Climate Action for Health:

Integrating Public Health into Climate Action Planning

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California Department of Public Health

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Mona Mena (Alameda County DPH), Joanne Genet, Michael Kent (Contra Costa County DPH), Paula Murray (San Diego DPH), Kathleen Karle (San Luis Obispo DPH), Cathleen Baker (San Mateo County DPH), Kate Kelsey, Susan Stuart (Santa Clara County DPH), Minnie Sagar (Shasta County DPH), Dr. John Walker (California Conference of Local Health Officers and Stanislaus County DPH), Dr. Sharon Hutchins (Stanislaus County DPH), Natasha Prudent (CDC-Center for Environmental Health), Timothy Burroughs, Billi Romaine (City of Berkeley), Cindy van Empel (City of Modesto), Garrett Fitzgerald (City of Oakland), Mathew Seubert (County of San Mateo), Matt Raimi and staff (Raimi + Associates), Bruce Riordan, (Elmwood Consulting), Jessica Sisco (AECOM), Ann Baker (ASLA), Yvonne Hunter (Institute for Local Government), Amruta Sudhalkar, Brian Holland, Michael Schmitz (ICLEI/Local Governments for Sustainability, California Office), Letitia Ayala, Nicole Captrez (San Diego Environmental Health Coalition), Miriam Rotkin-Ellman (Natural Resources Defense Council), Jonathan Parfrey (LA Green Coalition), Lynn Terry (California Air Resources Board), Michael McCormick, Christopher Calfee (California Governor's Office of Planning and Research), Lianne Dillon, Jacquie Duerr, Dr. Neil Maizlish, Jeffrey Rosenhall, Dr. Linda Rudolph, and Janet Tobacman (California Department of Public Health).

Authors: Solange Gould, MPH and Kathy Dervin, MPH

Editor: Tiffany Watson

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Introduction: Intent and Use of This Guide

The State of California currently provides national leadership in addressing climate change. Reducing greenhouse gases in the atmosphere is key to preventing or slowing further climate change. Assembly Bill 32 requires California to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. California Executive Order S-03-05 mandates a further reduction of GHG emissions to 80% below 1990 levels by 2050. Amendments to California Environmental Quality Act (CEQA) Guidelines adopted in 2009[1] require lead agencies to consider the potential impacts and significance of GHG emissions in project review.[2] Senate Bill 375 requires Metropolitan Planning Organizations (MPOs) to develop a Sustainable Community Strategy (SCS) (or an alternative strategy), as part of their Regional Transportation Plan, which aligns land use, transportation, and housing plans to meet regional GHG reduction targets.[3, i] Many local governments in California have or will develop a voluntary plan to reduce their GHG emissions, which usually involves conducting an inventory of emissions, setting emission reduction goals, adopting GHG emissions reduction measures — generally referred to as climate change mitigation planning — and establishing a timeline to achieve those goals. This may be in the form of an amendment to a General Plan, a comprehensive sustainability plan (including local implementation of the regional SCS), CEQA-related mitigation for projects or programs, a stand-alone Climate Action Plan (CAP), an Adaptation Plan, or all of the above.

While this document primarily addresses key GHG emissions reduction efforts in CAPs that have health co-benefits, the information provided may also be useful in broader sustainability or adaptation planning, where some of these strategies overlap. For guidance on how to develop a CAP, the Governor's Office of Planning and Research (OPR) maintains advisories and resources to assist local governments.[4] ICLEI/Local Governments for Sustainability has several free resources designed for California cities and counties developing CAPs, developed with the Statewide Energy Efficiency Collaborative (SEEC), a partnership between ICLEI, Institute for Local Government, the Local Government Commission, and California's four investor-owned utilities.[ii]

These recent laws and some funding sources[iii] have created important opportunities to work across sectors to reduce GHG emissions and promote sustainability while also improving

i Institute for Local Government has resources to help understand how AB 32 and SB 375 impact local agencies. Available at www.ca-ilg.org/AB32-SB375LegalAnalysis.

ii SEEC resources are available at http://californiaseec.org/tools-guidance/advanced-resources.

iii The state Strategic Growth Council's Sustainable Community Planning Grants, as well as some regional agencies (MPOs, Air Districts) and foundations, provide financial support for CAP development. Some grants provide additional points to applicants that promote public health objectives and co-benefits, prevent or mitigate potential negative health consequences, address the definition of a healthy community, and actively seek partnerships with local health departments. More information is available at www.sgc.ca.gov/docs/funding/PGIP-guidelines2011.pdf.

community health and well-being. This document is intended for people from varied agencies such as planning, public works, city manager or mayor's offices, sustainability offices, public health and community groups that are working together to develop a Climate Action Plan. Some of the strategies and recommendations outlined here may apply more readily to urban and suburban areas. Planning teams in rural areas may need to make adjustments or develop alternate strategies for integrating health into climate action planning.

Many planning and public health agencies are already working together to incorporate health into documents such as General Plans. For others, this may be a new endeavor. This document introduces key health connections to climate change mitigation strategies, suggestions of where these fit into a CAP, a process for forging partnerships between planning and health organizations, links to data that will help planners identify and reference the existing health status of their jurisdiction, and supporting documentation, evidence, and resources. Additionally, we provide a number of examples of CAP strategies that integrate public health objectives, and health departments and community-based organizations that are making efforts to improve community health and reduce GHG emissions. The information provided is advisory, voluntary, and educational. The specific language a local jurisdiction develops for its CAP's health policies should optimally be the result of conversations and long-term partnerships with health organizations that link and coordinate sustainable and healthy community efforts.

What Is a Healthy Community?

A HEALTHY COMMUNITY is one that meets the basic needs of all residents, ensures quality and sustainability of the environment, provides for adequate levels of economic and social development, and assures social relationships are supportive and respectful.

A healthy community provides for the following through all stages of life:

Meets basic needs of all residents

- Safe, sustainable, accessible, and affordable transportation options
- Affordable, accessible, and nutritious foods, and safe drinkable water
- Affordable, high-quality, socially integrated, and location-efficient housing
- Affordable, accessible, and high-quality health care
- Complete and livable communities including quality schools, parks, and recreational facilities, child care, libraries, financial services, and other daily needs
- Access to affordable and safe opportunities for physical activity
- Able to adapt to changing environments, resilient, and prepared for emergencies
- Opportunities for engagement with arts, music, and culture

Ensures quality and sustainability of environment

- Clean air, soil, and water, and environments free of excessive noise
- Tobacco- and smoke-free
- Green and open spaces, including healthy tree canopy and agricultural lands
- Minimized toxics, greenhouse gas emissions, and waste
- Affordable and sustainable energy use
- Aesthetically pleasing

Provides for adequate levels of economic and social development

- Living wage, safe and healthy job opportunities for all, and a thriving economy
- Support for healthy development of children and adolescents
- Opportunities for high-quality and accessible education

Promotes health and social equity

Ensures social relationships that are supportive and respectful

- Robust social and civic engagement
- Socially cohesive and supportive relationships, families, homes, and neighborhoods
- Safe communities, free of crime and violence

(From Strategic Growth Council, Health in All Policies Task Force, 2011)

I. Overview: Why Is Public Health Important to Include in a Climate Action Plan?

Human health is highly impacted by climate change.

