Local Health Departments and Subject Matter Experts Address Climate Change Readiness in California: Findings and Recommendations

December 12, 2022

California has experienced a wave of climate-driven disasters in recent years that have created unprecedented challenges to human health and well-being. This includes the most destructive wildfire season in California history, which coincided with record-setting heatwaves and community-wide rolling power shut-offs in communities vulnerable to fire. The impacts of these events were compounded by a host of other health stressors, including a global pandemic and a decade-long homelessness and housing affordability crisis. Any one of these disasters would have been a public health emergency on its own; combined, they threaten the well-being of entire populations.

The impacts of climate-driven disasters are particularly severe for communities that experience health inequities—the systemic and unjust disparities in health outcomes that exist by race, income, neighborhood, language, immigration status, and other factors. These communities are at greater risk of exposure to climate-related health threats, are more vulnerable to those threats, and have less access to the resources necessary to respond and recover effectively.

To address this crisis, we need to build a new type of health equity infrastructure, designed for our new era of climate-related emergencies. California's local health departments (LHDs) have an essential leadership role to play in fostering a more equitable, healthy, and resilient California. Yet as the findings in the attached study show, while LHD leaders see an urgent need for public health departments to engage in climate change to safeguard those most at risk, these departments do not receive adequate resources to effectively participate. The solution is clear: **We need substantial sustained investment of state and federal funds focused on expanding the capacity of California's LHDs to effectively address the intersection of climate change, health, and equity.**

About the Report
Shortly before the COVID-19 pandemic, the Bay Area Regional Health Inequities Initiative (BARHII), in partnership with the Public Health Alliance of Southern California and Urban Resilience Strategies, conducted a series of 25 interviews with leaders from local health departments and other public health and climate change experts. The purpose of this effort was to assess the capacity of local health departments to advance adaptation to the health impacts of climate change and synthesize recommendations to increase local health department capacity to prevent and prepare for the health impacts of climate change .

Five key recommendations emerged from the interview process:

1. Strengthen the capacity of local health departments (LHDs) to achieve community-developed health equity and resilience outcomes by identifying consistent, sustained fiscal and technical resources.
2. Call for leadership from LHD directors, local health officers, and other senior leadership to prioritize climate change within their departments, across the local government organization, and in the community.
3. Pivot on the teaching moment of California's recent natural disasters to spur necessary action.
4. Integrate addressing climate change impacts and improved health equity outcomes into the mainstream of local government.
5. Ensure that collaboration and community partnership is a foundational activity for all climate change activities.

Why These Findings Matters
These findings show that California's LHDs must play a heightened role in ensuring the health and well-being of communities that are suffering from the near-term and long-term effects of climate-related disasters—especially those communities most impacted by inequities. Yet while LHDs are eager to address climate change—the "greatest public health issue of the 21st century"—they lack the necessary resources and capacities to do so at the scale of the crisis.

These findings are as urgent today as they were when these interviews took place shortly before the COVID-19 pandemic. The public health community in California has not seen substantial new resources dedicated to addressing the intersection of climate change, health, and equity in that time—and local health departments have been severely strained by three years of emergency pandemic response. The effects of climate change on our health are increasingly apparent and increasingly severe. And it is now well understood that our approaches to addressing public health crises—from pandemics to wildfire smoke —must be anchored in equity to eliminate unjust and avoidable disparities in health outcomes.

Fortunately, there are signs of hope. California is now poised to invest billions of dollars to address the causes and consequences of climate resilience. And the 2022-2023 state budget includes several small steps to support LHDs to address climate change, including one-time funds for local health departments and CBOs to prepare regional plans to address climate change and health. Yet much more is needed to align California's funding streams to the critical intersection of climate change, health, and equity.

We encourage everyone interested in climate, resilience, and our governmental infrastructure to study the attached report to better understand the readiness of our public health departments to address this century's greatest public health challenge. And we encourage California's legislative leaders to dedicate resources to expand local health departments' capacity to address the interconnected issues of climate change, health, and equity so that we can build the health equity infrastructure for the new era of climate-driven disasters.

Melissa Jones, MPA
Executive Director
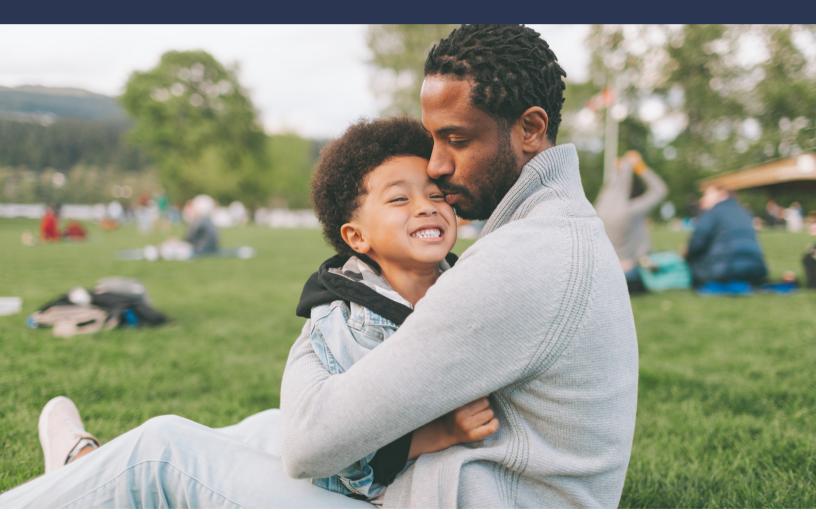BARHII

Tracy Delaney, Ph.D.
Executive Director
Public Health Alliance of Southern California

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Prepared by:
Bay Area Regional Health Inequities Initiative
in partnership with the Public Health Alliance of Southern California and
Urban Resilience Strategies

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BARHII
Bay Area Regional Health
Inequities Initiative

Public Health Alliance™
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OVERVIEW
PURPOSE

Public health and climate change practitioners are seeking to understand how local jurisdictions address climate change and its connection to health and equity. The CalBRACE (California Building Resilience Against Climate Effects) Project in the California Department of Public Health's Office of Health Equity contracted with the Bay Area Regional Health Inequities Initiative (BARHII) to conduct the interviews that inform this report.[i]

The purpose of this effort was threefold:

1 To assess the capacity of local health departments to advance adaptation to the health impacts of climate change;

2 To solicit stakeholders' ideas on how state and local health departments could work together to increase local health department capacity to prevent and prepare for the health impacts of climate change; and,

3 To synthesize stakeholders' responses into recommendations that could inform development of local health department programs to address health impacts of climate change in partnership with state health departments.

