 2021, the nonprofit research organization Gender Equity Policy Institute issued a report entitled “Failing The Climate Justice Test.”¹⁵ This study, unlike the state Audit, focused on how California proposed spending money to improve the state’s climate resilience. It looked specifically at two bills to put multi-billion dollar climate resilience bond proposals (SB 45 and

¹⁵ “Failing the Climate Justice Test: An Analysis of California’s Projected Climate Resilience Funding and Its Effects On Californians by Region, Race, and Gender,” Gender Equity Policy Institute, June, 2021
<https://thegepi.org/failing-the-climate-justice-test/>

AB 1500) on the ballot. The report analyzed the proposed funding and how it would affect Californians by region, race and gender.

The report found the proposed investments “would be distributed to Californians in a radically unbalanced, unfair, and unequal way. The whitest and most male regions of California are projected to receive a windfall of investment far out of proportion to their share of the state population. At the same time, the Los Angeles region, home to half of all Black and Latino Californians and nearly half of all women in California, is projected to receive a stunningly small proportion of funding. In addition, 92% of the jobs potentially created by these bills’ investments will go to men.”

The report also found:

- The North Coast region would receive 13 times more per capita than the Los Angeles region and nearly 8 times more than the Sacramento Valley region.

That translates into a gaping gender and racial gap in funding. The North Coast region is 71% white and disproportionately male. The southern California counties in the Los Angeles region are 67% BIPOC (Black, Indigenous, People of Color) and disproportionately female.

- 45% of Californians live in the Los Angeles region, but only 21% of funds are estimated to be invested there.
- The Sacramento Valley, the most female region in the state, is the only other region projected to receive less than its fair share of spending.

Climate Adaptation vs. Climate Resilience

What is climate adaptation?

Climate change adaptation refers to actions that reduce the negative impact of climate change, while taking advantage of potential new opportunities. It involves adjusting policies and actions because of observed or expected changes in climate. Adaptation can be reactive, occurring in response to climate impacts, or anticipatory, occurring before impacts of climate change are observed. In most circumstances, anticipatory adaptations will result in lower long-term costs and be more effective than reactive adaptations.¹⁶

What is climate resilience?

Climate resilience, also known as “climate resiliency,” is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.¹⁷

¹⁶ [Adapting to Climate Change : An Introduction for Canadian Municipalities](#)

¹⁷ [Center for Climate and Energy Solutions -- climate-resilience-overview](#)

How do climate resilience and adaptation relate to inequity and vulnerability?

As the two reports referenced above demonstrate, there is not sufficient oversight and planning at the state and local levels to protect our most vulnerable residents adequately even from the most common climate disaster of wildfire routinely occurring today.

Existing law related to climate change, including climate adaptation and resilience:

- The Governor’s Office of Planning and Research (OPR) is the state’s comprehensive planning agency to provide long-range planning and research. OPR maintains a clearinghouse for climate adaptation information and administers the Integrated Climate Adaptation and Resiliency Program (ICARP), which coordinates regional and local efforts to adapt to climate change with state climate adaptation strategies.
- The Governor’s Office of Emergency Services (Cal OES) is designed to protect lives and property, build capabilities, and support communities for a resilient California.
- The Strategic Growth Council (SGC) is aimed at, among other purposes, encouraging the development of sustainable communities, administering multiple climate-related grant programs, and coordinating the State’s activities and funding programs. SGC also administers a climate change research grant program.
- The California Natural Resources Agency (CNRA) oversees various natural resources-related departments, boards, and conservancies. CNRA seeks to restore, protect and manage the state's natural, historical and cultural resources.
- The California Energy Resources and Conservation Commission, also known as the California Energy Commission (CEC), assesses trends in energy consumption, forecast future supplies and consumption of energy, research and develop alternative sources of energy, improvements in energy generation, transmission, and siting, fuel substitution, and other topics, as specified.
- Multiple climate goals, including:
 - Reducing statewide greenhouse emissions to 1990 levels by 2020.
 - Reducing statewide greenhouse emissions 40 percent below 1990 levels by December 31, 2030.
 - Reducing statewide emissions of methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030.