- Climate change will have significant and far-reaching public health consequences, and these health impacts are occurring sooner than expected. Georges Benjamin, Executive Director of the American Public Health Association, has stated, "Climate change is one of the most serious public health threats facing our nation. Yet few Americans are aware of the very real consequences of climate change on the health of our communities, our families, and our children." Climate change impacts such as increased risk of wildfires, drought, and extreme weather events, such as extreme heat and floods, have accompanying health impacts that include increased death, injury, and some chronic and infectious diseases. (See *Human Health Effects of Climate Change in California*, page 9.)
- Many Climate Action Plans (CAPs) state that climate change will have public health impacts, but do not elaborate or link these health threats to the local community. The health impacts of climate change require more description and understanding by elected officials, key sectors, and the public.

Climate mitigation efforts can reap significant public health "co-benefits."

- Many key strategies for reducing greenhouse gas (GHG) emissions can also improve population health. These co-benefits make climate action planning itself a "win-win" for the jurisdiction, bettering health and slowing climate change. Benefits of a CAP that prioritizes strategies with health co-benefits include a decrease in obesity, some chronic diseases, respiratory illnesses, injury, and improved community cohesion and mental health.
- Some public health co-benefits can be achieved more rapidly than many GHG emissions targets. A CAP that prioritizes near-term (i.e., achievable in the next five to ten years) health benefits to local communities can increase community commitment to longer-term mitigation efforts.

Health Co-Benefits:

Strategies to prevent further climatic changes that also have a beneficial effect on health and quality of life.

- The CAP process can benefit by engaging local public health practitioners, who bring a multidisciplinary skillset that includes policy, environmental, and behavior change expertise. Policy and environmental changes that support healthy lifestyles provide the biggest impact. Partnering with public health practitioners can ensure that planning policies and documents contain health-promoting strategies that simultaneously advance GHG mitigation goals.

Health is a strong motivator for action.

- Ensuring the opportunity for a healthy life is a deeply held American value. Research shows that describing climate change as a health issue and identifying the health benefits associated with taking action against climate change is compelling to a cross-section of the

Strategy to Reduce GHG Emissions	Potential Health Co-Benefitss
Reduce vehicle miles traveled	• Increase physical activity • Reduce chronic disease • Improve mental health • Reduce air pollution
Reduce emissions through land use changes	• Increase physical activity • Reduce chronic disease • Increase local access to essential services (affordable housing, jobs, amenities) • Enhance safety
Reduce residential building energy use	• Reduce household energy costs (especially beneficial for low-income households) • Promote healthy homes (see *Resources*, page 32) • Create local green jobs • Promote cooler communities (e.g., white roofs)
Urban greening	• Reduce temperature and urban heat island health effects • Reduce air pollution • Reduce noise • Enhance safety
Reduce energy intensity in local food systems • reduce food miles traveled • promote local agriculture • encourage less meat consumption • expand farmer's markets and community/backyard gardens	• Increase access to healthy, fresh foods • Reduce cardiovascular disease due to saturated fats • Reduce air pollution • Increase local social cohesion • Increase resilience

The Importance of Equity in Land Use Planning

"Planners are required to address social equity in their work as part of APA's AICP Code of Ethics and Professional Conduct. As Hurricane Katrina and heat wave mortality figures teach us, lower-income and elderly populations are more at risk and will bear the brunt of many climate change impacts. As a consequence, planners need to ensure that the responses they develop to address the impacts of climate change take into account the varied needs of all sectors of the community, in order to equitably meet the significant challenges facing us."

(From "Policy Guide on Planning and Climate Change," American Planning Association, April 11, 2011)

public.[5, 6] Making the connection between health and climate change may help to engage a broader constituency and build support for the climate action effort.

- The public health community has a critical role to play in communicating the health impacts of climate change, adding credibility, and increasing recognition of climate change as an important social and health issue. Public health professionals are well positioned to explain the connections between the rapidly emerging threats associated with climate change and our individual and community health and well-being.
- In partnership with the local public health community, the Climate Action Plan can highlight the specific local health effects of climate change, thereby informing land use, housing, and transportation planners, elected officials, stakeholders, and residents, and mobilizing these groups to decrease GHG emissions and begin climate adaptation planning.

Climate change impacts intersect with health and social equity.

- While climate change will affect the health of entire communities, some groups will experience more severe impacts than others. Climate Action Plans can identify the local populations most at risk, in order to engage these communities in solutions and include policies to lessen any disproportionate impacts.
- Some climate change mitigation efforts can exacerbate existing health problems, which can reinforce or widen disparities between groups. Potential adverse health effects in specific CAP sectors are presented in the chapters addressing specific sectors or focus areas (Transportation, Land Use, Urban Greening and Food/Agriculture, Residential Energy Use, Economic Development, Community Engagement, and Climate Adaptation), beginning on page 19.
- Early evaluation of the potential health impacts of climate change mitigation strategies can help avoid unintended negative health and equity consequences, especially as they pertain to the most vulnerable populations.
- Public health agencies can be a valuable resource for engaging communities, particularly vulnerable populations, in climate change planning. Public health staff have long-standing relationships within low-income and ethnically diverse communities, and community engagement and education expertise that can be leveraged to achieve both health and climate change mitigation goals.

Including health in a CAP can promote greater efficiency and cost-effectiveness, and enhance the collaborative nature of local government.

- Incorporating health co-benefits into a CAP provides an opportunity for resource sharing among agencies and may help leverage local investments in community well-being in a time of diminished budgets. Identifying relevant health objectives in CAPs might make these efforts eligible for additional funding (health, community development, etc.), which is a prime concern for local governments.
- Addressing projected health effects of climate change now will help local jurisdictions avoid greater costs later.
- By embedding health into the strategies of a CAP, local governments can encourage collaboration across agencies and communities. This collaborative approach is consistent with a new state focus on Health in All Policies, under the auspices of the multi-agency Strategic Growth Council.[7]
- Recent research shows that deaths and health problems from floods, drought and other U.S. disasters related to climate change cost an estimated $14 billion over the last decade.[8]