This report is based on a series of interviews with public health practitioners from local jurisdictions and subject matter experts in California as a gauge of public health readiness and capacity to act on health threats associated with climate change. While the engagement and scoping activities were performed in California, the intent is to provide findings and recommendations from the interviews that could serve state, national, and local jurisdictions with respect to their own unique populations, resources, and situations.

BACKGROUND

California local health departments (LHDs) have a long history of public policy and program development to address emerging health challenges. The profession's response has been no less pragmatic as the state grapples with the ongoing impacts of climate change and cascading health equity effects. A 2009 Public Policy Institute of California survey found:

"...most public health officers feel that climate change poses a serious threat to public health, but that they do not feel well equipped in terms of either resources or information to cope with that threat. Nonetheless, public health agencies currently implement a number of programs that will help these agencies handle some of the challenges posed by a changing climate." [ii]

Public health departments and allied associations are often called upon for implementation of public health intervention efforts. Many in the field seek to examine the current state of practice and consider a role for deeper partnerships between state and local health departments in preventing and preparing for the health impacts of climate change.

Communities and local and regional agencies have expressed demand for services from public health agencies that are not currently within the purview of existing programs nor supported by other means.

Such requests signal stakeholder expectations about the important role that public health professionals have in addressing public health outcomes associated with climate change impacts. Stakeholders also expect local health departments to have the capacity to represent the health sector in broader planning processes to reduce or prevent climate hazards, such as climate action planning or updates to general (comprehensive) plans, transportation plans, and other local efforts.

Recent pilot efforts to provide support for LHDs to integrate climate change include state programs such as the CalBRACE Project in the California Department of Public Health. CalBRACE provided LHDs modest seed grants for piloting adaptation planning using an evidence-based public health framework to identify and address the challenges communities are facing. LHDs that received funding included Imperial, Mariposa, Merced, Mono, Sacramento, San Diego, San Luis Obispo, Tulare, Kings, and Contra Costa counties.

The Centers for Disease Control and Prevention (CDC) Climate Ready States and Cities Initiative (CRSCI) funded the CalBRACE Project, as well as 15 other states, tribes, and cities to use the BRACE framework to identify climate impacts, potential health effects, and at-risk populations and locations, as well as to develop adaptation plans and implement selected actions. With CRSCI funding, a handful of states (Arizona, California, Oregon, Florida, Illinois, and New Hampshire) have in turn provided funding and technical assistance to LHDs.[iii]

> " We know this is our largest looming risk—but what do we do now? With funding to make the difference, we can make the work happen.
> - Marin County

The survey conducted for this report included interviews with public health staff from jurisdictions that collaborated with or received funding or technical assistance from the CalBRACE Project.

From these pilot efforts implemented by CDC BRACE state grantees and through related climate change programs, technical resources have emerged that enrich the policy portfolio of public health practitioners. Many documents and efforts of state and local health departments across the United States provide a solid evidence-based technical platform on the nexus of climate change impacts, public health, and health equity measures. [iv]

These cumulative efforts pointed to the need to analyze current public health practices and readiness in light of increasing frequency and intensity of environmental and disaster disruptions and learn from local health jurisdictions what gaps and resources are influencing their readiness and capacity to respond. Many of the responses that were gathered through this report echo findings from past efforts to understand readiness, gaps, and capacity of California's public health departments to respond to climate change.[v]

Changing environmental conditions and disaster impacts point to the need to understand and define the heightened role that public health departments must play to ensure the well-being and health of communities that are suffering from the near-term and long-term effects of climate-related disasters. Key recommendations emerged from the interview process that point to actions that public health leadership and practitioners might consider:

01 **Strengthen the capacity of local health departments (LHDs)** to achieve community-developed health equity and resilience outcomes by identifying consistent, sustained fiscal and technical resources.

02 **Call for leadership from LHD directors, local health officers, and other senior leadership to prioritize climate change within their departments, across the local government organization, and in the community.**

03 **Pivot on the teaching moment of California's recent climate-driven disasters.**

04 **Integrate addressing climate change impacts and improved health equity outcomes into the mainstream of local government.**

05 **Ensure that collaboration and community partnership is a foundational activity for all climate change activities.**

ENGAGEMENT PROCESS

BARHII partnered with the Public Health Alliance of Southern California (Alliance) and Urban Resilience Strategies to conduct stakeholder interviews.[vi] The engagement process occurred over the summer of 2018 and included staff from Local Health Departments (LHDs) and thought leaders on climate change and health equity. The authors interviewed LHD staff about their capacity to advance climate change adaptation and preparedness solutions that promote public health and health equity. BARHII and the Alliance worked together in a partnership, along with Urban Resilience Strategies, to conduct both group and individual interviews, and compose the findings and recommendations. The process prioritized participation of LHDs to ensure the recommendations were responsive to their capabilities, priorities, challenges, and needs.

LOCAL HEALTH DEPARTMENTS

Structured focus groups included interviews with staff from 20 local health departments from all regions of California to gain insight and feedback into what program functions, staffing, and resources would be most effective and beneficial to local climate and health planning and implementation. Ten counties had previously participated in activities or received funding from the CalBRACE Project. Appendix 3 provides a full list of interviewed LHDs.

One of the first steps in the process was to formulate questions with input from public health department staff who were members of BARHII's Built Environment Committee, the Alliance, and CDPH.

THOUGHT LEADERS IN CLIMATE CHANGE AND HEALTH EQUITY

Five subject matter experts in the public health and climate change fields with a wide breadth of expertise and diverse perspectives shared their opinions on the resources needed to advance the public health role in climate change. The subject matter expert interviewees had substantial experience working on climate change and health, and health equity, at state agencies, state universities, nonprofit organizations, and with the community.

In their respective roles, these experts were responsible for management, data analysis, research, advocacy, community engagement, and other responsibilities that public health departments take on in their climate change and health work.
Appendix 3 provides a full list of these interviewees.

METHODS

The project design prioritized participation of LHDs to ensure the recommendations were responsive to their capabilities, priorities, challenges, and needs. The interviewers asked introductory questions about existing climate and health work and facilitated deeper discussions with the interviewees about their recommendations for aspects of an ideal state-local partnership to address climate change. The discovery process included a series of questions for the respondents about program development and structure, previous activities, funding and technical assistance received, and specific climate change related needs and priorities, such as staffing and funding allocations. Questions also focused on the value of and types of communications, stakeholder engagement, and evaluation, as well as what a state-local partnership should include. (Appendix 2 provides the full set of interview questions.) Interviewees also provided supplemental comments or their own ideas on various issues of importance to them inspired by the interview questions.