- Requiring renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045.
- Achieving carbon neutrality by 2045 and maintaining net negative emissions, thereafter (Executive Order B-55-18).
- Requiring the adoption and regular update of the following plans to address climate change and infrastructure needs, including:
 - Climate Change Scoping Plan to identify how the state will achieve the maximum technologically feasible and cost-effective greenhouse gas reductions. The California Air Resources Board (CARB) must update this plan every five years.
 - Safeguarding California Plan to address climate change vulnerabilities by region and sector and identify priority actions to reduce risks in those sectors. CNRA must update this climate adaptation strategy every three years.
 - Cap-and-Trade Auction Proceeds Three-Year Investment Plan to identify Greenhouse Gas Reduction Fund investment priorities. The Department of Finance (DOF) must prepare this plan for release with the Governor’s budget every three years.
 - Infrastructure Plan to identify state infrastructure needs and set priorities for funding. DOF must prepare this plan annually for release with the Governor’s budget.
- With funding from FEMA and the CEC, California developed the 2012 Adaptation Planning Guide (APG) to assist local and regional government agencies with planning for climate change adaptation.¹⁸

Definition of Vulnerable Communities

- The law¹⁹ directs OPR, through ICARP, to perform a climate assessment every 5 years in coordination with CNRA, CEC, and SGC, and in consultation with partner public agencies designated by OPR. After completing the assessment, OPR is required to make it accessible to DOF so it can assess liabilities in the state budget, and to make it available to regional and local governments, tribes, and vulnerable communities. The assessment defines climate vulnerability as:

The degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and

¹⁸ The [2020 APG](#) is a comprehensive 282 page document created with broad participation amongst many government California state agencies and departments along with federal support.

¹⁹ **Senate Bill No. 1320:** CHAPTER 136: An act to add Part 4.4 (commencing with Section 71340) to Division 34 of the Public Resources Code, relating to climate change.

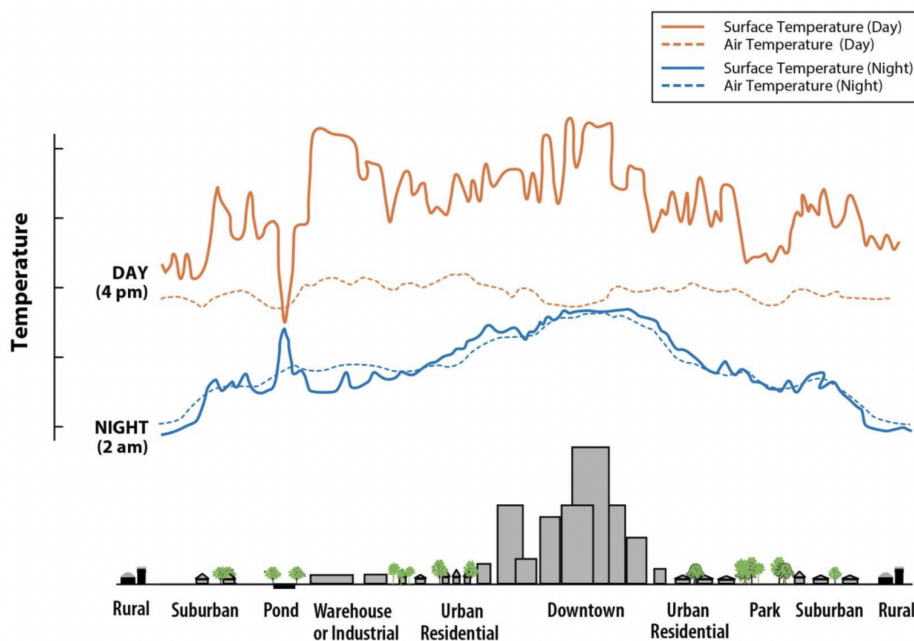
increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality.²⁰

Potential Solutions to Address Climate Risk Inequities

Reducing “Heat Island Effect”

Heat islands are zones of relative warmth created by urban air and surface temperatures that are higher than those of nearby rural areas. Air temperatures in a large city can be 2–22°F higher than its rural surroundings. The sketch below shows a hypothetical city’s heat island profile at two times during a 24-hour period, demonstrating how temperatures typically rise during both the day and night as you move from rural areas toward dense downtown areas.²¹