Human Health Effects of Climate Change in California

Climate Change Impacts	Health Impacts	Populations Most Affected
Extreme Heat	• Premature death • Cardiovascular stress and failure • Heat-related illnesses such as heat stroke, heat exhaustion, and kidney stones	• Elderly • Children • Diabetics • Poor, urban residents • People with respiratory diseases • Agricultural workers • Those active outdoors
Poor Air Quality/ Air Pollution	• Increased asthma, allergies, chronic obstructive pulmonary disease (COPD), and other cardiovascular and respiratory diseases	• Children • Elderly • People with respiratory diseases • Low income • Those active outdoors
Wildfires	• Injuries and death from burns and smoke inhalation • Eye and respiratory illnesses due to air pollution • Exacerbation of asthma, allergies, chronic obstructive pulmonary disease (COPD), and other cardiovascular and respiratory diseases • Risk from erosion and land slippage after wildfires • Displacement and loss of homes	• People with respiratory diseases
Severe Weather, Extreme Rainfall, Floods, Water Issues	• Population displacement, loss of home and livelihood • Death from drowning • Injuries • Damage to potable water, wastewater, and irrigation systems, resulting in decrease in quality/quantity of water supply and disruption to agriculture • Water- and food-borne diseases from sewage overflow	• Coastal residents, and residents in flood-prone areas • Elderly • Children • Low income
Increased average temperature	• Cardiovascular disease Increased number and range of: • Vector-borne disease, such as West Nile virus, malaria, Hantavirus, or plague • Water-borne disease, such as cholera and *E. coli* • Food-borne disease, such as *salmonella* poisoning • Harmful algal blooms causing skin disease and poisoning • Allergies caused by pollen, and rashes from plants such as poison ivy or stinging nettle • Vulnerability to wildfires and air pollution	• Children • Elderly • Agricultural workers • Those active outdoors • People with respiratory disease • People with acute allergies
Agricultural Changes	• Changing patterns and yields of crops, pests, and weed species, resulting in higher prices for food and food insecurity, hunger, and malnutrition • Changes in agriculture/forestry, leading to lost or displaced jobs and unemployment	• Agricultural workers • Rural communities • Low income • Elderly • Children
Drought	• Hunger and malnutrition caused by disruption in food and water supply, increased cost and conflict over food and water • Food- and water-borne disease • Emergence of new contagious and vector-borne disease	• Low income • Elderly • Children
All Impacts	Mental health disorders (e.g., depression, anxiety, Post-Traumatic Stress Disorder, substance abuse, and other conditions) caused by: • Disruption, displacement, and migration • Loss of home, lives, and livelihood Health Care impacts: • Increased rates of illness and disease, emergency room use, and related costs borne by employers, health plans, and residents • Damage to health facilities	• All populations • Low income • Health care staff

Table sources:

Public Health-Related Impacts of Climate Change in California, A Report From: California Climate Change Center, March 2006[9]

Global Climate Change Impacts in the United States, Cambridge University Press[10]

Centers for Disease Control and Prevention, Climate and Health Program[11]

II. How to Include Health Content in a Climate Action Plan

Public Health Departments as Partners in Climate Action Policy and Planning

Considering the public health co-benefits during climate action planning will assure that plan actions improve population health over the decades of implementation. Today, many health departments are working on the health impacts of housing, transportation, and infrastructure, and investing in projects where there are co-benefits. Collaboration with the local health department and health organizations can facilitate robust climate mitigation and adaptation plans that identify localized health impacts and mobilize the broader community to work together on these issues. Public health and medical professionals can be important allies in identifying climate change as a critical community issue requiring attention and resources with elected officials, agencies not yet engaged on climate change, and the public.

Plans and Policies with Health and Climate Connections

- Identifying health impacts of climate change on the community, including identifying potentially vulnerable populations
- Provision of relevant local health data, including geospatial disease data
- Climate Action Planning and monitoring and assessing progress toward CAP goals
- Regional and local SB 375/Sustainable Community Strategy planning
- Food policy planning, and planning to enable urban food production
- Transportation planning, and Bicycle and Pedestrian Master Plans
- Safe Routes to School planning and advocacy, including Walk and Roll to School Day
- Urban Forestry and Urban Greening Master Plans
- General or Specific City/County Plans, and updates or amendments to existing plans
- Emergency Preparedness, Hazard Mitigation and Response plans (adaptation planning)
- Community engagement
- Health Impact Assessment
- Identifying funding opportunities for collaborative health and planning efforts

Example of Public Health Partnerships for Healthy Planning

The Santa Clara County Public Health Department, with support from the Center for Disease Control's *Communities Putting Prevention to Work Initiative*, is funding cities to develop and advance plans, policies, and organizational and environmental changes that promote physical activity, improve nutrition, and combat obesity. This kind of public health initiative addressing obesity prevention provides an important opportunity for collaboration with climate action planning. City projects include:

Cupertino	Implement Bicycle Master Plan through commute recommendations (municipal code changes) and engage new businesses in alternative commute opportunities and incentives (combine with Green Business program and Association of Bay Area Governments support). Add bike racks, promote bike ambassadors. Leverage *Let's Move Cities, Towns, and Counties* to increase accessibility and affordability of fruits and vegetables by increasing Community Supported Agriculture (CSA) opportunities for employees and low- to moderate-income residents.
Gilroy	Develop and print a bilingual bicycle map and bike safety instructions, and collaborate with Parks and Recreation Department and Safe Routes to Schools to distribute broadly to residents and community partners.
Saratoga	Develop ordinance to reduce on-street parking and encourage local businesses to install bike parking. Conduct outreach to new businesses affected by policy.
Mountain View	Develop zoning studies and design standards for El Camino Real Corridor, to implement active transportation policies in Mountain View General Plan Update.

Checklist for Integrating Health into Climate Action Planning

Use this checklist to integrate public health into the stages of climate action planning: scoping, development, implementation, monitoring progress, and updates. At each stage, local health impacts can be embedded into CAP strategies. Each jurisdiction should optimally discuss these suggestions with local health partners.

- ☐ Meet with local health department staff about CAP planning process and implementation.
- ☐ Invite public health and other local health organizations to participate in CAP development and coordinate and collaborate on implementation. Local health partners include hospitals, clinics, Health Plans, the County Medical Society, American Lung Association local chapters, and community health organizations, many of whom are becoming more involved in land use, transportation, and climate and health issues.
- ☐ Make sure local policymakers understand the health and climate change connections and how these can be part of the overall CAP.
- ☐ Identify and include health goals and co-benefits in a Request for Proposals for consultants, to ensure that health impacts will be integrated in the planning process early on.
- ☐ Identify relevant local health data and indicators for use in the CAP.
- ☐ Identify health co-benefits that resonate most with the community's goals to ensure the CAP addresses the unique needs and interests of the local population.
- ☐ Identify public health co-benefits and potential adverse health consequences early in the screening, development, or implementation phases of the CAP. Health partners may be able to help with this analysis. For any identified negative consequences that may be associated with the CAP, have a clear plan for mitigating or preventing these consequences.
- ☐ Identify health co-benefits that resonate most with the community's conditions and goals to ensure the CAP addresses the unique needs and interests of the local community.
- ☐ Include climate change and health information as part of community outreach and engagement during the development, adoption, and implementation phases. Identify health partners who can help with outreach, education, and communication strategies.
- ☐ As part of evaluation and reporting on CAP progress, make sure that health outcomes are included and measured. Health partners may be able to help with this.
- ☐ When reporting progress to elected officials, media, partners, and residents, make sure to reinforce the human welfare, equity, and health benefits of measures to reduce GHG and strengthen community readiness.