The project included a total of 25 interviews with LHDs and climate and health experts from California between July 30 and August 27, 2018.

SUMMARY OF THE INTERVIEW RESPONSES

This summary identifies the key topics that emerged from the interviews. Among them was the need to elevate climate resilience and health equity planning and implementation in LHDs and to ensure adequate fiscal resources and technical assistance in light of the substantial effects of climate change on Californians. Almost all respondents stated that climate change will impact frontline communities the hardest, in the same way that other health impacts and social determinants of health do.

There is a general sense among those interviewed that a climate change program is needed across the state to achieve consistent, aligned objectives to safeguard people most at risk from climate and disaster impacts. Resources for staffing is a high priority need. Support for community engagement, technical assistance, and training resources are also called for to ensure capacity to meet program deliverables and improved community outcomes.

There is enthusiasm about developing a sustainable structure for LHDs to work on climate change and health. Almost all agree this is an urgent issue that they should be doing more as departments to address, but a lack of resources prohibits them from being more engaged. The staff respondents from many LHDs recommended modest levels of financial support would be adequate. (These recommendations may be based on experience with existing public health programs and seemed to signal lowered expectations about the level of resources and support that could be mustered for a more robust and active public health role in climate resilience.)

Some respondents mentioned local sensitivity about the topic of climate change in politically conservative jurisdictions. Other jurisdictions cited that climate resilience efforts are nominally supported but are not allocated adequate resources needed to reduce impacts. Interviewees felt these varying political conditions with respect to climate impacts slowed statewide capacity to achieve comprehensive, consistent risk reduction.

> Health equity is at the core of our work and there is no question that there are equity issues regarding climate change and at-risk communities.
>
> - Sacramento County

Respondents identified the urgent need to reverse the segmented, "siloed" nature of climate resilience work in all local jurisdictions. They called for public health departments to be fully integrated as multi-sector partners into existing planning, response, and implementation initiatives with other operational departments and agencies to best connect with resilience work. They noted that current local government practices do not always accommodate public health sector engagement, health equity programs are not allocated appropriate resources to reduce community risk, and that LHDs are typically assigned minor roles in community-wide resilience planning. They identified that the granular community-level knowledge, experience, and trust that LHDs can bring to the climate change and sustainability planning tables can improve resilience outcomes if supported adequately with consistent statewide resources, guidance, and messaging.

KEY FINDINGS ON A STATE-LOCAL PARTNERSHIP STRUCTURE

The key findings about the aspects for a state-local partnership structure are based on the overall responses of 20 LHDs and five subject matter experts.

1. Very few LHDs in California have staff working solely on climate change.

2. Public health practitioners have widespread awareness and understanding of the link between climate change and health, and that climate change will exacerbate existing health inequities.

3. Most interviewees agree climate change is an urgent issue with which local jurisdictions should be engaged, but a lack of resources impedes more active participation.

4. There is a need to educate decision makers and elected officials on climate change and the health equity connection.

5. Staffing is the primary factor cited by the departmental staff and senior leaders interviewed when asked about needed resources.

6. Every LHD would benefit from securing sustained, multi-sectoral funding for climate change efforts, and allocations should be based on an equitable funding formula that takes into account population size, need, and climate vulnerabilities.

7. Community engagement is a foundational component of LHDs' climate change work.

8. Elements of the state's Tobacco and Nutrition Education and Obesity Prevention (NEOP) programs are useful models to consider as future planning proceeds.

9. LHDs currently partner with other local government departments such as planning, public works, parks and recreation, and social services. Some collaborate with other partners including school districts, housing agencies, energy and utility departments and firms, the business and agriculture sectors, and chambers of commerce.

10. Regional health department coalitions including the Bay Area Regional Health Inequities Initiative (BARHII) and the Public Health Alliance of Southern California (Alliance) as well as multi-sector climate collaboratives such as the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA), are valuable in bringing people together to work on climate change, exchange information, and advocate for improved practices.

11. There is almost universal support for evaluation being built into any future climate change impact and health program.
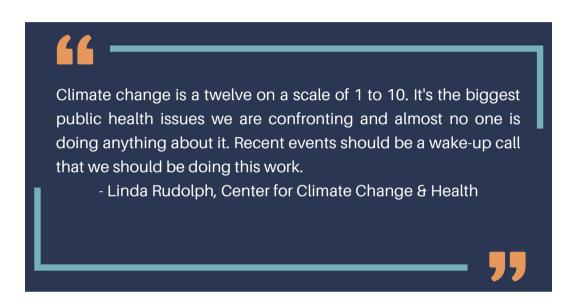
ANALYSIS
STRUCTURE AND STAFFING

The interview questions covered aspects of the LHDs current staffing, structure, and planning processes as related to climate change efforts.

Few LHDs have staff assigned to climate change issues. What efforts are in place tend to be on the periphery of programs such as nutrition, chronic disease, health equity, and built environment initiatives. Climate change work is also not well integrated across departmental programs within public health and other local government efforts. Current public health climate activities are, in the main, reactive to emergencies and urgent events. In some larger jurisdictions, however, respondents cited that interdisciplinary approaches were connecting climate change initiatives among multiple sectors within the larger jurisdictional organization.

Most respondents within large jurisdictions are working on climate change to some degree within the departments through other programs including food systems, active transportation, epidemiology, and emergency response. Generally, climate change is at the periphery of local work and staff has limited capacity to devote to this need. Public health departments' work on climate change is dependent on staff knowledge and interest. Staff knows that climate impacts are pressing issues and want more resources to address these; however, the work is now largely dependent on episodic support. For example, if a person working in chronic disease, epidemiology, or tobacco prevention is aware of current challenges and wants to work on climate change, then the work tends to be elevated more.

An expert interviewee states that the ability to make connections between climate issues and health equity analytics is key to turning technical information into publications and framing for communities. Enhanced technical capacity is an area where further staff development is recommended. Both data analysis and epidemiological skills are essential, as well as community outreach expertise. GIS is also a crucial capacity to overlay climate vulnerability with other public health data.

Most internal LHD plans, such as Community Health Assessments and Community Health Improvement Plans, do not expressly focus on addressing climate change, but many interviewees responded that this work will be included in upcoming assessments. The public health staff has been more successful in integrating climate issues and health impacts into other sectoral plans (i.e. general plans, climate action plans, water equity case statements, legislative platforms, etc.). As cited by senior leaders, some departments have included climate change in "forces of change" analysis and Health in All Policies (HiAP) initiatives that provide policy support as well.