Typical Heat Island Temperature Differences Between Urban and Rural Areas

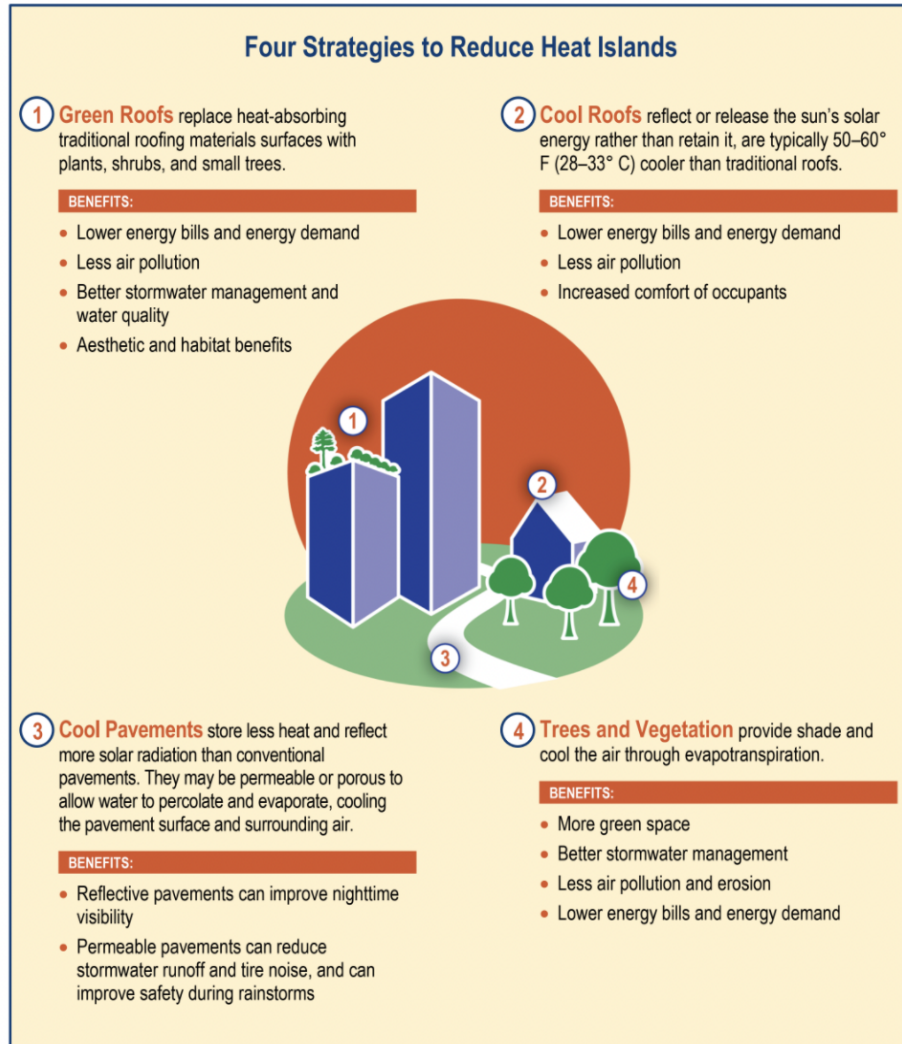


How Can Communities Cool Down?

Communities that want to cool down have options. They include installing reflective cool roofs; planting trees and vegetation, including “green” roofs; and using cool paving materials for roads, sidewalks, and parking lots.

²⁰ “Defining Vulnerable Communities in the Context of Climate Adaptation,” resource guide published by OPR in July 2018. It can be [downloaded here--http://opr.ca.gov/planning/icarp/vulnerable-communities.html](http://opr.ca.gov/planning/icarp/vulnerable-communities.html)

²¹ [EPA Heat Island Brochure](#) (also chart on next page is from this brochure)



Urban communities need cool streets, roofs and buildings to protect our most vulnerable residents

We must cool down our communities and reduce the heat island effect. To do so, the state should support a program to install reflective cool roofs; plant trees and vegetation, including “green” roofs; and use cool paving materials for roads, sidewalks, and parking lots.

The state should support grant programs to rehabilitate old or build new community buildings and public facilities. These centers will serve as community emergency response facilities and build long-term preparedness, resilience for local communities.

The state should invest in a wide range of resilience upgrades including improved insulation for extreme heat protection, clean energy installations for backup power during grid outages, or air filtration systems to combat wildfire smoke. These solutions can achieve a multitude of economic, health, and social benefits for the communities that need it the most.

Community resilience centers can also provide access to drinking water, food storage and distribution, shelter, workforce development, telecommunications and broadband services, economic assistance, and more.

