



Defining Vulnerable Communities in the Context of Climate Adaptation

2025 UPDATE

Table of Contents

Table of Contents	2
Executive Summary	4
1. Defining Climate Vulnerable Communities	7
ICARP Vision	9
ICARP Principles	9
How to use the definition and this guide	11
2. Factors that Increase Climate Vulnerability	13
Disability	13
Gender	15
3. Mapping Climate Vulnerable Communities	18
Vulnerable Communities Platform (VCP)	20
VCP Climate Vulnerability Map.....	21
VCP Use Cases	22
Local Governments (Cities, Counties, Tribes)	22
Community-Based Organizations.....	24
State and Regional Agencies	24
Integrating Other Information and Data.....	24
4. Gaps and Challenges in Vulnerability Mapping	26
5. Vulnerability Assessments in Practice.....	30
Example: City of Los Angeles 2025 Climate Vulnerability Assessment	30
Lessons Learned:.....	31
Example: City of Berkeley General Plan	31
Lessons Learned:.....	32
Example: Shade Master Plan for Eastern Coachella Valley	33
Lessons Learned	34
6. Equity in Action.....	35
Procedural Equity.....	35

Distributional Equity	39
Structural Equity	41
Helpful resources and tools	44
References	46

Executive Summary

The impacts of climate change are not felt equally. With every extreme climate event - wildfire, flood, heat wave and drought - we are reminded that communities confronting institutionalized and structural racism and chronic underinvestment face not only greater immediate danger but also steeper barriers to long-term physical and economic recovery.

In 2018, the Integrated Climate Adaptation and Resiliency Program (ICARP) Technical Advisory Council (TAC) adopted a definition of climate vulnerable communities and released an accompanying report that outlined factors that contribute to community vulnerability in a changing climate (LCI, 2018b). In 2025, the TAC updated this definition of climate vulnerable communities to include disability and gender, as well as to emphasize intersectionality, the understanding that communities and individuals often face multiple forms of inequity that intersect:

Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and 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, gender, sexual orientation, national origin, income inequality, and disability. People facing multiple forms of marginalization and inequality will experience climate change impacts more intensely and face more barriers to recovery.

The definition is intended to encourage adaptation approaches that promote equity. A primary charge of ICARP is to prioritize equitable adaptation solutions to the climate risks faced across the state – advancing a climate-resilient California for all (Wieckowski, 2015) and aligning with one of the State’s six adaptation priorities to “strengthen protections for climate vulnerable communities” (California Climate Adaptation Strategy, 2024).

This updated report responds to the TAC amendments to the definition of climate vulnerable communities by presenting new information on how climate impacts exacerbate, and are exacerbated by, social inequities. It describes how populations added to the TAC definition are disproportionately affected by

climate change. Examining how disability and gender increase barriers to cope with, adapt to, or recover from climate impacts highlights the multiple ways that social and economic factors interact to result in climate vulnerability.

The Vulnerable Communities Platform (VCP), a new tool developed by the Governor's Office of Land Use and Climate Innovation (LCI), maps social and economic factors with climate hazards to identify vulnerable communities. Motivated by the TAC definition of climate vulnerable communities and the 2018 report, the VCP answers three main questions:

1. Where will different climate hazards be most severe?
2. Which communities are most vulnerable to those hazards?
3. And, what makes them vulnerable?

The VCP is designed for state agency partners, community organizations, and local governments to easily access high-level overviews of climate impacts and differences in vulnerability in their communities.

The VCP is a valuable tool to identify climate vulnerable communities, but like other tools that map social vulnerability, it has limitations. For example, not all relevant social indicators are easily represented spatially.

These limitations highlight the importance of combining quantitative and qualitative data in assessing vulnerability. Outreach and engagement ensure that community members have opportunities to identify key priorities and provide valuable, on-the-ground understanding of climate vulnerabilities. Based on decades of working with vulnerable communities, climate justice advocates advise that the key to building resilience is to involve the local community as early in the process as possible. Communities across California are leading the way on combining community engagement with mapping and analysis of climate vulnerability, providing lessons learned that can inform other vulnerability assessments.

Identifying vulnerable communities is only the first step in equitable adaptation. The 2020 Adaptation Planning Guide describes equity as multidimensional and having three objectives: procedural, distributional, and structural (CalOES, 2020). These dimensions of equity are widely used. Procedural equity refers to creating processes that are transparent, fair, and inclusive. Distributional equity speaks to the distribution of resources, benefits, and burdens with resources being prioritized in communities that are disproportionately impacted by climate change. Structural equity means addressing the underlying structural

and institutional systems that produce inequities and disproportionate climate impacts. Across California, there are examples of communities considering these objectives in all phases of adaptation. These examples can help replicate and deepen efforts to embed equity in climate adaptation.



1. Defining Climate Vulnerable Communities

Across California, climate change is already making wildfires, extreme heat, flooding, drought, and other hazards more frequent and intense. Climate impacts exacerbate, and are exacerbated by, social inequities. Climate adaptation efforts that center equity bolster the ability for communities to plan for and respond to climate impacts. However, truly addressing the unequal impacts of climate change also requires broader efforts to reduce social inequities. Vulnerability assessments should identify communities and populations that are disproportionately impacted by climate change. Adaptation plans and implementation actions should be tailored to address the needs of the most vulnerable and address underlying causes of vulnerability. And, throughout the adaptation process, community engagement should empower those most affected to shape decisions that impact their lives.

The Integrated Climate Adaptation and Resiliency Program (ICARP), housed at the California Governor's Office of Land Use and Climate Innovation (formerly the Office of Planning and Research), promotes a cohesive and holistic response to the impacts of climate change by coordinating regional and local climate adaptation strategies. Through its enabling legislation, Senate Bill 246 (Wieckowski, 2016), ICARP is focused on advancing climate equity and supporting integrated climate strategies, or those strategies which both

proactively respond to the impacts of climate change and reduce greenhouse gas emissions.

The ICARP Technical Advisory Council (TAC), which helps guide the work of ICARP, includes representatives from state, regional and local government, as well as community-based organizations, academia, and private sector from across California. It coordinates and aligns the state's resiliency efforts to better serve local implementation needs.

Equity, including efforts to improve the understanding of the unequal impacts of climate change, is foundational to ICARP and its evolution. In 2018, the ICARP TAC adopted a definition of climate vulnerable communities and released an accompanying report outlining factors that contribute to community vulnerability in a changing climate. The TAC definition has informed climate adaptation efforts across state agencies; for example, it is referenced in the Adaptation Planning Guide that provides a step-by-step process communities can use to plan for climate change. In 2025, the TAC updated this definition of climate vulnerable communities to include disability and gender, as well as to emphasize intersectionality, the understanding that communities and individuals often face multiple forms of inequity that interact and stack:

*Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and 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, **gender**, sexual orientation, national origin, income inequality, and **disability**. **People facing multiple forms of marginalization and inequality will experience climate change impacts more intensely and face more barriers to recovery.***

Note: new amendments to the 2018 definition are bold.

ICARP Vision

All Californians thrive in the face of a changing climate. Leading with innovation, California meets the challenge of climate change by taking bold actions to protect our economy, our quality of life, and all people. The state's most vulnerable communities are prioritized in these actions. Working across all levels of government, the state is prepared for both gradual changes and extreme events. Climate change adaptation and mitigation is standard practice in government and business throughout the state. California meets these goals with urgency, while achieving the following long-term outcomes:

- All people and communities respond to changing average conditions, shocks, and stresses in a manner that minimizes risks to public health, safety, and economic disruption and maximizes equity and protection of the most vulnerable.
- Natural systems adjust and maintain functioning ecosystems in the face of change.
- Infrastructure and built systems withstand changing conditions and shocks, including changes in climate, while continuing to provide essential services.