> Climate change is a twelve on a scale of 1 to 10. It's the biggest public health issues we are confronting and almost no one is doing anything about it. Recent events should be a wake-up call that we should be doing this work.
> - Linda Rudolph, Center for Climate Change & Health

Wildfires and extreme heat events demonstrate an urgent need to clearly focus on climate and health impacts, but the actual practice varies by department and the recent disruptions communities have faced. Respondents noted that extreme events could happen in any jurisdiction and want to be more proactive to build resilience in advance. Jurisdictions also are affected when major disasters strike in neighboring communities and regions; cascading impacts are felt at the regional scale and mutual support is often needed in the aftermath of disasters, such as the 2017 North Bay fires and the 2018 Montecito debris flow. Staff and senior leaders see the disasters experienced in recent years as benchmark events in public awareness; these provide an opening for stakeholders to focus on climate impacts without triggering political sensitivities about causation.

HEALTH EQUITY

The interview questions on health equity centered on the relationship between addressing climate change, health equity, and vulnerable populations as well as resources needed to ensure that the most vulnerable communities are at the table and engaged in decision-making.

Respondents see a clear link between health equity work and vulnerable communities. Frontline communities are impacted the most adversely and bear the largest health and social burdens, especially in harmful air quality impacts. Climate change is worsening existing health inequities. LHD staff and senior experts point to the need for funding to prepare data analyses, including vulnerability assessments, to better understand the magnitude of climate impact needs in their jurisdictions and within communities of concern.

Climate change is especially impacting vulnerable populations, including communities with limited resources and income and communities of color. Impacted populations mentioned by LHD staff and senior leaders include the homeless, elderly, youth, environmental justice communities, immigrants, the medically vulnerable, and underserved. Support funding is needed to address these inequities. Resourcing LHDs is an optimal solution, according to one public health policy expert, as the departments are "better able to handle environmental suggestions than other government agencies."

There is an opportunity to better integrate climate change into existing community engagement efforts and use those forums as the platform for broader education and awareness about climate impacts, health equity, and local action planning. Community engagement is a critical factor in developing strategies that will be implemented. One senior leader suggests a "restructuring of the power dynamic" is called for and warrants long-term, sustained investment, matched by private-sector support. Another policy expert sees "vulnerability assessments as an entry point into conversations with community groups and discussions on what LHDs and county agencies can be doing to address impacts on low-income and minority communities."

Many interviewees called attention to the challenges involved in partnering with local community groups, informal leaders, and neighborhood residents. Respondents suggest that community groups and residents need to be compensated or incentivized to attend meetings and other forums where their input is essential. Community representatives are busy and often feel "used" by government bureaucrats when their time is not equally valued in comparison with compensated stakeholders. LHDs would benefit from having funding for health educators to develop and conduct this sort of crucial outreach, support for involved partners, and racial equity training, as called for by policy experts.

> "
> There is grassroots work going on, but public health needs to get more involved and do a lot of backbone support for community members.
> - Marin County
> "

PROGRAM RESOURCES

The interview questions on program resource needs focused on what might be most needed to accelerate climate and health planning and implementation along with recommendations for the State for structuring an effective climate and health program for local health departments.

Interviewees stated that adequate staffing is the most needed resource for LHDs to meaningfully address climate and health impacts. Both small and large LHDs expressed a desire for one, if not two or more, full-time equivalent staff positions to accomplish the necessary work.

Indeed, larger jurisdictions indicate a need for even more funding to pay for the time of staff in other departments to focus more on climate change. Responses vary on whether climate change activities should be in a stand-alone program or integrated into existing divisions.

The next highest needs cited were for resources to staff effective community engagement, and technical assistance and training on how to integrate climate change into LHD work. Staff is already aware of climate change for the most part, but unsure about how to address it in their everyday work; they need training on how to do this. The state can support climate change efforts by playing more of a role in directly intervening in policy implementation and through more democratic access to stakeholders and community engagement that involves coalition-led work, as recommended by policy leaders.

Absent more staff resources, climate change guidebooks and materials are not as helpful unless accompanied by hands-on training. There is, however, a significant need for LHD-centric content for staff to use to develop community-focused toolkits and curriculum. Also, having the state create a clearinghouse of best climate impact practices for LHDs to use would be a productive support for staff. The state can play a supportive role in helping LHDs by creating an ongoing dialogue among LHDs to discuss climate adaptation activities and to share lessons learned and challenges in current work, along with practical community solutions.

In ranking interest to be involved in the development of a potential program, the majority of LHDs felt strongly that they should assist with strategic planning; creating the targeted menu of activities; developing guidelines, work plans, etc.; recommending strategies and approaches; identifying challenges and barriers; and providing input on TA needed. This indicates promising possibilities for local jurisdiction staff to partner with state colleagues on examining strategies and tactics for a comprehensive climate-health initiative throughout the state.

The California Tobacco Control Program, Nutrition Education and Obesity Prevention Program, the Oral Health Program, and Public Health Preparedness all provide useful program models that could be examined and emulated to develop climate change technical assistance opportunities. Interviewees cited these especially useful program components as adaptive procedures to address local program needs:

✔ Roll-over funding capability

✔ Flexible guidelines and work plans

✔ Technical assistance from the State

✔ Information exchanges among LHDs

✔ Consideration of adaptive program guidelines that address service delivery needs

Respondents also spoke to the need to better integrate public health strategies in all ongoing climate change planning. They recommend that the state encourage LHDs to better partner within their departments, across departments, and across subject matter boundaries in their larger organizations. A move from working in silos is seen as a potential substantive improvement over current isolated practices and will help accelerate improving health outcomes.

FUNDING ALLOCATION

The interview questions on potential funding allocations needed for climate change focused on issues LHDs consider when applying for funding and if specific program criteria ought to be prioritized.

The LHD staff and senior leaders indicate that dedicated, long-term and sustainable funding is needed to best accomplish climate change and related health equity work. There was consensus that the sort of funding needed should span several years to be worth securing; one respondent said there should be a 10-year commitment from funding partners on comprehensive climate change and health equity efforts to best provide adequate time to develop long-term, regionally appropriate community solutions.

The recommended minimum funding amount varies. Where one small LHD states that the department needs a minimum of $50,000, larger LHDs suggest at least $500,000 is called for. Interviewee consensus was that at least $150,000 annually is needed as a baseline for all local health departments, and additional allocations could be based on a combination of population size, a need-based formula, and climate vulnerabilities. Priority consideration ought to be afforded to jurisdictions with greater climate impacts, though there was not universal support for any single priority factor. Interviewees suggest reviewing other types of climate change programs to see how "need" is determined.