Resilience Hubs

Communities experience climate impacts in different ways. A community's geography and biophysical setting will influence its exposure to risks and hazards: coastal areas face storm surges and sea level rise; other communities live in very high fire severity zones. In addition to exposure risks, the community's existing resources— its economic, social, and cultural capital — fundamentally affect its ability to respond to and withstand a disruption event.²² These community assets also vary widely based on a range of interacting factors, leading some to be more vulnerable to hazards than others despite having the same exposure.²³

While resilience planning and policy must happen at the federal, state, county, and city levels, it manifests at the community level. No one-size-fits-all model will work everywhere; each community has unique vulnerabilities and needs. Resilience investments should be targeted locally and deliver direct and meaningful benefits to communities. However, the communities who could benefit most from resilience do not have the resources to fund their own investments. To equitably allocate and prioritize resources, there has to be coordination at the city, county, and state levels. Benefits should be facilitated by local government policy to reach communities directly and meet community-identified needs.

Resilience Hubs have emerged as one effective way to deliver benefits that strengthen communities before, during, and after disaster. When planned intentionally, Resilience Hubs can form a network of community-driven resources that work with other community and public entities to increase resilience and coordinate emergency response.

Resilience Hubs are physical spaces that provide resources and capacity to promote social cohesion and everyday resilience (e.g., economic, health, environmental), as well as disaster preparedness, response, and recovery.

While the term Resilience Hub may be new, the basic concept is not. Community leaders and local governments have long provided programs and services through trusted community centers, schools, libraries, parks and recreation centers, churches, and mutual aid networks. Creating a Resilience Hub does not mean reinventing those spaces, but instead updating existing community resources to ensure resilience during and after extreme climate events.

²² From *Resilience Before Disaster: The Need to Build Equitable, Community Driven Social Infrastructure*, 9/2020 report by Asian Pacific Environmental Network (APEN), SEIU 2015, SEIU California and the Blue Green Alliance-- <https://states.ms2ch.org/ca/resilience-before-disaster/> citing Kais, S. M. and M. S. Islam. 2016. *Community Capitals as Community Resilience to Climate Change: Conceptual Connections*. *International Journal of Environmental Research and Public Health* 13(12):1211.

²³ *Ibid* citing Mohnot, S., J. Bishop, and A. Sanchez. 2019. *Making Equity Real in Climate Adaptation and Community Resilience Policies and Program*. The Greenlining Institute.

Home care workers as the frontline of in-home resilience

There are a growing number of often older adults who have functional impairments that prevent them from leaving their homes. These homebound populations are an especially vulnerable subset of people with access and functional needs. A wide range of impairments can keep people confined to their home including physical disability, health conditions, medical vulnerability, and cognitive decline. The number of homebound people is larger than the nursing home population, yet homebound populations, and the workers who provide them with care, are often overlooked in emergency planning.²⁴

Home care workers are personal care aides and home health aides. A majority of these workers are In-Home Supportive Services (IHSS) providers who provide services funded by Medi-Cal (a combination of county, state, and federal funds) and administered by local county governments. Due to the country's aging population, home care workers are projected to be one of the fastest growing occupations in the next 10 years.²⁵ Despite this growing need, there is a current shortage of home care workers in California.

Low wages, and the physically and emotionally demanding nature of the work, has led to high turnover in in-home care workers, a lower quality of care, and an over-reliance on public programs and institutional long-term care facilities.²⁶ A majority of home care workers are women of color and the devaluation of their work is a direct consequence of structural racism that has marginalized this workforce for decades. Lack of upward mobility and opportunities for career advancement keep these workers stuck in dead-end, low-wage jobs.

Home care workers have not yet been recognized as the frontline of in-home resilience. Not only do home care workers have unique skills to assist those with access and functional needs, together they also constitute a network between the populations they serve and public and community agencies. Through their work, home care workers already promote in-home resilience during normal conditions by improving quality of life for homebound populations, allowing those populations a degree of independence and the ability to remain in their communities. They also represent an untapped group of skilled workers who could play an increased role in the event of disaster.

To assist in the event of a shock or disruption, home care workers should be equipped with additional emergency response training and incorporated as essential components of disaster preparedness and recovery. This presents an opportunity to create skill-based career ladders within the field while empowering home care workers to take on valuable and highly needed responsibilities. By providing training opportunities to this workforce that is already closely tied to vulnerable populations, communities can increase their capacity by building off of existing networks and resources.