ICARP Principles

- Prioritize integrated climate actions, those that both reduce greenhouse gas emissions and build resilience to climate impacts, as well as actions that provide multiple benefits.
- Prioritize actions that promote equity, foster community resilience, and protect the most vulnerable. Explicitly include communities that are disproportionately vulnerable to climate impacts.
- Prioritize natural and green infrastructure solutions to enhance and protect natural resources, as well as urban environments. Preserve and restore ecological systems (or engineered systems that use ecological processes) that enhance natural system functions, services, and quality and that reduce risk, including but not limited to actions that improve water and food security, habitat for fish and wildlife, coastal resources, human health, recreation, and jobs.
- Avoid maladaptation by making decisions that do not worsen the situation or transfer the challenge from one area, sector, or social group to another.

Identify and take all opportunities to prepare for climate change in all planning and investment decisions.

- Base all planning, policy, and investment decisions on the best available science, including local and traditional knowledge, including consideration of future climate conditions out to 2050 and 2100, and beyond.
- Employ adaptive and flexible governance approaches by utilizing collaborative partnership across scales and between sectors to accelerate effective problem solving. Promote mitigation and adaptation actions at the regional and landscape scales.

How to use the definition and this guide

The Council’s definition of vulnerable communities identifies underlying social, economic, physical, and political factors that increase a community’s risk of negative impacts from climate change. The definition is intended to encourage adaptation approaches that promote equity, and it can be understood as a call to action regarding the importance of a holistic and wide-ranging view on how different communities experience climate vulnerability. The 2018 version of this report reviewed available tools to identify and map climate vulnerable communities that could be used in vulnerability assessments and pointed to resources to embed equity in plans and implementation actions.

Since the 2018 report was published, more information is available on how climate impacts exacerbate, and are exacerbated by, social inequities. New tools map climate vulnerability, including both climate hazards and social factors that increase vulnerability. This report references the Vulnerable Communities Platform (VCP), a tool developed by LCI that operationalizes many of the principles and priorities called out in the initial 2018 report, but it also reflects this ongoing evolution in how we understand and characterize community scale climate vulnerability. Likewise, there is a growing body of knowledge and practice on how to address vulnerability in climate adaptation policy, plans, programs, and projects. These advances highlight that our understanding of climate vulnerable communities has and will continue to evolve. The ICARP definition should be understood in this context – it can and should be tailored to address the needs of different types of projects, scales, and communities.

A primary charge of ICARP and one of the state’s six adaptation priorities is to prioritize equitable adaptation solutions to the climate risks faced across the state – advancing a climate-resilient California for all (Wieckowski, 2015; California Climate Adaptation Strategy, 2024). As defined in California’s 2020 [**Adaptation Planning Guide**](#), *“Equitable climate adaptation planning involves identifying persons who may be most vulnerable to climate change and ensuring that planning processes, distribution of resources, and efforts to address systemic wrongs are all conducted in an equitable manner”* (CalOES, 2020).

A critical component of equitable adaptation is examining the impacts of climate risks on vulnerable communities. **Section 2** expands on how the new

factors in the updated definition – gender and disability – relate to climate vulnerability.

Section 3 highlights the VCP and how this tool is designed to respond to gaps and priorities identified by the ICARP TAC and other collaborators. This section also provides recommended use cases of the VCP for identifying climate exposure and social vulnerability.

Tools like the VCP are a starting point to better understand climate vulnerability, but these tools have gaps and limitations. **Section 4** discusses some of these limitations.

Section 5 provides examples of vulnerability assessments in practice, which point to the importance of combining quantitative analysis with qualitative data and community perspectives. Lived experience can illustrate how factors result in barriers to preparing, responding, and recovering to climate impacts. This engagement is critical for adaptation solutions to be responsive to vulnerable populations’ needs and priorities.

Identifying vulnerable communities is only the first step in equitable adaptation. The 2020 Adaptation Planning Guide describes equity as multidimensional and having three objectives: procedural, distributional, and structural. It is helpful to consider these objectives in all phases of adaptation. **Section 6** highlights examples from across California where communities advanced these objectives in climate adaptation through meaningful community engagement, setting goals and policies to fairly distribute resources, and more. This final section is meant to inspire next steps and equitable adaptation action.

2. Factors that Increase Climate Vulnerability

This section describes how populations added to the TAC definition in 2025 are disproportionately affected by climate change and face barriers to cope with, adapt to, or recover from climate impacts. It is not an exhaustive list, but it highlights the multiple ways that social, political, physical, and economic factors interact to result in climate vulnerability. Other resources, including the [Executive Order B-30-15 Resiliency Guidebook: Vulnerable Populations](#) and California's Climate Change Assessment, provide additional context about vulnerable populations (LCI, 2018c). The goal is to help users identify factors that may be relevant in their own vulnerability assessments and to help prioritize investments and resources to aid resilience for people more likely to suffer from climate change.

Disability

People with disabilities are disproportionately affected by climate change impacts. Globally, the disabled population faces a mortality rate two to four times higher than the non-disabled population in disasters (Secretariat for the Convention on the Rights of Persons with Disabilities, 2015). Among the 27 confirmed dead from the 2025 Los Angeles wildfires, several victims had disabilities or mobility issues. A father who was an amputee and wheelchair user and his son who had cerebral palsy died unable to evacuate their home (Popkin & Gonzalez, 2025).

Heat waves, projected to increase in frequency, intensity, and duration in California, triple the risk of death for people with psychosocial disabilities (NIHHIS, 2025; California Climate Adaptation Strategy, 2024). Heat especially endangers those who have mental health issues and are also unsheltered (see Box 3. Unhoused individuals). Extreme heat exacerbates pre-existing conditions, including cerebral, respiratory, and cardiovascular diseases. Heat affects people who take medications that influence the body's ability to regulate temperature, such as antidepressants and mood stabilizers (NIHHIS, 2025).

Evacuation from fire, floods, and other hazards also poses specific challenges for people with disabilities. During evacuation, leaving behind disability-related materials, such as communication boards and sensory-support equipment, adds to an already stressful experience. A study on children with disabilities

exposed to the 2017 Northern California wildfires found that parents had difficulty meeting the disability needs of their children during sheltering, with limited or inconsistent access to resources. Although school- and community-based initiatives were available, resources and treatment specific for children with disabilities were not provided (Ducy & Stough, 2021).

People with disabilities may rely on supports that are disrupted during and after natural disasters, such as personal assistance services, meal delivery, or other in-home supports (NIHHIS). In particular, power outages – an impact of heatwaves and a strategy to prevent wildfires – can be life-threatening for people with disabilities who depend on electronic equipment (Junod et al., 2024; NIHHIS). During an outage, people with disabilities can lose access to refrigerated medications, oxygen or mobility equipment, communication devices, and dialysis (California State Auditor, 2022; NIHHIS).

Disabled populations may also face challenges in accessing relevant information about climate events. The Southern California Wildfires After Action Report found that most disaster response systems are designed for people who can walk, run, see, drive, read, hear, speak and quickly understand and act on alerts. Many people with disabilities cannot easily use standard response and recovery services, information, or equipment (Kailes, 2008; NIHHIS).

Disability is often missing from California cities' climate action and adaptation plans. The climate action and adaptation plans that do include people with disabilities as part of vulnerable community members do not go into detail explaining their vulnerability to climate change. Santa Monica is one of the only cities that collaborated with a dedicated disabilities advisory commission to create its climate action plan (Clendening, 2021; City of Santa Monica, 2019).

Disability also intersects with other factors that increase vulnerability to climate impacts. In 2021, 22% of Californians with disabilities were living in poverty, twice the state poverty rate (Zacarias, 2025; Danielson & Malagon, 2022). Disproportionate poverty and lower educational attainment are some of the social risk factors that people with disabilities experience that contribute to poorer health outcomes during extreme climate events (NIHHIS).

Gender

Climate change affects women, men, and gender diverse people differently (UNFCCC, 2025). In the context of the TAC vulnerable communities definition, gender includes sex, gender, gender identity, and gender expression¹.

Women are disproportionately impacted by climate change. Women's greater vulnerability to climate change stems primarily from gendered economic inequality and women's disproportionate responsibility for caregiving (Vega Varela et al., 2024). A report on gendered impacts of climate change in California found that, on average, women have lower incomes, are employed in lower-paying occupations, and possess less wealth than men, leaving them with more limited resources to respond and adapt to climate change. Women are more likely than men to be rent and energy burdened; they can struggle to cool their homes adequately during heat waves. Possessing fewer resources to recover from climate disasters and emergencies, women are at a higher risk for food insecurity, displacement, and poverty after extreme events (Vega Varela et al., 2024).