III. Where to Include Health Content in a Climate Action Plan

There are three main areas where health content should be integrated into a CAP:

- **Background and Rationale section**
- Chapters addressing specific mitigation strategies by sector or focus area (**Transportation, Land Use, Urban Greening and Food/Agriculture, Residential Energy Use, Economic Development, Community Engagement,** and **Climate Adaptation**)
- **Performance Metrics and Data section**

Background and Rationale Section

Though climate action planning aims to identify policies and programs to reduce a community's greenhouse gas emissions and respond to the impacts of climate change, some of the first benefits of policies and programs to reduce greenhouse gas emissions will be improved human health and decreased healthcare costs. Consider the following snapshot of current challenges to California's health, which may be further exacerbated by climate change or improved by co-beneficial climate action planning:

- California faces unprecedented levels of chronic disease, which now accounts for 87% of deaths in California[12] and 80% of all California health care expenditures.[13]

Social Determinants of Health (SDOH):

The conditions in which people are born, grow, live, work, and age, or the underlying causes of ill health. Some examples of SDOH include:

- Access to healthy food, transit, and affordable housing
- Social exclusion/segregation
- Characteristics of the built environment, such as safe spaces for social interaction
- Quality of employment and educational opportunities
- Stress

These are shaped by the distribution of power and resources, which are influenced by policy choices.

(World Health Organization, 2011. Available at www.who.int/social_determinants/en/)

- California has nearly three million people — more than 1 out of 10 adults — with diabetes.[14]
- One in every nine California children, one in three teens, and over half of adults are already overweight or obese, due in part to sedentary lifestyles and the lack of opportunity for everyday physical activity.[15,16]
- More than 60% of adults do not achieve the recommended amount of regular physical activity.[17] This affects virtually all age, income, educational, ethnic, and disability groups, although rates are highest among California's low-income households, communities of color, and those with disabilities. Poor diet, inactivity, and obesity contribute to the risk of heart disease, type 2 diabetes, high blood pressure, stroke, arthritis, depression, sleep disorders, and some cancers.
- California's costs attributable to physical inactivity, obesity, and overweight in 2006 were estimated at $41.2 billion. It is estimated that by 2023 Californians will have 4.2 million people with avoidable chronic diseases, with treatment costs at $18.9 billion, and lost productivity at $98 billion.[18] A recent study revealed that California will bear the biggest brunt of diabetes costs by 2025. Diabetes costs throughout the U.S. are projected to hit $514 billion by 2025, a 72% increase over 2010.[19,20] California could save an estimated $1.7 billion over five years by investing $10 per person per year in chronic disease prevention programs.[20,21] The Climate Action Plan presents an important opportunity to complement ongoing public health efforts in California cities and counties. Important health co-benefits can be achieved by linking GHG mitigation goals and strategies directly to complementary health objectives of increasing physical activity levels (walking and biking), improved respiratory health (reduced driving and healthy home weatherization), encouraging local healthy food supplies (urban gardens and sustainable agriculture), reducing heat mortality and morbidity (urban greening/forestry), improving social determinants of health, and eliminating health inequities.

Health Inequities:

The unfair and avoidable differences in health status within and between different population groups. (World Health Organization, 2011)

Health inequities are differences in which disadvantaged social groups — such as the poor, racial/ethnic minorities, women, and other groups who have persistently experienced social disadvantage or discrimination — systematically experience worse health or greater health risks than more-advantaged social groups. Social advantage refers to one's relative position in a social hierarchy determined by wealth, power, and/or prestige. (Braveman, 2006)

Establish the connection between climate change and health early in the introductory Background and Rationale sections with the following steps:

1. **Describe the public health impacts of climate change in the Background and Rationale sections.**

   Some public health impacts will be direct, such as death and illness from extreme heat or storms. Ecological shifts and environmental degradation will cause other impacts, such as emergent infectious diseases through changes to habitats of disease-carrying vectors, exacerbation of chronic respiratory diseases due to air pollution, or food

insecurity due to variable food production. In addition to the direct environmental and human health impacts, climate change will have significant economic impacts, which can negatively affect health and wellbeing. The *Human Health Effects of Climate Change in California* table on page 9 can be used to broadly describe impacts that are likely to affect each jurisdiction.

Planning Resource: The Cal-Adapt Website

The Cal-Adapt site has been designed to provide access to the wealth of data and information produced by the State's scientific and research community. The data available in the Cal-Adapt site offer tools to visualize how climate change might affect California at the local level. The data populating Cal-Adapt's tools have been developed by a variety of research centers and institutions, sponsored by the Public Interest Energy Research (PIER) program. Available at www.cal-adapt.org

2. **In partnership with local health agencies, identify local climate change and health impacts.**

   Climate change impacts will vary broadly by region. Increased understanding of the localized public health consequences of climate change can help local officials better anticipate, manage, and respond to the impacts that climate change may have on their communities. Work with the local health department, local health advocacy organizations, researchers at local universities, and local Air Quality Management districts to identify information on the existing health issues and how these may affect sensitivity or adaptability to climate impacts. Local officials can learn more about local climate impacts with the state's Cal-Adapt tools, data, and interactive maps. The extent of climate change impacts upon different ecosystems, populations, regions, and sectors of the economy will depend not only on the sensitivity of those systems to climate change, but also on the systems' ability to adapt to climate change. This is an emerging field, and consultants, organizations,[iv] or local universities may provide resources for identifying local impacts.

   - **Identify local populations having particular vulnerability to climate change impacts, using census and existing health data.** CAP planners have an opportunity to improve the health and resilience of at-risk communities and protect vulnerable populations. Regional and local emergency response plans may already contain relevant data on local hazards, but these are only beginning to incorporate climate impacts.

     Climate change will not affect all communities in the same way. Populations vulnerable to climate-related health impacts include the elderly, children, low-income, communities of color, and those unable to afford food or fuels for cooling and transportation, or lacking alternatives to contaminated drinking water. An urgent

iv ICLEI/Local Governments for Sustainability resources providing guidance on community vulnerability and adaptation include:

- "Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments" Chapter 8 includes a list of questions to identify adaptation strategies. At www.icleiusa.org/library/documents/action-center/Adaptation_Guidebook.pdf/view
- "We Adapt," at www.icleiusa.org/climate_and_energy/Climate_Adaptation_Guidance

challenge for CAP planners to consider, coined the "Climate Gap," is the unequal harm climate change is expected to cause for people of color and the poor in California.[22] Low-income and minority populations disproportionately live in neighborhoods with the worst air quality and housing conditions and with the fewest resources to protect themselves against the effects of extreme weather events.[23]

Plan for projected demographic change. What will local communities look like in 2035? In 2050? Aging populations, for example, will need a stronger public transit infrastructure in order to access basic necessities and health care as they become less able to drive.[24] A CAP that emphasizes stronger public transit infrastructure and active transport — especially pedestrian infrastructure/support — will also be addressing future needs of an aging population with an increased proportion of community residents likely to become less able to drive. Demographic data can be found on the census at http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

- **Include key measures of the jurisdiction's existing and projected demographics and health status to the CAP's baseline data and inventory of local greenhouse gas emissions.** Including relevant local health challenges and opportunities can provide additional motivation for adoption and implementation of the plan. California-specific references and data can be taken from the appropriate mitigation sector chapters below. Local health data can be obtained in partnership with the local health department, using resources in the Performance Metrics and Data Section (see page 39).