²⁴ *Ibid* citing Ornstein K. A., B. Leff, K. E. Covinsky et al. 2015. Epidemiology of the Homebound Population in the United States. *JAMA Internal Medicine* 175(7): 1180–1186.

²⁵ *Ibid* citing United States Bureau of Labor Statistics. 2019. Fastest Growing Occupations. *Occupational Outlook Handbook*.

²⁶ *Ibid* citing Thomason, S. and A. Bernhardt. 2017. *California's Homecare Crisis: Raising Wages Is Key to the Solution*. UC Berkeley Labor Center.

Strengthening the home care workforce in both number and capacity is vital to building community resilience. To do so, California must make investments to both grow this workforce and build the skills and capacity of workers. Policymakers should consider policy options to achieve those goals, including:

Protecting Renters from the Effects of Catastrophic Wildfires

Michael Wara, the Stanford Woods Institute for the Environment's Director of the Climate and Energy Policy Program testified as to how best to protect those living in rental housing from the effects of catastrophic wildfires.²⁷ Renters go through a number of traumatic incidents in the wake of a wildfire that homeowners may not.

Homeowners who have homeowners insurance receive the benefit of a guaranteed rental pay, typically resulting in eviction of many low and moderate income renters. This happened in both Sonoma and Chico after the devastating fires near those small cities. The wake of a catastrophic fire frequently exacerbates a housing crisis for low and moderate income residents. Residents that are unsheltered are truly and in the most brutal sense climate refugees. They also may have an increased risk to the health impact of wildfire smoke impact either by living in tents or campers or even indoors. Wara observed that it is typically the case that older housing stock, which is the housing stock that low and moderate income people tend to live in, is less well insulated from smoke and smoke impacts. What that means is that during smoke events, wealthier home dwellers can generally retreat indoors, purchase HEPA grade filters and can live in relative safety whereas lower income residents, typically in rental housing that has not as tight seals on doors and windows, are subject to indoor air quality that is as bad as the outdoor air quality. They really have no safe place to go.

A third impact that connects the wildfire impact to the extreme heat impact is for low income electricity customers of rate increases due to needed wildfire investment and we're seeing a really rapid acceleration in the rate of electricity rate increases in the state of California that is largely driven by the need to invest in grid hardening and greater wildfire safety. That, again, despite CARE/FERA rates which most low or moderate income ratepayers have access to, is leading to an acceleration in the cost of energy for these customers and that compromises their ability to run their air conditioning (if they have it) to keep their home comfortable which is creating a disproportionate impact that then once again is born by those least able to manage it or afford it.

Responses to climate change urgently need to focus on reducing overall societal risk. Professor Hall discussed the need to use more prescribed fire to get good fire back on the ground. We also need to focus on increasing the resilience of our most vulnerable. Dr. Wara asked the committee to consider the following:

²⁷ Testimony of Michael Wara, Stanford Woods Institute for the Environment's Director of the Climate and Energy Policy Program, before the Joint Legislative Emergency Management Committee July 21, 2021.

- As suggested by the Wildfire commission report from several years ago, some sort of an automatic catastrophic insurance payout for those who lack other coverage and lose their homes as a function of a catastrophic wildfire. Many renters lack renters' coverage. They don't have homeowners coverage if they don't own a home and they're subject to disproportionate impacts because of their overall financial vulnerability when disaster strikes.
- A broader application of what the Karuk Tribe is doing in Northern California to manage the impacts of wildfire smoke and a very active cultural burning and prescribed fire program. They have a lending library of HEPA filters that they loan out to tribal elders in advance of prescribed fire and whenever there is a fire nearby that may cause smoke impacts. We need to consider reducing exposure when we cannot prevent exposure for the vulnerable in our communities.
- School retrofits both to improve indoor air quality for students in lower air quality regions such as the southern San Joaquin Valley during pre fire conditions when air quality is already often in non attainment with the Clean Air Act, but also so that during smoke events kids have a safe place to spend time at least for 8 hours a day when they are in school. And of course they are generally in school during September and October when the smoke is most likely to be particularly intense.

At the largest scale we need to redouble our efforts to make sure that all 40 million Californians live in clean air that is healthy to breathe and have homes that are modern and safe so that they can be made safe from wildfire smoke, from extreme heat events and from whatever else climate change throws at us over the next couple of decades.