Climate disruptions and disasters likewise exacerbate women's unequal caregiving responsibilities. During the Los Angeles wildfires in January 2025, over 1,000 schools closed, affecting over 600,000 students and forcing parents to seek alternative options for childcare (Seshadri, 2025). Mothers do nearly twice as much childcare as fathers, on average, and thus the extra responsibility of childcare during crises falls mainly on women (Milkie et al., 2025; Glynn, Vega Varela, & Cohen, 2025). This additional work of caring for children, older parents, or sick relatives can disrupt women's paid work, which can exacerbate their economic disadvantage (Vega Varela et al., 2024).

Numerous studies have demonstrated adverse outcomes from climate hazards on pregnancy, childbirth, and neonatal health (Cil & Cameron, 2017; Sbiroli et al., 2022). Wildfires and floods are associated with low birthweight and increased preterm births (Holstius et al., 2012; Mallett & Etzel, 2018). A study of primarily low-income and Hispanic mothers in Los Angeles County found that exposure to wildfire days and daily maximum heat index resulted in a greater risk for babies being small for their gestational age (Khalili et al., 2025). Heat

¹ The Vulnerable Communities Definition uses the term "gender" to explicitly include gender minorities – transgender, intersex, nonbinary, agender, two-spirit, and other gender diverse people. When working with communities and individuals under the gender umbrella, we encourage additional research and engagement to determine the best terminology for those affected.

waves have been linked to poor perinatal and postnatal outcomes, including preeclampsia, miscarriage, preterm birth, and low birth weight (Beltran, Wu, & Laurent, 2014). One study found that the risk of preterm birth was 13% higher for those who experienced an extreme heat event in the last week of gestation (Ilango et al., 2020).

As gender diverse people are increasingly being targeted by the federal government and state governments across the U.S. (Trans Legislation Tracker, 2025), it is as critical as ever to prioritize their safety and wellbeing, including in the area of climate adaptation. While there is limited research on the climate impacts to these populations, existing studies point to specific vulnerabilities. Transgender people experience higher rates of displacement from natural disasters compared to cisgender people. In a January 2023 survey of Californians, 3.3% of transgender people were displaced by natural disasters compared to 1.3% of cisgender people (U.S. Census Bureau, 2023). Gender diverse populations have been denied disaster-related shelter and aid in the U.S., and some reported being verbally attacked when they did access shelters (Simmonds et al., 2021). Disasters can also lead to interrupted medical and social transitions for transgender individuals, including interrupted access to hormone replacement and to gender-affirming clothing (Simmonds et al., 2021).

Gender intersects with other systemic inequities and factors that increase vulnerability. Over 7 out of 10 Black, Latina, and Native American women in California live in a low-income or heavily polluted community, in comparison to only 4 out of 10 white women (Vega Varela et al., 2024). The Racial Equity Commission Framework encourages government agencies to look at how race overlaps with other identities (like disability, gender, and income) to create unique burdens (REC, 2025). Women also live longer than men, and consequently a larger share of California adults over age 65 are women. Older adults with existing health conditions, limited mobility, and greater social isolation are at higher risk of negative health outcomes from climate events (LCI, 2018c).

LGBTQ+ people are more likely to have characteristics linked to higher risk from climate change impacts, including higher rates of poverty, homelessness, and mental health conditions. LGBTQ+ young adults aged 18–25 are more than twice as likely to be unhoused compared to non-LGBTQ+ young adults, putting them at an even greater risk to climate disasters, storms, and extreme heat (see

Box 3. Unhoused individuals; LCI, 2018c; Morton et al., 2018). In addition, research suggests that a high proportion of LGBTQ+ homeless youth are people of color. People experiencing multiple forms of marginalization tend to have a higher risk of exposure to and less capacity to adapt to climate impacts (Vega Varela et al., 2024).

3. Mapping Climate Vulnerable Communities

Inequities, including but not limited to those stemming from institutionalized and structural racism, environmental pollution, underinvestment, and exclusion from services and opportunities, increase communities' vulnerability to climate impacts. Demographic data and social indicators – such as income, disability, and limited English - can help identify these communities and prioritize adaptation resources and projects to support those who need them most.

The 2018 version of this report highlighted indicators and available tools to assess vulnerability, but it also pointed to existing gaps in available tools. Building on this work, other entities called for development of new tools that would allow California adaptation practitioners to more easily map indicators that influence vulnerability with data on climate hazards. Members of Governor Newsom's Task Force on Business and Jobs Recovery, led by the Asian Pacific Environmental Network (APEN), called for the development of a mapping platform to identify climate-vulnerable communities in 2020 (Figure 2). The Task Force specifically noted that a mapping platform could combine climate projections, socioeconomic indicators, and adaptive capacity factors to inform decision-making for adaptation (The Greenlining Institute, 2020). APEN had previously identified the need for the State of California to have a statewide framework that could connect social vulnerability and climate impacts in their 2019 report, Mapping Resilience (Raval, 2019).

Other specific calls to action for a mapping platform of climate vulnerable communities included the Climate Justice Working Group of the Fourth California Climate Change Assessment, which highlighted the importance of being able to map communities at risk to climate impacts *both now and in the future*. Critically, they noted that existing tools were not accessible to most users and that new tools in this space must address these barriers and focus on ease of use (California's Fourth Climate Change Assessment, 2018c). The 2021 Climate Budget provided funds for the development of a state web platform to bring together information and resources to support a better understanding of climate vulnerability in California, and the Climate Services Program at LCI began development of the Vulnerable Communities Platform (VCP, 2025b).

The Solution

“OPR (now LCI) must lead a process to create a new integrated climate vulnerability mapping platform that consolidates and updates existing data to identify California’s communities who are most vulnerable to climate change. This centralized tool will give stakeholders, legislators and the State an easily accessible foundation to consider, analyze, and combat the ongoing climate crisis.”

-The Greenlining Institute

Figure 1. Recommendation for the Office of Planning and Research (OPR) to develop an integrated mapping platform to identify vulnerable populations in the context of climate adaptation and resilience. OPR was renamed LCI in 2024 (The Greenlining Institute, 2020).

Vulnerable Communities Platform (VCP)

The **Vulnerable Communities Platform** was released in October 2025. The platform is designed so that state agency partners, community organizations, and local governments can identify communities most vulnerable to the impacts of climate change. Critically, by translating complex climate data available on the Cal-Adapt Analytics Engine and integrating it with social vulnerability data from the U.S. Census and other sources, the map provides an easy-to-access onramp to using climate data (VCP, 2025a). The goal of the VCP is to answer three main questions:

1. Where will different climate hazards be most severe?
2. Which communities are most vulnerable to those hazards?
3. What makes them vulnerable?

The VCP draws from an established framework that looks at the intersection of climate hazards, exposure to these hazards, and the vulnerabilities that amplify impacts (IPCC, 2022). A **hazard** is any potentially damaging physical event or trend, such as a flood, drought, or heatwave. **Exposure** refers to the presence of people, infrastructure, ecosystems, or other assets in places where they could be affected by these hazards. **Vulnerability** describes how likely those exposed elements are to suffer harm, depending on how sensitive they are to impacts and how much capacity they have to cope or adapt (IPCC, 2022).

The VCP's framework draws directly from the ICARP Technical Advisory Committee definition of climate vulnerable communities as those that **experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts**. The VCP operationalizes the TAC definition by utilizing the best available climate hazard and social sensitivity data to identify vulnerable communities on a map.

VCP Climate Vulnerability Map

The VCP's Climate Vulnerability Map looks at the intersection of exposure to a climate hazard and social vulnerability to that hazard. It provides a bivariate index for vulnerability to extreme heat, flooding, sea level rise, and drought in addition to CAL FIRE's Fire Hazard Severity Zones (FHSZ) for wildfire.