Mitigation Strategies By Sector

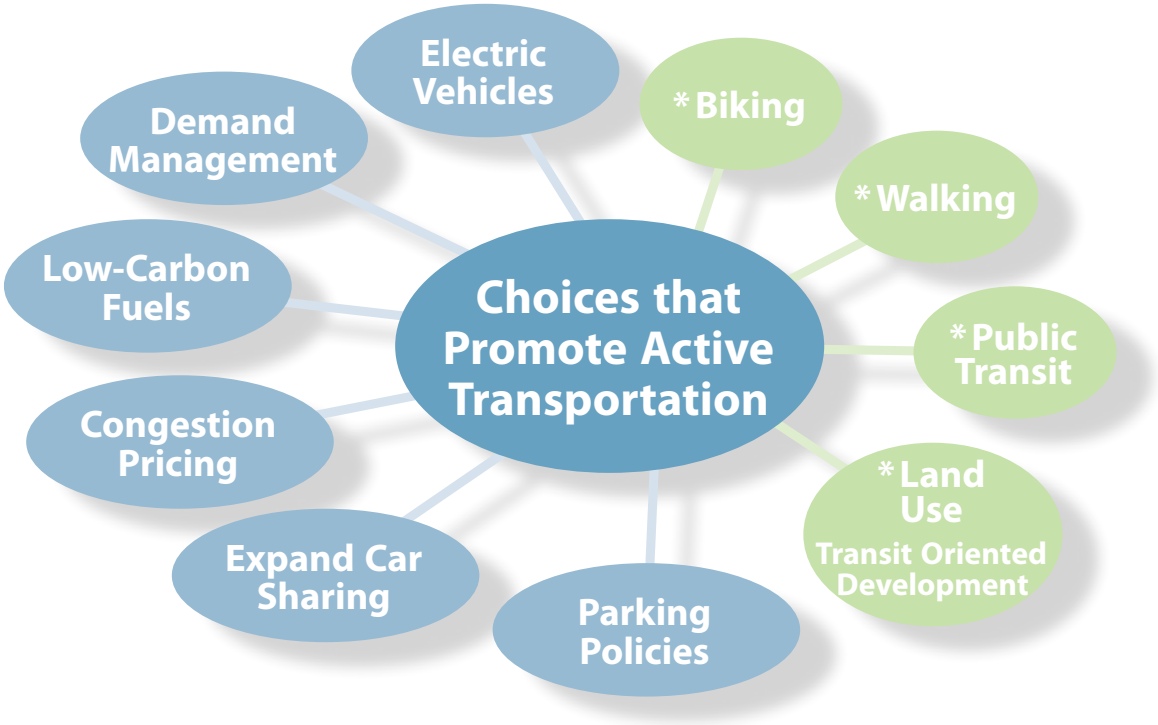
Some of the key strategies to reduce GHGs also have great potential to improve health outcomes. Specific health impacts and co-benefits can be included in the sector-oriented chapters addressing specific climate change mitigation strategies (or focus areas). This section is organized into climate change mitigation focus areas, and outlines the health issues and co-benefits related to these main sectors: Transportation, Land Use, Urban Greening and Food/Agriculture, Residential Energy Use, Economic Development, Community Engagement, and Climate Adaptation.

Prioritize CAP strategies that also promote physical activity, decrease chronic disease rates, improve air quality, and strengthen community safety and resilience. It is also important for planners to evaluate the potential for creating new hazards or shifting the burden of health risks when choosing mitigation activities. Public health staff can assist planners in evaluating the potential benefits or adverse health consequences of specific strategies or implementation activities.

Transportation

The transportation sector accounts for approximately 37% of California's GHG emissions,[25] and reducing vehicle miles travelled (VMT) is a key strategy for reducing GHGs from this sector. Active transportation (walking, biking, and taking public transit) is a primary strategy to reduce VMTs. It is also a primary strategy for incorporating physical activity into people's daily routines, and thus reducing the risk of heart disease, overweight and obesity, improving mental health, and lowering blood pressure.[26]

Besides emitting greenhouse gases, transportation fossil fuels produce a host of air pollutants, reducing local air quality and affecting human health. Californians already experience the worst air quality in the nation, with more than 90% of residents living in areas with unhealthy levels of ozone or particulate pollution.[27] Air pollution exposure can lead to increased rates of asthma and chronic bronchitis, reduced lung function, worsening of lung illnesses such as emphysema, heart attacks, strokes, lung cancer, premature death, and abnormal lung development in children.[28] Both kinds of pollution increase rates of hospitalization and death, particularly in the young, sick, and elderly.[29] Low-income communities and communities of color are also vulnerable due to the multiple pollution sources located in some of these communities, psycho-social stressors, and often limited access to health care.[30] Rising temperatures and other weather conditions that are associated with global warming increase



Prioritizing transportation strategies (*) that promote physical activity creates immediate health benefits.

smog formation, in turn increasing the likelihood of these serious health effects.[31]

CAP mitigation objectives that increase active, shared, and public transportation by even small amounts improve air quality, and have a direct and marked effect on chronic disease rates and mental health.[32] Further, motor vehicle crashes are a leading cause of injury and death for individuals less than 34 years old.[33] Speed was indicated as the primary collision factor in 29% of the fatal and injury collisions in 2009.[34] While addressing VMTs in a CAP, examine existing bike and pedestrian infrastructure, plans, and policies, and see how health outcomes such as physical activity and injury prevention can be added or expanded.

SampleCAP Language: Health in Transportation

Sustainable Long Beach Action Plan: Increase bike ridership 1% to 16% by 2016. Available at: longbeach.gov/civica/filebank/blobdload.asp?BlobID=26498

Oakland Energy and Climate Action Plan: Accelerate the completion of bicycle and pedestrian networks and plans to provide safe, healthy transportation choices for all residents. Available at www2.oaklandnet.com/oakca/groups/pwa/documents/policy/oak024383.pdf

Priority Actions that Have Health Impacts and Co-benefits

Prioritize the strategies that reduce VMTs and increase physical activity. Choosing strategies that increase physical activity levels through active transportation can have significant health co-benefits due to the burden of chronic disease. According to studies conducted in London (2009)[35] and California (2011)[36], the largest health gains from active transportation would be reductions in the prevalence of heart disease, stroke, depression, dementia, and breast cancer.