We must retrofit our homes so that they are fire resistant as we restrict home-building in Wildland Urban Interface (WUI)

California is in the midst of intersecting economic, housing, and climate crises. As the state works to increase the supply of housing and reduce its climate risks while balancing the budget, California's growth strategy must recognize the intersection of development and climate in the key area of fire risk.

Millions of Californians are living in serious fire danger. A McClatchy analysis conducted using CalFire's fire severity maps found that about 2.7 million Californians live in Very High Fire Hazard Severity Zones (VHFHSZs). The climate emergency puts those in fire-prone areas at increased risk as fires will continue to become more frequent and more severe. Governor Newsom's Strike Force Report noted the impact that climate change is having on fires stating, "California faces a dramatic increase in the number and severity of wildfires."

Fire resistance does not mean fire immunity— and, as researchers have been reiterating for years, "Where you build your house, not what it's made of, is the biggest factor in determining whether it will burn." The 2018 and 2019 wildfire seasons took a toll not only on older homes

but also on some of the newly constructed homes with up-to-date building standards and mitigation measures. In order to protect those homes, the state has spent nearly \$10 billion.

As of December, the 2020 wildfire season was even more severe, with CalFire estimating 4,197,628 acres burned in the year compared to a previous 5-year average of 878,800 acres per year. Additionally, an estimated 10,500 structures were damaged or destroyed causing the tragic loss of 31 lives. To be sensible, California's growth strategy cannot ignore the most important factor in determining fire risk, which is where houses are built.

California on a path of fire-safe growth by prohibiting further residential, commercial and industrial development in VHFHSZs.

Such a prohibition is not intended to operate in a vacuum. It will have the effect of encouraging transit oriented, affordable, green and infill housing, efforts that will not only reduce exorbitant housing costs – they will also help California achieve its climate goals. This bill will ensure new housing development projects will not inadvertently put more Californians in harm's way.

We have the best firefighters in the world, and must invest more in our first line of defense against climate change. This is not a war. This is now everyday life. To lessen the risk of these climate hazards, we must change our southern California strategy, by investing in community hardening and limiting new development in the riskiest fire zones.

In the chaparral, shrublands and oak woodlands that weave their way through the mountains and hillsides of the greater Los Angeles area, structures do not burn from direct heat or dry fuel like they did in Paradise, but instead from wind-driven embers blown through vents, under eaves, and into unsealed garages. With over two million people living in high fire zones, a recent Woods Institute study recommends we invest \$1 billion a year, from public funds, and private investment through tools like insurance incentives, to harden 100,000 homes annually.

In May of this year the California State Senate released its Fire Safe California budget and policy blueprint to do just that. The plan would finally begin to adopt a Southern California approach to wildfire prevention by putting thousands of Californians to work hardening homes, removing invasive grasses that speed wildfires spread, and restoring native landscapes like oak trees, which act as nature-based fuel breaks around our communities.

But spending smart won't be enough. We must build smarter too. With a housing crisis that demands that we say yes to new housing in our backyards, we also must learn where to say no. For many developers though, building a huge home near a good view is just too profitable to resist.

Today, thousands of luxury homes and buildings are being built in areas certain to burn. These developments are a hidden subsidy, from working people to the very wealthy. Risky new developments stretching into our wildlands privatize breathtaking views and open space, and when disaster strikes, the cleanup costs are spread to taxpayers. The National Bureau of Economic Research estimates the cost of protecting homes in the riskiest fire zones was over \$100 billion for California taxpayers in the last decade alone.

To counter this hidden subsidy and push development into areas of infill, transit and access to jobs and services where it belongs, we must reform our state and local land use policies. If we are serious about the climate crisis in Southern California, we have to change the way we build, and invest smarter. Our way of life depends on it.

What might be beyond the scope of this hearing but potentially of interest to the committee going forward?

- Worldwide we know that the areas of southeast Asia and the Middle East due to their already high average temperatures are likely to be rendered uninhabitable much earlier than the rest of the planet. That will likely trigger mass migration of people who live in those areas to other habitable climates. Given our relative proximity to southeast Asia, their climate disaster phenomenon alone is likely to impact California significantly.
- While this hearing (and report) is concentrated on the effects of such climate disasters on humans, we would not for a minute pretend that the effects on humans can or should be separated from the effects of climate disasters on the plants and animals of our state. They are inextricable. Like some of the most vulnerable human residents, plants and animals can't vote, lobby their legislators, speak English, drive a car or move to another state. They have vast networks of communities and communication and are in many ways even more adaptable and resilient than their human counterparts but they are, like vulnerable humans, at the mercy of those who make the decisions and own the means of production.
- An examination of potentially inequitable funding distribution on climate advocacy and research.