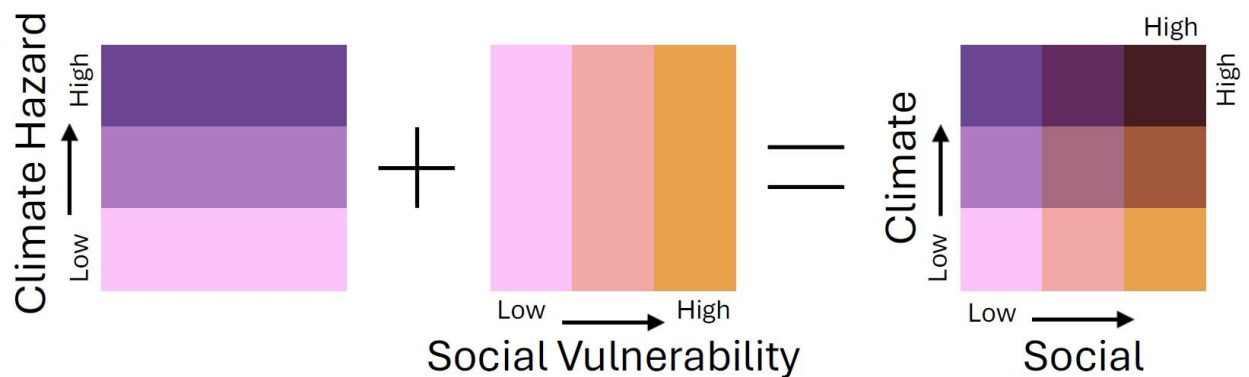


Figure 2. The purple gradient in Figure 3 represents climate data while the orange gradient in the second box represents related social data. The dark maroon color in the top right box of the combined gradient represents the highest combined vulnerability

The Climate Vulnerability Map shows areas with relatively low, medium, and high vulnerability to each hazard. For extreme heat, flooding, sea level rise, and drought, data is provided for now and 2050. Wildfire is represented using CAL FIRE's FHSZ, California's primary approach to measuring wildfire severity on lands in state or local responsibility. To remain aligned with the CAL FIRE FHSZ, to avoid confusion for adaptation planning, and to leverage the analysis by CAL FIRE's Fire and Resource Assessment Program, we currently use the FHSZ classification as our only designation of wildfire vulnerability.

Different social indicators are used to calculate social vulnerability to each hazard, depending on what indicators are most relevant to determine vulnerability. For example, the percentage of outdoor workers is included as a social vulnerability factor for extreme heat.

The map uses FEMA LandScan Population estimates as the basis for visualizations, a method to identify the location of communities and population density (VCP, 2025b). This directs attention to vulnerability where people live, whether in denser urban and suburban communities, or in larger and more

remote and rural areas. Additional information about how the VCP combines and represents data is available in the [VCP methodology report](#) (VCP, 2025b).

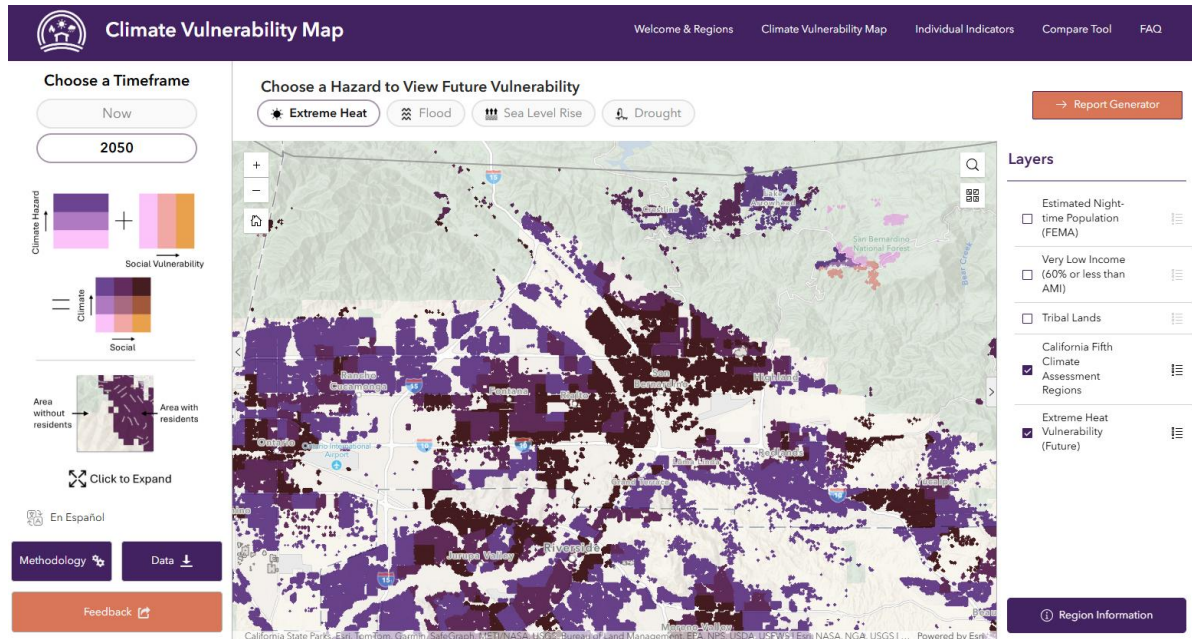


Figure 3. The VCP's Climate Vulnerability Map with Extreme Heat selected for 2050, zoomed in on San Bernadino (VCP, 2025a).

VCP Use Cases

The Vulnerable Communities Platform can be a valuable tool for a wide range of users. The main use cases are supporting state and regional agencies; city, county, or Tribal governments; and community-based organizations.

Local Governments (Cities, Counties, Tribes)

The VCP can support local jurisdictions in fulfilling requirements for adaptation planning. This can include;

- **Climate Vulnerability Assessment:** Senate Bill 379 (Jackson, 2015) requires jurisdictions to conduct a vulnerability assessment and identify climate adaptation strategies. The VCP can help jurisdictions accurately identify their major climate vulnerabilities, understand the factors influencing their vulnerability, and get started with resources to develop adaptation strategies.
 - LCI has published a [SB 379 User Guide](#) for local planners with high level instructions for how the VCP can be used to assist with

creating a climate vulnerability assessment (Climate Services Program, 2025).

- LCI is currently developing a web-based self-led training program that will be made available on the VCP for people to learn step-by-step how the VCP and other resources can be used to create a Climate Vulnerability Assessment. This will be made available in late summer 2026.
- **Relationship to planning requirements:** The TAC definition, along with tools and resources included in this report, can inform the development of a vulnerability assessment in response to these planning requirements. It should be noted, however, use of this definition and the resources referenced throughout this guide is not mandated and should not be considered formal legal guidance (see LCI's General Plan Guidelines for the most recent guidance (LCI, 2017)).
- **General Plan Safety Element:** Senate Bill 1035 (Jackson, 2018) requires safety elements to be updated with climate-change informed flood and fire hazard data and resiliency strategies. The VCP can help provide a broad overview of flood and fire hazard risk and direct people to the best available data sources for more detailed information and adaptation strategies.
- **General Plan Environmental Justice Element:** Senate Bill 1000 (Levy, 2016) requires EJ elements to address compounded health risks in disadvantaged communities that account for how climate change may exacerbate existing environmental conditions. The VCP can help provide a broad overview of climate vulnerabilities, allow users to dig into the details of how this intersects with pollution burden, and offers the ability to overlay CalEnviroScreen disadvantaged communities.
- **Local Hazard Mitigation Plans:** Local jurisdictions must develop LHMPs to qualify for certain FEMA hazard mitigation funding (Disaster Mitigation Act, 2000). These plans require the identification of major hazards impacting the jurisdiction. The VCP can provide a first step in identifying climate related hazards and direct people to the best available data sources for more detailed information and adaptation strategies. The VCP can also help communities prioritize mitigation strategies identified in the plan to reduce natural hazard risk in communities.

Community-Based Organizations

Community-based organizations can use the VCP to access clear, actionable vulnerability data that they can apply in program design and funding pursuits.