Prioritize the strategies that reduce GHG and toxic air pollution in neighborhoods with the dirtiest air, and around sensitive-use areas such as schools, senior centers, and parks. Strategies to reduce GHG from transportation — fuel efficiency and reducing VMTs — benefit respiratory and cardiovascular health, due to changes in air pollution.[37] Measures to reduce climate emissions could also reduce other types of dangerous pollution in the neighborhoods that need it most. Jurisdictions can prioritize efforts in neighborhoods in close proximity to highways, ports, and other sections of the transportation and goods-movement corridors where air quality has been noted as among the worst in the state.[38,39] These efforts may need to be tied to other regional agencies looking at pollution prevention efforts.

Create and implement plans (e.g., Transportation, Pedestrian, and Bike Master Plans) that increase physical activity. Improvements in the transportation, bike, and pedestrian infrastructure — public transit, greenways and trails, sidewalks and safe street crossings near schools, bicycle paths, traffic-calming devices, and sidewalks that connect schools and homes to destinations—are associated with more walking and bicycling, greater physical activity, and lower obesity rates.[40]

Support expansion of Safe Routes to School and other programs that promote walking and biking to and from school for children and parents throughout the school district. Safe

Routes to School[v] programs and the management of traffic in local neighborhoods and around schools have been shown to increase physical activity among children, adolescents, and adults, and decrease congestion and VMTs.

Improve, support, encourage, and incentivize use of public transportation. Almost one-third of Americans who commute to work using public transit meet the Surgeon General's recommendations of 30 minutes of physical activity each day by walking as part of their daily life, including to and from the transit stop.[41] Traffic casualty rates tend to decline as public transit travel increases in an area. Trips on public transportation result in 200,000 fewer deaths, injuries, and accidents than similar trips made by car. The National Safety Council estimates that riding the bus is over 170 times safer than traveling by automobile.[42]

Consider policies to reduce vehicle speed limits where there are vulnerable populations such as children or elderly, around schools, parks, or senior centers. Vehicle speed impacts injury and fatality from collision, bike- and walkability, respiratory health, and community quality of life.[43,44] Reduced speed not only reduces traffic fatalities, but people feel safer walking and bicycling when vehicles drive slower, and are therefore more likely to be active.

Considerations and Avoiding Negative Health Impacts

If all residents used zero-emission or fuel-efficient vehicles, GHG emissions would be significantly reduced, but there would be little or no change in sedentary lifestyles that contribute to chronic diseases. This also would not address the access needs of a large segment of the population that does not or may not be able to drive (youth, young adults, and seniors) or cannot afford to own and operate a vehicle.

A strategy that succeeds in increasing the numbers of people walking and biking must consider and address the potential that pedestrian and bicycle collisions may also increase.[45,46] Creation of safer infrastructure for mass active transport is needed to limit accompanying increases in bicycle and pedestrian injury.

The California Complete Streets Act (AB 1358, 2008) requires local entities to consider the needs of all users of streets, roads, and highways when revising the circulation elements of their general plans. "Complete Streets" are streets that are designed and operated to enable safe access and use by everyone, from those with mobility impairments to pedestrians, bicyclists, motorists, and transit.[47] By framing desired increases in walking, bicycling, and transit use as Complete Streets planning and implementation, and integrating this into the CAP, the safety and accommodation for *all users* is expressly considered and balanced. Because most roadways and streets are designed primarily for cars and trucks, "completing streets" often entails reducing vehicle speeds, lanes, or lane widths, and other measures that increase safety for both the vehicle occupants as well as pedestrians, bicyclists, and transit users. This avoids a framing of the strategy as

v Safe Routes to School (SRTS) is a federal program that creates safe and convenient opportunities for children to bicycle and walk to and from their schools, and aims to help children be more physically active. SRTS focuses on increasing the number of children walking and bicycling to school and improving pedestrian and bicycle travel by building infrastructure such as sidewalks, crosswalks, and bicycle lanes.

one of bicyclists and pedestrians versus automobiles and trucks.[48,49] Communities can identify local solutions that garner widespread support by bringing representatives from law enforcement, public health, transportation, Safe Routes to Schools, school district administration, PTAs, and advocates together to develop mitigation strategies addressing infrastructure, enforcement, education, and adequate public and school transportation systems and schedules.

Resources

Health Co-Benefits and Transportation-Related Reductions in Greenhouse Gas Emissions in the Bay Area: Technical Report, Center for Chronic Disease Prevention and Health Promotion, California Department of Public Health. Available at cdph.ca.gov/programs/CCDPHP/Documents/ITHIM_Technical_Report11-21-11.pdf

The Hidden Health Costs of Transportation, American Public Health Association: apha.org/NR/rdonlyres/8CB9D85D-3592-4C0B-8557-C22E925F75A7/0/FINALHiddenHealthCostsLongNewBackCover.pdf

Active Living Research Brief: Walking and Biking to School, Physical Activity, and Health Outcomes: activelivingresearch.org/files/ALR_Brief_ActiveTransport.pdf

Complete Streets Resources, Law and Policy:

Update to the General Plan Guidelines: Complete Streets and the Circulation, Office of Planning and Research Element opr.ca.gov/docs/Update_GP_Guidelines_Complete_Streets.pdf

Caltrans Complete Streets Implementation Action Plan (CSIAP): www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html

California Complete Streets legislation, AB 1358: www.calbike.org/pdfs/ab_1358_bill_20080930_chaptered.pdf

Land Use

Land use plays a significant role in ongoing climate change, through mechanisms independent of GHG emissions,[50,51] and due to the volume and length of vehicle trips necessitated by auto-oriented land use planning.[52,53] A growing body of research documents the power of common land use patterns, urban form, and neighborhood conditions to shape the distribution of sickness and health in communities.[54] Rising rates of obesity, chronic diseases, illnesses resulting from pollution (asthma, other respiratory illnesses), certain cancers, and rising GHG emissions are all linked to changes in the built environment that have increased reliance on motor vehicles.[55] Forty-five million Americans live within 300 feet of a major roadway, and are at higher risk of respiratory illness due to exposure to traffic-related air pollution.[56]

Health inequities frequently reflect the socioeconomic divide between poor and affluent neighborhoods: A recent San Francisco Bay Area report showed that residents in poor neighborhoods can expect to live at least ten years less than those living in other areas.[57] The Centers for Disease Control and Prevention recommends that children and adolescents be physically active for at least 60 minutes every day and adults for 30 minutes every day. However, many people in California have limited opportunities to meet this minimum recommendation because their communities lack resources and infrastructure, making it difficult and/or dangerous to walk, bike, or take public transit. People in walkable communities get about 35–45 more minutes of moderate physical activity per week than people of the same socioeconomic status in neighborhoods not considered walkable.[58] Although many parents would like their children to walk or bike to school, the percentage of children doing so has dropped from 66% in 1974 to 13% in 2000, due to distance from school, crime, or traffic danger.[59]

Planning Example: Health in Land Use Planning

Portland's Climate Action Plan sets an objective for 2030 calling for vibrant neighborhoods in which 90% of Portland residents can easily walk or bicycle to meet all basic daily, non-work needs.