Conclusion: Resilience Before Disaster

Climate injustice hits women and children of color hardest

Since climate disasters are human-created and exacerbated by human policies and actions, this is not just an environmental problem, but also a question of social justice. The most vulnerable residents of California -- the elderly, the poor, those suffering from asthma or other chronic health conditions, those whose reading or understanding of English may inhibit their ability to be reached by existing emergency warning or communication systems -- are not only most likely to be harmed by a climate disaster but also the least likely to have access to the resources needed to survive it. This injustice implores the state of California to direct planning and resources to its most vulnerable residents.

Climate change forces a new approach to emergency management

Climate related disasters are no longer "emergent," as extreme heat waves and wildfires have become commonplace and will only increase in frequency. As such, while California has

emergency forces to respond to disasters as they occur, we need to introduce a people-centered care-oriented approach to home and community level resilience that recognizes the unique vulnerabilities of renters, who tend to lack access to adequate insurance, in-home cooling, insulation against wildfire smoke, and other climate disaster hazards.

Solutions exist

By investing in caregivers at the frontline and combining in-home protection with community resilience centers there are a number of hazard mitigation solutions available, from improved insulation for extreme heat protection, clean energy installations for backup power during grid outages, or air filtration systems to combat wildfire smoke. These solutions can achieve a multitude of economic, health, and social benefits for the communities that need it the most.

Community scale hazard mitigation and disaster preparation are more cost effective and just than relying on emergency response

In many ways, California leads the field in planning, coordination and grant-making for climate adaptation and resilience but there is more to be done. California Climate Change Assessment defined climate vulnerability and put in place a framework to assess where we are every 5 years.²⁸ But we can do more. The state should create and support a program to provide planning grants for projects in certified regional climate adaptation and resilience action plans with greater clarity.

Wildfires & megafloods

The planning and grantmaking in law and to come paves the way for a people first strategy for both wildfires and megafloods. We need to direct public dollars to hardening people's homes. We need to address the direct risk of wildfire and adverse public health impacts from smoke too. We need to stop building new housing in the Wildland Urban Interface (WUI) or in flood plains. We need to maximize federal dollars to shore up levees and dams.

Extreme heat: beyond cooling centers

We must make it sustainable for people to live safely through extreme heat events in their own home. The state should support a people-first cooling program to keep vulnerable populations safe in their homes and communities, including:

- Low income weatherization, installation of ultra efficient heat pump and cooling units using the CEC's TECHprogram, and back-up solar powered electric batteries for those at risk of public safety power shut offs.
- Training and support for caregivers, social workers, in-home support service workers and community emergency response volunteers to assess vulnerabilities, assist vulnerable residents with navigating incentives and emergency preparation, and help improve the connection between county and state emergency services and the people most vulnerable to

²⁸ Aka "Fifth Climate Assessment" codified in 2020 with SB 1320 (Stern)

climate disasters.

- Low cost retrofits to roofs, parking lots, sidewalks and pavement, shading and urban forestry, park expansion and other efforts that will reduce the urban heat island effect.
- Rehabilitation and construction of community resilience centers can provide access to drinking water, food storage & distribution, shelter, workforce development, computer connection and economic assistance.

We can't let the unthinkable become the wallpaper of our lives

Author David Wallace-Wells closed his testimony by apprising the committee of the stark reality that unless addressed, every year 10,000 Californians or more, the majority of whom are agricultural workers, will die of the effects of extreme heat. When asked whether he was worried that we would stop farming, he said “I worry less that farming will go away than that we continue to farm and become okay with workers dying...That’s true of so many risks. There’s a risk of normalizing human dying. That the unthinkable simply becomes the wallpaper of our lives.”

This committee has heard and reviewed the facts. When it comes to the disparate effects of climate change, the old approach to disasters is insufficient. While we must continue to contain climate disasters as they emerge, we must work to prevent them and, even more urgently and sadly, to protect *all* our residents from the effects of extreme heat, wildfire smoke, flooding and sea level rise. We cannot, to borrow Mr. Wallace-Wells’ phrase, let the unthinkable become the wallpaper of our lives.