- **Grant Applications:** Many regional, state, and federal grants for resilience-related projects require applicants to provide evidence of their climate vulnerabilities. The VCP gives users easy access to data and information that can help build their narrative.
- **Program Development:** The VCP can help community organizations inform the services they provide and to build resilience in their community where and how it will be needed most.

State and Regional Agencies

State and regional agencies can use the VCP to guide where resources and support could be focused, based on gaps and priorities for community and regional scale adaptation.

- **Prioritization for Projects and Grants:** The VCP can help program administrators identify the specific climate vulnerabilities in areas they are targeting and determine where outreach or funding should be focused. For example, the VCP is included in the 2024 Climate Bond [guidance](#) as a recommended tool for programs to use to identify and prioritize vulnerable populations.

Integrating Other Information and Data

The flagship [Climate Vulnerability Map](#) offers an interactive comparison feature in the [Other Vulnerability Tools page](#) which helps users compare frequently used tools related to equity, disadvantage, and climate vulnerability (VCP, 2025c). It includes tools such as CalEnviroScreen, the Healthy Places Index, and the Climate Change and Health Vulnerability Indicators for California (CCHVI). The page includes a summary of what each tool does, what climate data it includes (if any), what features and data it offers (e.g., an index, individual indicators, reports, etc.), and at what scale the data is available (e.g., block group, census tract, city, zip code, county). This helps users decide what tools are best suited for their question or needs and serves as a starting point for high-level climate vulnerability assessments and exploration.

In addition to the overview of other vulnerability tools, the page includes a map that allows users to overlay key data layers from each of the tools that include a mapping function. This shows how different tools highlight different features within communities and helps users choose the most relevant tool for use in a grant application.

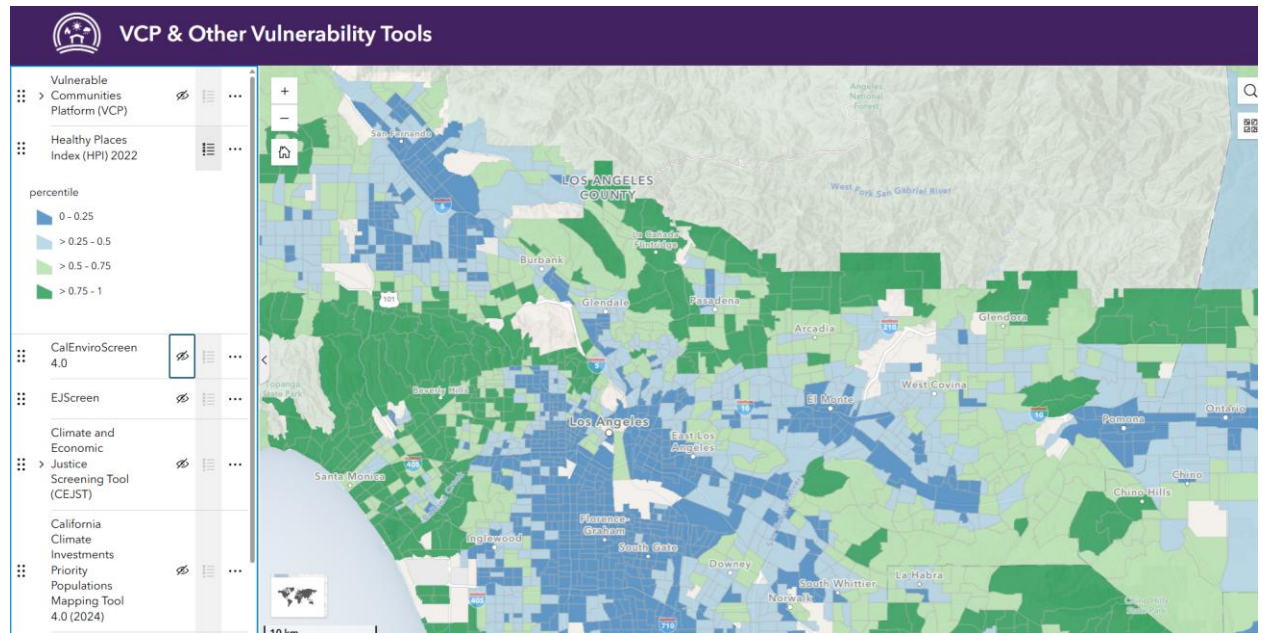


Figure 4. Overlay of tools related to equity, disadvantage, and climate vulnerability (VCP, 2025c).

4. Gaps and Challenges in Vulnerability Mapping

Tools that map climate vulnerability are valuable, but it is important to recognize their limitations.

One limitation is that not all relevant physical, social, political and economic factors are easily represented spatially, including some of the factors included in the TAC definition. For example, gender does influence individuals' vulnerability to climate hazards but given the relatively limited variation in the percentage of folks of a particular gender across neighborhoods or census tracts, it does not typically make sense to map.

The Gender Equity Policy Institute (GEPI) conducted a research review on the gendered experiences of climate change and recommends approaches that incorporate gender equity into climate-related decision-making. In addition to embedding gender into vulnerability assessments, GEPI calls for targeted measures, such as gender-aware disaster planning (Vega Varela et al., 2024). They highlight a pilot initiative launched in 2022 in California to train home care workers and nurse aides in emergency preparedness, equipping them to better support their clients and themselves during climate-related disasters. Another example is the Just Recovery Promotora Network, which grew out of the Latino Community Foundation (LCF) efforts to provide financial support to grassroots organizations led by and serving Latino communities that are actively responding to wildfires and other natural disasters (LCF, 2025). A key insight emerged from their work: local immigrant women were already serving as cultural anchors, advocates, and informal emergency responders and were doing critical work without compensation or resources (Orantes, 2021). To address this, they created the Just Recovery Promotora Network to compensate women in the community for the time they already dedicate to educating peers on emergency readiness, shaping and communicating evacuation strategies, and advocating with local officials for sustained investment in their neighborhoods. Launched in early 2021, this program invests in the leadership of 45 community women by providing \$1,000 stipends, laptops, and six months of training to strengthen digital skills and civic engagement (Orantes, 2021).

Another limitation of mapping tools is that there is a lack of reliable data for certain populations, such as unhoused individuals. In 2024, California had 48 people per 10,000 experiencing homelessness, which is over twice the national rate (U.S. Department of Housing and Urban Development, 2024).

Homelessness is a critical issue for many cities across California, but mapping homelessness remains a challenge. There is a lack of spatial data collection, and data ownership and sharing restrictions make it hard to combine data sources across government agencies that touch homelessness (Carter & Streeter, 2025).

Despite these challenges, the fact that unhoused individuals are disproportionately exposed to climate events makes it important for communities to consider this population in their climate adaptation work.

Extreme weather-related deaths among the unhoused population have increased. Between 2011 and 2020, a study across 22 counties in the U.S. found a 141% increase in mortality in the unhoused population from environmental causes (Fowle & Routhier, 2024). Yet, as of 2022, less than a quarter of cities and counties with high rates of homelessness across the U.S. included strategies to address the safety of unhoused people in their emergency-preparedness plans (Rode, 2024).

Unhoused individuals are disproportionately exposed to and impacted by climate events. In California, unhoused residents represented around 13% of heat-related hospitalizations from 2017 to 2021, even though homeless individuals make up less than half a percent of the state's population (Reese, 2023).

Flooding also poses a significant risk to the unhoused population in California. In November 2022, a storm overwhelmed Ontario's flood infrastructure and swept away approximately 10 unhoused individuals. The flooding carried some through the channel for over 3 miles and resulted in three deaths. When an atmospheric river hit California in February 2024, first responders in Anaheim saved a woman believed to be living in a storm drain that led to the Santa Ana River. In Riverside farther upstream, 10 people were rescued after encampments at the bottom of the river were flooded. In San Jose, people living along the Guadalupe River were forced to evacuate (Rode, 2024).

Anti-camping ordinances and police sweeps can increase unhoused individuals' exposure to climate hazards by pushing them to the edge of cities.

San Diego's camping ban in July 2023 caused an increase in people living by the San Diego River. During Tropical Storm Hilary a month later, approximately 12 people had to be rescued (Rode, 2024).