Most LHDs based their funding suggestions on the need to hire at least one staff member; larger LHDs express a need to hire several to accommodate the larger coverage area. LHDs and policy experts also cite other expenses including meeting costs and community engagement, technical assistance, and content development as integral to baseline service delivery.

> As much work as we have done, we still need a good communications strategy, both internally and externally. How do we communicate these issues and have it be a priority and stay a priority?
>
> - Tulare County

It is worth noting that the LHD staff-level interviewees were consistently modest in their assessment of what level of funding could be obtained for an active climate change program that supports improved health equity. The project team attributes these responses as a possible combination of three factors: a respondent's positional authority; the widely shared sentiment that public health is a marginalized department in many jurisdictions; and, that program funding adequate to climate change and related health equity challenges is likely unattainable. The limitations of bureaucracy and continually restricted public health budgets have left their mark.

COMMUNICATION AND ENGAGEMENT

The interview questions addressed how LHDs work with multi-sectoral partners, identify key partners and outcomes, and the value of regional collaboratives.
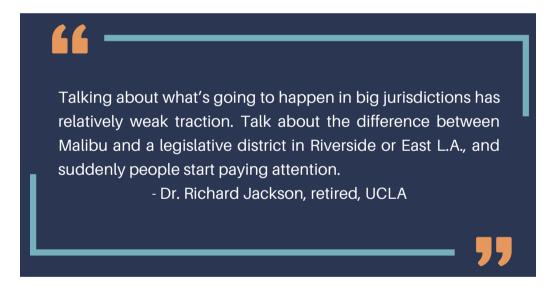
In addition to the resource issues regarding community engagement, a recurrent theme emerged regarding the need for long-term, supported community engagement and partnership development with the community. As the most trusted emissaries of local government, public health providers have strong and healthy relationships with their community members. This social capital advantage warrants both fiscal investment and inclusion in the broader spectrum of climate change work.

Most LHDs feel engaging elected officials and other decision makers was essential but were unsure on how best to do this. Staff with lower seniority cannot engage with elected officials at all. Many interviewees cite political sensitivities about using the term "climate change" or discussing strategies to address its impacts; LHDs need help addressing those challenges. Many agreed that bypassing the term and focusing on climate change outcomes, such as extreme heat days, drought, air quality, and wildland fire impacts provided a more fruitful entry to community dialogue.

Existing coalitions of LHDs and other departments, as well as partnerships with community-based organizations, have been helpful in advancing policy, systems, and environmental change work. LHD staff felt more comfortable working with the community because they already do this in their existing work but need assistance to integrate climate change. Public health leaders think that level setting including through discussing definitions of equity, climate change, and community in the local context can firmly anchor climate adaptation in planning.

Importantly, LHDs are often the conveners of coalitions, typically with a Health in All Policies approach. However, in many instances, LHD staff is brought in as in-kind partners without resources for staff time; this often prevents their departments from being more actively involved. Policy experts note that regional collaborative bodies provide a platform for peer-to-peer best practice sharing, assessing effective messaging, and identifying successful implementation, which can be especially important to support smaller jurisdictions.

> "
>
> Talking about what's going to happen in big jurisdictions has relatively weak traction. Talk about the difference between Malibu and a legislative district in Riverside or East L.A., and suddenly people start paying attention.
> - Dr. Richard Jackson, retired, UCLA
>
> "

TECHNICAL ASSISTANCE

The interview questions addressed technical assistance and other guidance from state, federal, and other community-of-practice organizations.

The project team reached out to all previous CalBRACE LHD grantees and affiliate LHDs and conducted 10 focus groups or interviews with representatives from that cohort. Feedback on CalBRACE was generally positive as the program allowed for direct engagement on climate efforts and the teams received supportive technical assistance and resources. Participating LHDs and senior leaders would have liked both additional and prolonged funding along with technical resources, and suggest a sustainable climate change funding program could achieve improved outcomes over a longer period. Most LHDs that were not CalBRACE grantees have not received direct technical guidance on climate change.

Most respondents knew about technical reports, community, and population profiles and data tools produced by CDPH, CDC, and others. Individuals who have used these materials found them to be useful. However, because LHD staff has little to no time assigned to directly address climate change, these resources are under-utilized at present. Some interviewees felt having more distilled and locale-specific materials provided by subject matter experts would support broader application in existing programs.

EVALUATION

The interview questions addressed evaluation activities, quality improvement, and monitoring efforts for climate change programs.

There was universal agreement that program evaluation is needed for public health program initiatives, but consensus did not emerge on what to measure. Respondents have questions on how to measure long-term impacts on mitigating climate change and what metrics are seen as useful.

One policy leader suggested that the following questions be considered in program evaluation:

1. How many LHDs can report on what they are doing on climate change?
2. What measure of community engagement was accomplished? Did the department convene meetings, attend community gatherings, etc.?
3. What kinds of intersectoral collaborations does the department engage in?
4. How does Public Health work with other departments on climate change?
5. How many other departments are now integrating climate change into their programs?
6. Do all-hazard vulnerability assessments include climate projections?
7. Is the department documenting long-term outcome measures (i.e., how many shaded playgrounds & cooling green roofs at schools?)
8. What technical guidance from the State is needed? Can the State provide evaluation frameworks on what measures would make sense in different points of a climate and health program?

Because local jurisdictions are accountable for use of all their program funds, interviewees see that both process and outcome measures ought to be integrated with any evaluation process. Any climate change program structure should include provision of technical assistance consulting on how to effectively conduct program evaluation.

KEY RECOMMENDATIONS

A strong and sustainable partnership between CDPH and LHDs on climate change—one that values health equity—can strengthen the capacity of all LHDs to play a full, robust, and active role with local government colleagues and community partners to reduce climate, disaster, and health impacts and increase community resilience. To better realize this possibility, the project team recommends these five actions, culled from the stakeholder interviews:

01

Strengthen the capacity of LHDs to achieve community-developed health equity and resilience outcomes by identifying consistent, sustained fiscal and technical resources.

Climate change initiatives need resources appropriate to the challenges at hand in each LHD to achieve equitable, effective progress. Steady, long-term funding for staffing, technical assistance, and support for community engagement and community partners is imperative. Allocations should be based on a formula that takes into account population size, need, and climate vulnerabilities. With state and local partnership, an overarching program vision and goals can be implemented with adaptive, effective local variations.