One strategy to meet this is the Portland 20-minute Neighborhood: a place with convenient, safe, and pedestrian-oriented access to the places people need to go and the services people use nearly every day — transit, shopping, quality food, schools, parks, and social activities — that are within 20 minutes of housing. Available at www.portlandonline.com/portlandplan/index.cfm?a=246917&c=46822

The way our neighborhoods, streets, and homes are designed affects whether children can play outside and walk to school, whether families can access basic goods and services, and even whether neighbors can socialize and look out for one another. Community-wide campaigns to promote physical activity using highly visible and diverse media and messages can also increase physical activity and reduce GHG emissions.[60] The passage of SB 375 in

2008 created an unprecedented opportunity to fundamentally change land use patterns, away from sprawl and toward active communities with access to goods and services.

Priority Actions that Have Health Impacts and Co-benefits

Support new developments or changes to infrastructure of existing neighborhoods that encourage people to drive less and walk, bike, and take public transit more.

Support increased density or intensity, transit-oriented, mixed-use development in CAP plans to increase access to healthy food and health and social services. Plan goods and services closer to where people live, work, study, and play. This encourages active transportation, which provides the co-benefits of increased physical activity, reduced chronic disease and obesity rates,[61,62] improved air quality, and reduced traffic fatality[63] and GHG emissions from vehicle travel. Increased access to healthy local food, schools, and health care can result when grocery, agriculture, schools, health-care facilities, and social services are located within or close to communities.

Link CAP planning with regional and local SB 375–related planning efforts—in areas covered by Metropolitan Planning Organizations (MPOs)—that support improved community health outcomes.

Considerations and Avoiding Negative Health Impacts

Increasing building density without addressing green space and tree canopy needs may have the unintended consequence of increasing urban heat island effects. Make sure to incorporate green space and tree canopy in neighborhoods with increased building density, in order to reduce urban heat island effects.[64] (See next section on Urban Greening.)

As part of promoting smarter growth, local governments should consider the health impacts of siting new housing, schools or day care centers, or hospitals near major pollution sources such as large industrial sources and freeways, where decreased air quality causes increased asthma and other respiratory diseases. When possible, site housing and sensitive uses away from busy roadways, reroute or reduce traffic through circulation changes or traffic demand reduction, and provide mechanical ventilation systems with fresh air filtration and building designs can help filter and mitigate particulate exposure.[65]

Resources

Institute for Local Government Resources: ca-ilg.org/landuse

Local Government Commission Resources:

- Health Communities: lgc.org/freepub/healthy_communities/index.html
- Community Design: lgc.org/freepub/community_design/index.html

Land Use, Climate Change, and Public Health Issue Brief, American Lung Association: lungusa.org/associations/states/california/assets/pdfs/sb-375_issue-brief_final.pdf

Public Health Law and Policy Resources: phlpnet.org/healthy-planning

Urban Greening

Urban greening efforts provide opportunities to achieve GHG mitigation goals, improve health, and establish a foundation for adaptation to the increasing heat projected for virtually all of California. Urban greening contributes to a reduction in GHGs, air pollution, harmful ground-level ozone, urban heat island effects, and stress. Urban greening reduces atmospheric carbon dioxide by storing it or by reducing demand for heating and cooling. Even small changes of 100 square kilometers in urban development or deforestation can change local rainfall patterns and trigger other climate disruptions.[66]

Urban areas can be 2 to 8 degrees hotter than surrounding areas due to the effects of the built environment (impermeable and dark surfaces, increased traffic, and less vegetation).[67,68,69] By 2100, if temperatures rise to the higher warming range, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and above 95°F in Sacramento. Climate change is expected to increase the occurrence of urban heat island events — where air temperatures in cities rise disproportionately to surrounding areas, resulting in locally acute adverse human health, economic and environmental impacts. Due to the heat island effect, Californians will face greater risk of death or illness from dehydration, heat stroke/exhaustion, and heart attack, caused by extreme heat. By mid-century, extreme heat events in urban centers such as Sacramento, Los Angeles, and San Bernardino could cause two to three times more heat-related deaths than occur today.[70] Low-income urban neighborhoods and many communities of color are particularly vulnerable to the heat island effect because they are often segregated in inner-city neighborhoods[71,72] with greater amounts of concrete, heat-trapping surfaces and less tree cover.[73]

Sample CAP Language: Health in Urban Greening

San Diego Climate Protection Action Plan: Develop and adopt an urban heat island mitigation plan. sandiego.gov/environmental-services/sustainable/pdf/action_plan_07_05.pdf

Mature tree canopies can reduce air temperature by five to ten degrees, helping to counteract the urban heat island effect, provide protection during extreme heat events,[74] reduce the production of harmful ground-level ozone,[75,76] and provide protection from cancer-causing ultraviolet radiation.[77]

Plant life maintains California's water supply by protecting watersheds, providing permeable surfaces in urban areas to aid storm water management, and reducing pollutant loads in runoff as it recharges groundwater aquifers. Climate change is affecting the amount and distribution of fresh drinking water, which is crucial for maintaining health.

Well-vegetated urban parks, in a variety of forms and sizes, mitigate the impact of the urban heat island and minimize local climate change by cooling and cleaning the air, improv-

ing and modifying local wind circulations, and better regulating precipitation patterns.[78] Having access to public parks, green spaces, and facilities where people can congregate, exercise, and socialize increases social support, and leads to healthier communities.[79] Access to open and green spaces, forests, and outdoor parks and recreational facilities increases opportunities for physical activity and active transportation,[80] which are protective against cardiovascular disease, type 2 diabetes, some cancers, hypertension, obesity, osteoporosis, and depression.[81,82] Well-maintained parks and recreation facilities can also help reduce crime.

Planning Resource: The California Strategic Growth Council's Urban Greening Grants

Demonstrate how the greening plan will promote public health and the development of a healthy community (e.g., increase access to safe areas for physical activity, improve access to healthy, local food sources, reduce effects of climate change, etc.). sgc.ca.gov/urban_greening_grants.html

Those most at risk to be overweight — residents of low-income, ethnically/racially diverse communities — have the least access to safe places to exercise and play, such as parks, bike trails, and public pools.[83,84,85] Access refers to the location of parks and recreational facilities relative to homes, workplaces, and public transportation, cost, hours of operation, and accessibility for vulnerable populations such as low-income residents and those with special needs.

Priority Actions that Have Health Impacts and Co-benefits

Develop an Urban Forestry Master Plan. Developing a comprehensive Urban Forestry Master Plan begins with an assessment of existing tree canopy cover. Then, set achievable targets for the jurisdiction and quantify the anticipated benefits associated with meeting the targets, including health benefits, with particular attention to disadvantaged communities who may benefit most from increased tree canopy and greening.