Climate change may also increase homelessness as more people lose their homes to natural disasters. A statewide survey of Californians experiencing homelessness from 2021 to 2022 found that 2% of all participants reported fire or natural disaster as a reason for losing housing (Kushel, Moore, et al., 2023). Another intersectional issue that exacerbates the effects of homelessness is disability. Homelessness disproportionately affects people with disabilities, and California's housing crisis especially widens this disparity (Zacarias, 2025). Without sufficient access to support resources such as home health aides, employment opportunities, and accessible housing, people with developmental disabilities may struggle to find and keep housing (California Health Policy Strategies, 2025).

Another limitation of tools mapping climate vulnerability is that vulnerability is often measured relative to a comparison region. This means that at different scales and comparison regions, the areas of greatest vulnerability may change. A given community may not be designated as disadvantaged when compared to other communities in the State (e.g., through a Statewide comparison like CalEnviroScreen), but when compared to other communities within the same county, may be considered disadvantaged. Such communities still have populations and individuals that are disproportionately impacted by climate change and face greater barriers to prepare, respond, and recover from events. Therefore, it is important to consider what scale of comparison is best suited to the purpose of a given analysis.

Additionally, many mapping tools struggle with identifying small vulnerable communities in rural areas, since tools commonly use data at the census tract level, which can encompass geographic areas much larger than a community and can blur differences in demographic data across the census tract. For example, low-income rural communities can be overlooked when income is averaged across a larger census tract. It can also be inaccurate in urban settings, where neighborhoods do not conform to census tract boundaries (DOJ, 2023) The VCP's Vulnerability Map uses population squares that identify where people reside in lieu of block groups for this very reason.

It is also important to recognize that individuals and communities are often impacted by more than one factor simultaneously, and many of these factors are interconnected. Consider the acute heatwaves in California's Central Valley. Farmworkers may work outside, have low incomes, lack access to air conditioning, and, in addition, face language barriers to warnings and health information. This combination of factors puts them at greater risk of heatstroke or other heat-related illnesses than any one factor alone. The ICARP TAC highlights the importance of intersectionality in its new definition, but the way these factors interact and are experienced cannot be captured with the mapping of demographic data.

5. Vulnerability Assessments in Practice

Vulnerability assessments identify and characterize the climate hazards and impacts a community faces (CalOES, 2020). Vulnerability assessments are foundational for adaptation planning and action, helping identify and prioritize adaptation actions. LCI's 2025 Annual Planning Survey found that over 30% of the 297 cities and counties that responded had completed a vulnerability assessment and another 10% had a vulnerability assessment in-progress or planned (LCI, 2025). As more communities across California undertake vulnerability assessments, there is a growing body of knowledge and practice to inform future assessments. The [California Adaptation Clearinghouse](#) provides a searchable database of examples of vulnerability assessments and adaptation practice (LCI, 2018a). This section provides examples of vulnerability assessments and adaptation plans conducted by California communities, to connect the TAC definition to practice. While vulnerability assessments often also examine impacts to infrastructure, the economy, and other community assets, here we focus on consideration of social vulnerability.

Communities across California vary greatly in the climate hazards they face, their social make-up, and economies. [California's Climate Change Assessment Regional Reports](#) illustrate these differences (California's Fourth Climate Change Assessment, 2018d). Vulnerability assessments should be driven by community priorities and reflect knowledge from different population groups and neighborhoods (CalOES, 2020). Outreach and engagement while conducting vulnerability assessments ensure that community members have opportunities to identify key priorities and provide valuable, on-the-ground understanding of climate vulnerabilities. The examples provided highlight how quantitative data from maps and tools can be combined with qualitative data from community engagement to create more robust vulnerability assessments. The examples also highlight best practices for community engagement, such as relying on trusted community partners for outreach and engagement, making engagement opportunities more accessible, and compensating participants for their time (CalOES, 2020).

Example: City of Los Angeles 2025 Climate Vulnerability Assessment

The City of Los Angeles Department of City Planning completed a climate vulnerability assessment in 2025 that analyzed the physical and social

vulnerabilities expected under climate change. Notably, their community engagement process and community partners played a key role in identifying needs and developing equitable climate adaptation strategies co-created with those most affected by climate impacts. The community partners include the Fernandeano Tataviam Band of Mission Indians, Pacoima Beautiful, Promesa Boyle Heights, Rising Communities, Strategic Concepts in Organizing and Policy Education, and Strength Based Community Change . These CBOs led outreach in their respective communities, leveraging local expertise and trusted relationships to engage vulnerable populations. Through this process, they gathered lived experiences from unhoused individuals, LGBTQIA+ residents, and outdoor/farmworkers; reviewed climate data; identified gaps; and facilitated discussions to co-develop strategies grounded in community priorities. Proposed strategies included resilience hubs and cooling centers tailored for youth, older adults, and LGBTQIA+ individuals; solar-powered microgrids and emergency generators; nature-based stormwater infrastructure such as bioswales and rain gardens; enhanced floodplains to improve groundwater recharge; and improved street drainage systems to prevent flooding from clogged gutters (City of Los Angeles, 2025).

Lessons Learned:

- Community-based organizations and other partners can help gain access, build trust with, and meaningfully engage vulnerable populations to inform vulnerability assessments.
- Community outreach and engagement should include populations that are difficult to map, including unhoused individuals and LGBTQ+ residents.

Example: City of Berkeley General Plan

The City of Berkeley was awarded \$497,042 by the LCI Adaptation Planning Grant Program to update its General Plan Disaster Preparedness and Safety (Safety) Element, develop a new Environmental Justice (EJ) Element, and create a dashboard measuring progress on their climate resilience strategies (Adaptation Planning Grant Program, 2023; City of Berkeley, 2025). For climate projections and data, the team relied on Cal-Adapt's Local Climate Change Snapshot, Alameda County Heat Vulnerability Map, California's Fourth Climate Change Assessment, and the City's 2024 Local Hazard Mitigation Plan. These technical insights were complemented by qualitative data gathered through

one-on-one conversations, community mapping that enabled residents to self-identify place-based risks and resilience assets, Pop-Up Exhibits, and regular meetings with a Community Advisory Committee (CAC).

The CAC was central to the project - they helped conduct community engagement, including hosting Pop-up Exhibits, and supporting development of goals, policies, and programs that reflected input from the community. The CAC was made up of representatives from nine community organizations representing historically marginalized communities in Berkeley, and matching the EJ communities identified in the technical analysis. CAC members signed a memorandum of understanding (MOU) with the Ecology Center, a trusted non-profit, that allowed them to be paid for their participation. The City of Berkeley received additional funding from the Urban Sustainability Directors' Network to fund these MOUs.

The Pop-Up Exhibits were a series of 15 events that enabled the team to get input on draft goals, policies and programs. To make these events more accessible, materials were translated into four languages, and translation was available at the events. Events were also held at CAC venues to meet community members where they are, such as at a local food bank transit hub. Childcare, food, stipends and giveaways were also provided at events tailored to communities who have been marginalized. In total, these events reached at least 230 people in-person, and over 20 participants in the online version.

The resulting updated Safety Element and new EJ Element of the City's Comprehensive Plan include policies and programs to reduce climate risks and strengthen resilience but, importantly, this project also built new partnerships with community organizations that have historically been left out of government processes.

Lessons Learned:

- Community-based organizations and other partners can help gain access, build trust with, and meaningfully engage vulnerable populations to inform vulnerability assessments.
- It is critical to meet communities in their spaces and tailor engagement events for specific audiences by providing supportive resources (e.g. food, childcare, stipends, accessibility options, transit passes, translators, translated materials).

Example: Shade Master Plan for Eastern Coachella Valley

The Shade Master Plan provides a blueprint for residents, Riverside County agencies, and other stakeholders to advocate for and invest in new shade infrastructure in the unincorporated communities of the Eastern Coachella Valley (ECV). The ECV is home to predominantly low-income, Spanish-speaking communities where temperatures routinely exceed 110 degrees. Kounkuey Design Initiative (KDI) and the University of California Los Angeles (UCLA) Luskin Center for Innovation was awarded \$644,411 by LCI's Adaptation Planning Grant Program for the development of the plan. Developed in three phases, the project began by understanding existing conditions through literature review, heat mapping, and field analysis. The second phase, guided by the Oasis Leadership Committee (OLC) (comprised of community resident representatives), involved robust community engagement—including six mobile events and 34 design workshops—to shape the plan's direction. The final phase synthesized this input into design guidelines and policy recommendations.