02

Call for leadership from LHD directors, local health officers, and other senior leadership to prioritize climate change within their departments, across the local government organization, and in the community.

Elevate the role of the public health sector in local, regional, and state climate resilience planning and action to ensure that health equity and protecting vulnerable populations from climate change impacts is a "front-burner issue" in all adaptation implementation, as called for in local climate action plans, regional plans, and state climate laws, policies and regulations, including SB32 (2016) and Executive Order B-30-15. Executive leadership can play a stronger role in speaking up for the need for greater planning for climate adaptation and resilience within their departments, across government, and in the community.

03 **Pivot on the teaching moment of California's recent climate-driven disasters.**

Disasters such as wildland fires, drought, extreme heat days, debris flows, and flooding provide salient moments for galvanizing community and regional action. The public health sector, often on the frontlines of addressing these disasters and helping vulnerable community members, can point to these events to help explain the need for additional support and resources for LHDs to work on climate change and improve health equity outcomes.

04 **Integrate addressing climate change impacts and improved health equity outcomes into the mainstream of local government.**

Incorporate climate resilience work into all LHDs and provide sufficient resources to accelerate local capacity to reduce community risk through public health and community-based networks that are often overlooked by other agencies. Encourage greater collaboration and participation by the LHD in interdepartmental efforts including Health in All Policies initiatives. Dismantle departmental silos and segmented approaches to community programs to improve health equity outcomes. The State could mainstream efforts to address climate change and improve health equity into contracts with local health departments through public health preparedness contracts or other existing programs requirements.

05 **Ensure that collaboration and community partnership is a foundational activity for all as LHDs address climate change and support improved health equity activities.**

Strengthen the local public health sector's capacity to contribute to community resilience planning and practice. As trusted officials, public health practitioners can identify needs at the individual, institutional, and community level to improve resilience outcomes so that everyone does better after the next climate-driven disaster.

Regional local health department coalitions provide a strong policy platform for reducing the impacts of climate change and improving health equity progress. These bodies can also carry out the advocacy and policy development activities that individual LHDs and local jurisdictions often cannot, and can be particularly helpful when regions overlap with climate zones and face similar issues. These bodies should continue to play a strong role in building capacity and supporting the inclusion of climate change initiatives and health equity work of LHDs and interfacing with state agencies.
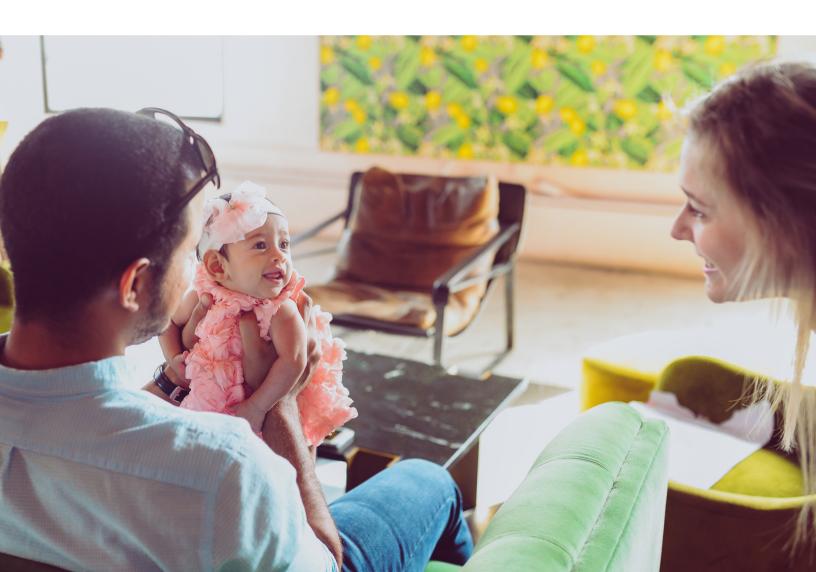
CDPH and LHD leaders can apply state climate laws, policies, and regulations, including Executive Order B-30-15, SB32, SB375, and SB1000, as justification for their actions and advance implementation within their communities. Their work on climate change impacts and health equity improvement should be aligned with the goals and targets identified in statutes, policies, and regulations.

> One of our partner organizations hosted a community event where participants created a poster that said, 'WE TAKE HEALTH AND CLIMATE CHANGE PERSONALLY.'
>
> – San Luis Obispo County

CONCLUSION

Public health departments have a great deal of community trust and a long history of social and health interventions. As trusted officials, public health practitioners identify needs at many levels to improve community resilience outcomes.

Given the increasing impacts of climate-related disasters in California, it is essential to build on successful climate change efforts such as CalBRACE and the important role that public health coalitions serve to improve resilience outcomes. Forging closer ties between the State and local health jurisdictions is a practical and forward-thinking next step. Realigning public dialogue, policy development, and program implementation to focus on people and communities could accelerate effective actions on crucial climate change initiatives and achieve better health equity outcomes.

APPENDICES
APPENDIX 1: GLOSSARY OF TERMS

This glossary of terms is a compilation provided by The California Department of Public Health's Office of Health Equity and its CalBRACE program reports. These definitions are adapted from glossaries in Safeguarding California 2014, Portrait of Promise 2015, and the original sources as noted.

Adaptation means adjustment in natural or human systems in anticipation of or response to a changing environment in a way that effectively uses beneficial opportunities or reduces negative effects. (U.S. Global Change Research Program)

Adaptive Capacity refers to the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages to take advantage of opportunities, or cope with the consequences. (Intergovernmental Panel on Climate Change)

Built Environment refers to all the physical parts of where we live and work (e.g., homes, buildings, streets, open spaces, and infrastructure). (Centers for Disease Control and Prevention)

Census Designated Places are delineated to provide data for settled concentrations of populations that are identifiable by name but are not legally incorporated. (U.S. Census Bureau)

Census Places include incorporated places (e.g., cities, towns, villages, boroughs) and census designated places. (U.S. Census Bureau)

Census Tracts are small, relatively permanent statistical subdivisions of a county or equivalent entity that are updated by local participants prior to each decennial census. (U.S. Census Bureau)

Climate in a narrow sense is usually defined as the "average weather," or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over time ranging from months to thousands of years. These quantities are most often surface variables such as temperature, precipitation, and wind. (Intergovernmental Panel on Climate Change)

Climate and Health means climate change and human health. The Centers for Disease Control and Prevention and the World Health Organization use this term interchangeably with, and often after, the first reference to the longer phrase "climate change and human health." (Centers for Disease Control and Prevention and World Health Organization)

Climate and Health Adaptation are steps taken to protect people and communities from health risks associated with a changing climate. (Centers for Disease Control and Prevention)

Climate Change refers to any significant change in the measures of climate lasting for an extended time, including major changes in temperature, precipitation, wind patterns, or other weather-related effects that occur over several decades or longer. Climate change is often referred to in popular parlance as "global warming." (U.S. Environmental Protection Agency)

Co-benefits mean the benefits of policies that are implemented for various reasons such as climate change mitigation which also have other, often at least equally important, rationales (e.g., related to objectives of development, sustainability, equity, or an individual's health). (U.S. Environmental Protection Agency)

Determinants of Equity means the social, economic, geographic, political, and physical environmental conditions that lead to the creation of a fair and just society. (California Health and Safety Code Section 131019.5)

Climate Change Exposures mean a category of natural hazard event or disease risk. (California Department of Public Health)

Exposure means the nature and degree to which natural or social systems are subject to climate variations. (Intergovernmental Panel on Climate Change)

Extreme Weather Event in most cases means an event in the outermost ("most unusual") ten percent of weather events in a place's history. Analyses are available at the national and regional levels. (National Centers for Environmental Information of the National Oceanic and Atmospheric Administration)

Food Insecurity is limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways. (U.S. Department of Agriculture via Life Sciences Research office)

Global Warming means an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur resulting from increased emissions of greenhouse gases from human activities. Also, see Climate Change. (California Air Resources Board)

Greenhouse Gas (GHG) is any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N20), hydrochlorofluorocarbons (HCFCs), ozone (O3), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). (California Air Resources Board)

Hazard Mitigation means sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. (Safeguarding California, 2014)

Health and Mental Health Disparities means the differences in health and mental health status among distinct segments of the population, including differences that occur by gender, age, race or ethnicity, sexual orientation, gender identity, education or income, disability or functional impairment, or geographic location, or the combination of any of these factors. (California Health and Safety Code Section 131019.5)

Health and Mental Health Inequities means disparities in health or mental health, or the factors that shape health, that are systemic and avoidable and, therefore, considered unjust or unfair. (California Health and Safety Code Section 131019.5)

Health Equity means efforts to ensure that all people have full and equal access to opportunities that enable them to lead healthy lives. (California Health and Safety Code Section 131019.5)

Heat Island means built up areas that are hotter than nearby rural areas. The annual mean air temperature of a city with 1 million people or more can be 1.8-5.4°F (1-3°C) warmer than its surroundings. In the evening, the difference can be as high as 22°F (22°C). Heat islands can affect communities by increasing summertime peak-energy demand, air conditioning costs, air pollution and greenhouse gas emissions, heat-related illness and mortality, and water quality. (U.S. Environmental Protection Agency)

Household includes all the people who occupy a housing unit such as a house, apartment, or mobile home. (U.S. Census Bureau)

Mainstreaming means integrating climate change considerations into development efforts and other policy processes (UNDP-UNEP Poverty-Environment Initiative)

Maladaptation occurs when an action or process increases vulnerability to climate change-related hazards. Maladaptive actions and processes often include planned development policies and measures that deliver short-term gains or economic benefits but can eventually lead to increased vulnerability in the medium to long term. (UNDP-UNEP Poverty Environment Initiative)

Mitigation means adjustment in natural or human systems to reduce global warming such as reducing greenhouse gas emissions. (Intergovernmental Panel on Climate Change)

Poverty is determined by the Federal Income Guidelines using a set of dollar-value thresholds determined by family size and composition. "If a family's total income in the past l2 months is less than the appropriate threshold of that family, that family and every member in it are considered below the poverty level." (U.S. Census Bureau)

Preparedness means actions taken to plan, organize, equip, train, and exercise to build, apply, and sustain the capabilities necessary to prevent, protect against, ameliorate the effects of, respond to, and recover from climate change related damages to life, health, property, livelihoods, ecosystems and civic infrastructure. (U.S. Global Change Research Program)

Resilience is the ability to survive, recover from, and even thrive in changing climatic conditions. (Asian Development Bank)

Vulnerability means the extent to which a person, community, or natural or social system is susceptible to sustaining harm or damage from climate change and is a function of the magnitude of climate change, the sensitivity of the system to changes in climate, and the ability to adapt the system to changes in climate. (Intergovernmental Panel on Climate Change)

Vulnerable Communities means communities that are inclusive of, but not limited to, women, racial or ethnic groups, low-income individuals and families, individuals who are incarcerated, and those who have been incarcerated, individuals with disabilities, individuals with mental health conditions, children, youth and young adults, seniors, immigrants and refugees, individuals who are limited-English proficient (LEP), and Lesbian, Gay, Bisexual, Transgender, Queer, and Questioning (LGBTQQ) communities, or combinations of these populations. (California Health and Safety Code Section 131019.5)

Vulnerable Places means places or communities with inequities in the social, economic, educational, or physical environment or environmental health and that have insufficient resources or capacity to protect and promote the health and wellbeing of their residents. (California Health and Safety Code Section 131019.5)

APPENDIX 2: INTERVIEW QUESTIONS FOR THE STAKEHOLDER INPUT

Overview

The California Department of Public Health is working with BARHII and the Public Health Alliance of Southern California to develop a report that identifies operational recommendations for a sustainable statewide climate change and health program that increases local public health department capacity to advance climate change adaptation and preparedness solutions that promote public health and health equity. We want to ensure such a program is responsive to the needs of LHDs. One of the first steps in this process is to interview LHDs around the state, along with climate and health experts, to gain insight and feedback into what type of state funding program would be most effective and beneficial to local climate and health.

In this interview we will start by asking some introductory questions about your existing climate and health work, then move into recommendations for creating a state funding program. This includes questions about program development and structure, previous funding/technical assistance you've received, your specific LHD needs that could be assisted with a state funding program, staffing, and funding allocations. We will also ask about communications, stakeholder engagement, evaluation, and anything else you think the state should know in setting up this program.

Structure and Staffing

1. Does your department currently work on addressing climate change? If so, do you have dedicated existing staff, programs, or resources focused on addressing climate change or is it an activity existing in the margins of other programs?

2. If you have current staff working on climate change, what type(s) of position(s) and skill sets do you currently have working on climate and health? What positions and skill sets would be the most beneficial?

3. Do any of your department's plans, assessments, and programs address climate change, including your strategic plan, Community Health Assessment, and Community Health Improvement Plan?