In the first phase, UCLA conducted a literature review on extreme heat impacts and used specialized software to model and map heat conditions using historical weather data, projections, and LIDAR. Concurrently, KDI developed a range of engagement activities—including surveys, design exercises, and story booths—to gather qualitative data from local residents on their shade priorities, heat tolerance, and outdoor habits. To ensure community ownership, UCLA and KDI engaged the OLC. Through the project, OLC members were paid to participate in a graduate-level seminar on shade and extreme heat. OLC's partnership was integral at every stage of the project, from co-designing research questions and collecting data to "ground-truth" the quantitative analysis. When widespread ICE raids in 2025 created a climate of fear, the team pivoted from public charrettes to a decentralized model of "Dinner Table Dialogues"—small, private workshops hosted in family homes. This innovative approach, facilitated by the OLC with all materials translated into Spanish, allowed the project team to conduct 32 home workshops and engage over 400 residents across the ECV's four unincorporated communities. The data from these parallel tracks were synthesized to produce a set of shade policy recommendations for County agencies and a complementary set of design guidelines for stakeholders.

Lessons Learned

- Formalizing the role of community members through committees can help ensure co-production of assessments and plans.
- Community engagement can serve an important role in not only collecting qualitative data for vulnerability assessments but also in informing research questions and ground-truthing quantitative data.
- Community engagement must be adapted to address residents' concerns for safety, both physical and social.

6. Equity in Action

The TAC definition is intended to encourage adaptation approaches that promote equity. Identifying vulnerable communities is only the first step. Considerations of procedural, distributional, and structural equity should be embedded throughout the adaptation process.

The Adaptation Planning Guide describes equity as multidimensional and having three objectives: procedural, distributional, and structural. Procedural equity refers to creating processes that are transparent, fair, and inclusive. Distributional equity speaks to the distribution of resources, benefits, and burdens with resources being prioritized in communities that are disproportionately impacted by climate change. Structural equity means addressing the underlying structural and institutional systems that produce inequities and disproportionate climate impacts.

Procedural Equity

Building community resilience requires meaningful collaboration and partnership with vulnerable communities. Decision-making processes that lead to equitable outcomes depend on the recognition and integration of diverse voices and perspectives. This requires meaningful engagement with vulnerable communities. This is especially important where communities have historically been excluded from government decision-making; for example, Tribal governments and communities have frequently been marginalized in government decisions throughout California's history. Equitable public engagement is essential to establish meaningful relationships with communities, repair and build trust, provide a space for open dialogue, allow people to express their voice and experiences, and share decision-making power over actions that affect their lives and those of future generations.

Examples of adaptation approaches that promote procedural equity:

- The Coastal Commission used Coastal Zone Management Act Section 309 funding to update the 2018 Sea Level Rise Policy Guidance. Staff convened eight paid Environmental Justice and Sea Level Rise subject matter experts who helped shape the public engagement plan and the final update to the Sea Level Rise Policy Guidance. Their feedback led to major updates: recommendations for earlier and deeper engagement procedures, strategies for identifying vulnerable environmental justice

communities, and clearer integration of health and environmental burdens in Local Coastal Program policies and the Coastal Development Permit review process. Several advisors stated this process was the first time they felt heard by a government agency. The updated policy guidance illustrates how environmental justice can be embedded in adaptation frameworks—the new guidance includes an expanded discussion on how sea level rise disproportionately impacts environmental justice communities and the importance of meaningful engagement with these communities when conducting sea level rise planning work.

- In 2021, Los Angeles County released its Climate Vulnerability Assessment . To address gaps in quantitative data and ensure underrepresented communities were included, the County conducted six listening sessions as its primary qualitative data collection method. These sessions explored how different groups experience, manage, and adapt to climate hazards. Groups included in the listening session were populations identified as having risks often underrepresented in spatial



Figure 5. County Drought Advisory Group Meeting.

analyses, including people experiencing homelessness, residents of mobile homes, climate-exposed workers, individuals reliant on electric-powered medical devices, people with disabilities, people without reliable transportation, rural communities, and Tribal communities.

- Climate projections indicate that California will experience increasingly frequent and severe periods of hotter, drier conditions (California's Fourth Climate Change Assessment, 2018a). Impacts observed during the 2012–2016 drought, and again in 2021–2022, demonstrated that small water systems and households reliant on private domestic wells are disproportionately vulnerable to water shortages compared to those served by large urban water suppliers. Without targeted investments in capacity and infrastructure, these rural communities face escalating drought risks under a changing climate.

Following the 2012–2016 drought, Assembly Bill 1668 (Friedman, 2018) directed the California Department of Water Resources (DWR) to convene a multi-year advisory group to identify small water systems and rural communities vulnerable to drought and to develop recommendations for improving drought contingency planning. Through an extensive and inclusive stakeholder process, DWR coordinated with multiple state agencies to produce recommendations that explicitly accounted for governance, technical, and administrative barriers faced by small and rural systems (DWR, 2021). These recommendations laid the foundation for long-term, equitable drought planning by strengthening institutional capacity and correcting systemic gaps that limit participation by under-resourced communities.

Additionally, these recommendations directly informed the development of water shortage vulnerability scoring for small systems and domestic wells (DWR, 2022b, which is now updated and maintained pursuant to Senate Bill 552 (Hertzberg, 2021). This scoring helps counties develop drought contingency plans and is incorporated into LCI's Vulnerability Communities Platform (VCP), supporting local climate adaptation planning.

- Through the Strategic Growth Council's Regional Climate Collaboratives Program, the Marin Climate Justice Collaborative aims to increase capacity and address climate impacts in Marin City and San Rafael's Canal District. These two communities in Marin County have been

historically underinvested while bearing the worst climate impacts in the county. Their goal is not only to build community capacity, but to ensure community participation drives public planning and local decision-making to reverse a history of poor planning processes, segregation, and environmental injustice. The collaborative is developing Neighborhood Vision Plans for the Canal District and Marin City through a variety of engagement and leadership development strategies. In the Canal neighborhood, the Nuestro Canal, Nuestro Futuro (NCNF) initiative has a 20-resident Consejo (Resident Advisory Council) serving as the decision-making body informing NCNF priorities. Members of the Consejo are developing skills and gaining education about the planning process to ultimately design and shape their neighborhood vision plan. In Marin City, the collaborative is working closely with youth through its Young Environmentalists Program and providing training and resources for them to effectively engage in community planning efforts that create positive change in Marin City.



Figure 6. Delta Stewardship Council staff conducting community outreach in Antioch, CA.

The Delta Stewardship Council (Council) adopted its first-ever Tribal and Environmental Justice Issue Paper, [Tribal and Environmental Justice in the Sacramento-San Joaquin Delta: History, Current Perspectives, and Recommendations for a Way Forward](#). The paper documents Tribal and community perspectives of Tribal justice and EJ issues and needs in and around the Sacramento-San Joaquin Delta and includes recommendations for the Council and other agencies working in the Delta. The Council partnered with community-based organizations (CBOs) in the Delta through its Environmental Justice Expert Group. This collective of four CBOs built a foundation for Council staff's relationships with the vulnerable communities they serve and allowed for community expertise to be incorporated into regional planning efforts (Delta Stewardship Council, 2025b).

Distributional Equity

Distributional equity refers to prioritizing resources for communities that are disproportionately impacted by climate change (USDN, 2017). Recognizing that some communities are hit harder than others by climate impacts, California has advanced equity in climate policy by directing investments to the most impacted communities. Senate Bill 535 (de Leon, 2012) and Assembly Bill 1550 (Gomez, 2016) require that a percentage of proceeds from the Greenhouse Gas Reduction Fund (GGRF) be spent on projects located in disadvantaged communities. The 2024 Climate Bond, also known as Proposition 4, allocates 40% of its funds to projects that provide meaningful and direct benefits to vulnerable populations and disadvantaged communities. (Note: Proposition 4's statute language defines disadvantaged communities differently than GGRF's. Read CNRA's ["Who the Bond Prioritizes"](#) and the California Environmental Protection Agency's ["Final Designation of Disadvantaged Communities"](#) for more information.)

Distributional equity also means tailoring adaptation actions or strategies to address the needs of specific vulnerable populations and communities.

Examples of adaptation approaches that promote distributional equity:

- In 2021, San Diego's City Council established a Climate Equity Fund to help underserved communities respond to the impacts of climate change. Resources from the fund are directed by the city's Climate Equity Index, a tool that measures the level of access to opportunity residents have within a census tract. To be funded, projects must be in

areas determined to have very low, low, or moderate access to opportunity in the Climate Equity Index.

The Climate Equity Fund supplements resources available to accelerate the implementation of projects that advance climate justice, resilience, and adaptation in disadvantaged communities (San Diego Mayor Todd Gloria, 2021).

- California is one of few states that have added Access and Functional Needs Coordinators (AFNCs) in their emergency and disaster management offices. AFNCs support people with disabilities by ensuring resources are accessible, providing interpreters, and reducing incidences of institutionalization. Including AFNCs in emergency and disaster management offices ensures that people with disabilities receive attention in planning and communications, and that language, program, and physical accessibility issues are considered throughout the emergency response (Junod et al., 2024).
- In California, the Disability Action Center and California Foundation for Independent Living advocated for coordination between the Pacific Gas and Electric Company's medical baseline program and portable battery program. These programs provide energy rate discounts, early notification about upcoming outages, and portable batteries. By providing emergency power during outages and life-saving time to charge medical equipment, these programs alleviate energy burdens for people with disabilities (Junod et al., 2024).
- In 2017, the Tubbs Fire destroyed over 5,000 structures in Sonoma County, many of them homes (CAL FIRE 2017). Five percent of the housing stock in Santa Rosa was destroyed, creating severe pressure on housing costs (Raphelson, 2017). While federal assistance was available to many of the people displaced by the fire, undocumented residents who lost their homes were unable to access FEMA support. In response, a group of nonprofits embedded in the local Latino community created a fund, Undocufund, to provide mutual aid to fire victims. This re-visioning of philanthropy and mutual aid has continued to serve the community through subsequent fires and the COVID-19 pandemic.
- Recognizing that communities most vulnerable to water shortages often also have the least capacity to apply for and administer state funding, DWR designed the Small Community Drought Relief Program to address structural and distributional inequities. Authorized by the Budget Act of

2021 and amended in 2022 for a total of \$295 million, the program provided immediate and near-term financial and technical assistance through a streamlined application process and hands-on implementation support (DWR, 2022a). By reducing administrative barriers and tailoring assistance to rural contexts, the Program enabled small communities to build long-term drought resilience and adapt to climate-driven water scarcity.

Structural Equity

Adaptation that advances equity should uplift frontline communities so that they do not simply “bounce back” to the unjust status quo after climate disasters strike but are able to “bounce forward” as healthy, resilient, and sustainable communities (Manyena, 2009; Mohnot, Bishop, & Sanchez, 2019; CalOES, 2020). In practice, this means considering the multiple benefits of adaptation policies and creating economic opportunities in communities most impacted.

Examples:

- K ó:dom Hýbísín “Land Stewardship” project funded by the LCI Regional Resilience Grant Program, integrates workforce development to build social and economic resilience alongside landscape management to reduce wildfire risks (CLEE, 2024). Many Tribal members, impacted by historical disinvestment and discrimination, face barriers to educational opportunities and stable employment. These challenges include low high school completion rates and difficulty finding work that values specialized skills in Traditional Ecological Knowledge and Indigenous Place-Based Knowledge. To address these workforce gaps, the project provides Tribal members with training and resources to advance career skills in land stewardship and wildfire management. Notably, the collaborative seeks to enhance access for Tribal members to both Federal and State recognized job certifications in prescribed fire and wildland firefighting, which will both provide them with skills to implement prescribed fire activities in the project area and be eligible for additional work opportunities.
- The California Conservation Corps (CCC) prepares California’s next generation of climate leaders through its workforce development program. Historically, the percentage of female Corpsmembers in the

CCC has shifted between 15% and 30% of the total Corpsmember population – far from a representative gender distribution. Over the past five years, the CCC has strived to achieve gender parity and equitable opportunities through multiple channels, including dedicated programming to prepare female Corpsmembers for success in careers where women are traditionally underrepresented.



Figure 7. California Conservation Corps all-female fire crew.

The CCC has organized several partnerships to encourage female Corpsmembers to enter wildland firefighting careers, a field with low female representation. This includes organizing two all-female fire crew programs in partnership with the Bureau of Land Management in the Inland Empire region (2018-2020) and at Yosemite National Park (2021-2023). Female staff with wildland firefighting experience led training and hands-on experiences for participants, providing representation and inspiration for young women aspiring to this career path.

- With funding from LCI’s Extreme Heat and Community Resilience Grant Program, Contra Costa County is developing a county Neighborhood Tree Plan (Contra Costa Conservation & Development, 2025). The Contra

Costa Neighborhood Tree Plan aims to address inequities in tree coverage across the county by creating a long-term roadmap for planting, maintaining, and protecting trees across all neighborhoods — especially those most impacted by climate change. As part of this larger project, The Workforce Development Board of Contra Costa County and Civicorps are creating a green career training program. This includes training for new workers in tree care and green infrastructure as well as career fairs connecting trainees to local employers.

Helpful resources and tools

This report provides a high-level overview of adaptation to advance equity and provides examples of how these ideas are put into practice across California. Many additional guides and tools are available to support equitable adaptation:

- [California Adaptation Clearinghouse](#) is the state’s official searchable database for California-specific climate adaptation and resilience resources (LCI, 2018a).
- California Adaptation Planning Guide is designed to support local government, regional organizations, and climate collaborative groups to integrate best practices and current science into their adaptation planning efforts. The APG provides helpful resources to local governments as they comply with state requirements for local adaptation planning, and it provides recommendations and advice on community-level climate change adaptation planning (CalOES, 2020).
- [Cal-Adapt](#) is an online resource for viewing and downloading data about projected changes in climate conditions and associated natural hazards (Cal-Adapt, 2023).
- [California’s Climate Change Assessment](#) is a series of academic reports looking at future climate conditions throughout the state and their potential consequences (California’s Fourth Climate Change Assessment, 2018b).
- The [Racial Equity Framework](#) is a practical guide developed by the California Racial Equity Commission to help government entities with advancing racial equity across the state. Rooted in the belief that California thrives when all communities thrive, the framework offers tools, strategies, and guiding principles to dismantle systemic racism and promote inclusive, equitable governance. It is designed for use by state government entities—including administrative, legislative, and judicial branches—as well as local governments and other sectors seeking to embed racial equity into their operations to build a place where everyone belongs (REC, 2025).
- The California Department of Public Health’s Climate Change and Health Equity Branch curates [Resources for Climate & Health Equity Planning](#), where people can explore data indicators, mapping tools, state-level plans, guidance documents, major reports, and other

resources to support local and statewide climate change and health equity planning. Resources are intended for State agencies, local government, local health jurisdictions, Tribes, community-based organizations, health care organizations, and other health equity partners (CDPH, 2024).

- [California's Office of Emergency Services Office of Access and Functional Needs \(AFN\)](#) has a robust database of resources related to integrating the needs of AFN communities into local resiliency planning (CalOES, 2022).
- The [Technical Assistance Toolkit](#) has been developed to help California agencies and other entities develop technical assistance programs that make a meaningful difference in under-resourced communities. Due to historic and continued under-investment, under-resourced communities often lack the staff capacity, partnerships, or resources to secure competitive funding and implement projects and policies. Technical assistance and capacity building support can be pivotal in leveling the playing field and ensuring that resources go to the communities that need them the most (SGC, 2024).

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