4. What is the current level of need for a program like this in your LHD given recent events such as wildfires? Is there an urgent or timely need at the moment?

Health Equity

5. What do you see as the relationship between addressing climate change and your goals around health equity and vulnerable populations?

6. What resources does your LHD want or need to ensure that the most vulnerable communities are at the table and engaged in decision-making?

Program Resources

7. Specifically, what resources are most needed in your LHD to accelerate climate and health planning and implementation?

8. What recommendations do you have for the state for structuring an effective climate and health program for local health departments? Are there other essential components you would suggest for an effective, collaborative program?

9. In the development of an effective, responsive, and collaborative state program, how important is it to your department that LHDs assist in the following, on a scale of 1 (least important) to 10 (most important):

- **a.** LHDs assist the state with on-going strategic planning and priority setting.
- **b.** LHDs assist with the creation of a targeted menu of activities to advance practice across the state.
- **c.** LHDs provide input on guidelines, eligible activities for funding, and funding allocation methodologies, workplans, and timelines.
- **d.** LHDs recommend strategies and approaches to the work that would be effective in LHDs.
- **e.** LHDs identify challenges and barriers that would prevent your LHD from seeking and/or accepting funding.
- **f.** LHDs provide input as to what type of TA is needed, so that it is responsive to actually needs.

10. Are there successes, challenges, or lessons learned from other programs that should be considered or avoided?

Funding Allocation

11. What would be the minimum amount of funding you would need to consider applying for State funding? Should there be a minimum funding allocation that all LHDs receive with everyone receiving the same amount? Should specific criteria be prioritized for higher funding?

Communications and Engagement

12. How can LHDs partner with elected officials, administrative officials, the community, and other sectors to best address climate change and health issues effectively?

13. What sectors or partners do you see as critical to collaborate with on climate change and health? What outcomes would be desired from such engagement? What challenges and tensions do you anticipate facing?

14. What value do regional collaboratives of LHDs and partners bring on working together on common objectives to respond to climate exposures, such as wildfire smoke, sea level rise, or specific disease burdens?

Technical Assistance

15. What technical assistance or other support have you received to do climate change and health work, and how have you used them?

16. Have you visited or used information from any of the following: CDPH Climate and Health Profile Report; CDC Climate Initiative website; ARRCA website; Online webinars; CalBRACE or CDPH Climate Change website; Healthy Places Index; CDPH Tracking Program website?

Evaluation

17. Should evaluation activities, quality improvement, and monitoring be a required activity? If so, should the state provide a consultant for training and TA to an LHD?

Anything else?

18. Is there anything else you'd like to add that would increase capacity of state or local health departments for climate adaptation activities?

APPENDIX 3: LOCAL HEALTH DEPARTMENTS AND SUBJECT MATTER EXPERTS

Local Health Departments

Alameda County Public Health Department

Contra Costa County Health Services

Imperial County Public Health Department

Kings County Department of Public Health

Long Beach Health and Human Services

Los Angeles County Department of Public Health

Marin Health and Human Services

Merced County Department of Public Health

Napa County Health and Human Services Agency

Sacramento County Department of Health Services

San Bernardino County Department of Public Health

San Diego County Public Health Services

San Francisco Department of Public Health

San Luis Obispo County Public Health

San Mateo County Health

Santa Barbara County Public Health Department

Santa Clara County Public Health Department

Solano County Public Health

Sonoma County Health Services

Tulare County Health and Human Services Agency

Subject Matter Experts

Rob Baird | Prevention Institute

Jackie Cole | VG Consulting

Paul English | California Department of Public Health

Richard Jackson | Retired, UCLA

Linda Rudolph | Center for Climate Change and Health

Elva Yanez | Prevention Institute

APPENDIX 4: ADDITIONAL RESOURCES

California Department of Public Health, Office of Health Equity
https://www.cdph.ca.gov/Programs/OHE/Pages/OfficeHealthEquity.aspx

CalBRACE: Preparing for Climate Change in California—A Public Health Approach
https://www.cdph.ca.gov/Programs/OHE/Pages/CalBRACE.aspx

Climate Change & Health Equity Program (CCHEP)
https://www.cdph.ca.gov/Programs/OHE/Pages/CCHEP.aspx

CDC Climate Ready States and Cities' Initiative
https://www.cdc.gov/climateandhealth/climate_ready.htm

ENDNOTES

i   Funds were provided by the Centers of Disease Control and Prevention (CDC) BRACE Collaborative Grant 5 NEU1EH001320-02, as a component of the CalBRACE implementation strategy.

ii Preparing for Climate Change: A Perspective from Local Public Health Officers in California; Louise Bedsworth, Public Policy Institute of California
    https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2679607/
    https://www.cdph.ca.gov/Programs/OHE/Pages/calbrace.aspx

iii https://www.researchgate.net/publication/325902440_Minigrants_to_Local_Health_Departments_An_Opportunity_to_Promote_Climate_Change_Preparedness

iv These resources include the CalBRACE Climate and Health Profile reports, CDC Climate Initiative website, the Alliance of Regional Collaboratives for Climate Adaptation (ARCCA) website, online webinars, CDPH Climate Change and Health Equity website, Public Health Alliance of Southern California's California Healthy Places Index and the Climate Change, Health, and Equity: A Guide for Local Departments, CDPH Tracking Program website, and the websites of the CDC State and tribal grantees.

v   See for example Advancing Health Equity and Climate Change Solutions in California Through Integration of Public Health in Regional Planning; Solange M. Gould; 2015 Dissertation submitted for Doctor of Public Health degree at U.C. Berkeley.
    https://www.proquest.com/docview/1730964489/744B404B5B6B4469PQ/1

vi Urban Resilience Strategies is a private consulting firm that provided technical assistance and guidance to the survey and report development.

QUESTIONS? CONTACT US.

BARHII
Bay Area Regional Health
Inequities Initiative

The Bay Area Regional Health Inequities Initiative (BARHII) is a coalition of the San Francisco Bay Area's eleven public health departments committed to advancing health equity. BARHII's mission is to transform public health practice for the purpose of eliminating health inequities using a broad spectrum of approaches that create healthy communities.

Public Health Alliance™
OF SOUTHERN CALIFORNIA

The Public Health Alliance of Southern California (Alliance) is a coalition of local health departments in Southern California.

Collectively our members have statutory responsibility for the health of nearly 50% of California's population. Our vision is "vibrant and activated communities achieving health, justice, and opportunities for all" and our mission is to "mobilize the transformative power of local public health for enduring health equity."