Explore the role of landscaping and green roofs to cool buildings, reduce urban heat island effect, conserve energy, and act as carbon sinks, with particular attention to areas most likely to experience urban heat island effects.

Develop a Parks and Recreation Master Plan that increases park resources and access to parks and facilities for disadvantaged communities. A Parks and Recreation Master Plan can help a jurisdiction evaluate their parks and recreation facilities to assess the amount of green space in the parks (versus on private property), maximize benefits, and facilitate resource management.

- **Map parks in relation to low-income and/or high-density residential areas, to guide planning for future development to ensure equitable distribution of parks.** This could be a simple assessment using existing maps or, if resources are available, a more comprehensive GIS mapping project.
- **Partner with public health, parks and recreation, and police department staff to create safe, crime-free, and healthy parks and recreational programming.** Unsafe streets and the lack of safe play areas and parks in many neighborhoods challenges

strategies to reduce VMTs and keeps children and adults from being active outside. Violence prevention may also need to be addressed in Walking and Biking plans, if this is a community concern. Parks and recreation facilities can help reduce crime, as the presence of park users in or around facilities can decrease criminal activities and increase community cohesion.[86,87] Open spaces and parks can also have a positive effect on nearby residential property values.[88]

Resources

California Health in All Policies Task Force Urban and Community Greening Implementation Plan: sgc.ca.gov/meetings/20111102/nov2011-hiap-greening.pdf

Cal Fire Urban and Community Forestry Program: fire.ca.gov/resource_mgt/resource_mgt_urbanforestry.php

Lawrence Berkeley National Lab, Urban Heat Island: eetd.lbl.gov/HeatIsland/

US EPA, Urban Heat Island Mitigation: epa.gov/hiri/mitigation/index.htm

Food and Agriculture: Reducing Emissions and Improving Nutrition

Agricultural food production and agriculturally related land use substantially contribute to greenhouse gas emissions worldwide; in California, agriculture accounts for 6% of GHG emissions.[89] Our reliance on widely dispersed food systems contributes to GHGs through the transport and distribution of agricultural products and foods. Four-fifths of global agricultural emissions arise from the livestock sector. Although livestock products are a source of some essential nutrients, they provide large amounts of saturated fat, a known risk factor for cardiovascular disease.[90]

Evidence shows that people's dietary choices are influenced by the location and availability of food stores and food service places, which are associated with the wealth and racial makeup of neighborhoods. Ensuring that all communities have access to healthy, affordable, fresh food can improve health outcomes, increase economic resilience and resilience to disaster, and reduce GHG emissions.[91]

Priority Actions that Have Health Impacts and Co-benefits

Support land use plans and policies to reduce energy intensity in food by reducing "food miles travelled" (the distance that food must travel), reducing the energy required to grow food, and changing consumption patterns. Some strategies to support this are:

Use economic development resources, changes to Women, Infants, and Children (WIC) food packages, and incentives to attract healthy, local food retail to underserved or sensitive-use neighborhoods.

Sample CAP Language: Health in Food and Agriculture

Davis Climate Action and Adaptation Plan: Reduce consumption of energy-intensive food. The typical U.S. diet is energy-intensive. Reducing meat consumption has many important health benefits. cityofdavis.org/cdd/sustainability/DCAAP/ClimateActionPlan.cfm

Fresh Works, a public-private loan fund, brings grocery stores and markets that offer fresh produce and other healthy foods to communities that do not have them. Available at cafreshworks.com/

Sustainable Long Beach Action Plan: Establish community gardens in every park over 5 acres by 2020. longbeach.gov/civica/filebank/blobdload.asp?BlobID=26498

Green Fresno Sustainability Plan: Promote the public health/environmental benefits of supporting locally grown and organic foods. fresno.gov/NR/rdonlyres/39776243-D803-434C-BB5A-F121FB40D269/9537/FresnoGreenPacketFINAL50608.pdf

Develop zoning and land use policies that allow agricultural production in urban and suburban areas. Agricultural land uses for local consumption reduce food miles travelled and, consequently, GHG emissions. Planning for land used for community farming can help protect and ensure the retention of these properties for local food production, preserve local agriculture, and sequester carbon.[92]

Create and support local farmer's markets, farm stands, community gardens, orchards, and garden programs, and ensure accessibility to low-income residents.

Implement a public education campaign about the value of eating less meat, such as San Francisco's recommendation to the public and restaurants for voluntary Meatless Mondays.

Resources

Local health department nutrition program and staff

American Planning Association, Food System Planning Briefing Paper: planning.org/national-centers/health/briefingpapers/pdf/foodcouncils.pdf

Public Health Law and Policy Resources and Tools for Creating Healthier Food Environments: phlpnet.org/healthy-planning/creating-healthier-food-environme

Residential Energy Use: Energy Efficient and Healthy Housing[vi]

Buildings contribute to climate change and affect health through the materials utilized; decisions about sites, electricity, and water usage; and landscape surroundings. Green building and energy-efficiency CAP strategies (e.g., the use of low-volatile organic compounds (VOC) materials, natural ventilation, and windows instead of artificial lights) present an opportunity to improve indoor air quality, reduce exposure to potentially harmful building and insulating materials, and improve resident health status by integrating healthy housing recommendations with green building standards.[93] Californians spend almost 90% of their time indoors,[94] yet indoor air is often more polluted than outdoor air.[95] This is due to a combination of second-hand tobacco smoke, mold growth, allergens from pets and pests, dust, and off-gassing of VOCs from materials such as carpeting and paints — all coupled with the lack of proper ventilation that traps unhealthy air inside buildings.[96] Asthma can be caused or exacerbated by these conditions. Moisture build-up from improper ventilation can also increase the likelihood of other health hazards, such as lead exposure due to peeling paint and safety risks from deteriorated structural elements.

According to the U.S. Surgeon General's recommendations on healthy housing, focusing on properties that pose the greatest health risks; that is, those properties that are older, low-income, or in substandard condition, will yield the greatest improvement in health out-

Planning Example: Health in Residential Energy Use

In San Diego, the Environmental Health Coalition has integrated lead poisoning prevention, safe and healthy housing, energy efficiency, and weatherization into their **Home Safe Home Project**. The project is funded by the U.S. HUD Healthy Homes and Lead Hazard Control Program, and administered by the San Diego Housing Commission. Tenants in low-income communities are given recommendations to make their homes safer, healthier, and more energy-efficient. Landlords are urged to choose green and healthy property maintenance methods to maintain their properties after lead abatement and energy retrofits have been completed. For example, weather stripping at doors, caulking around windows, and sealing holes and cracks hinders the ability of pests like roaches and rodents to enter the home, helps to resist temperature fluctuations in summer and winter, and reduces moisture build-up within walls. **Home Safe Home** integrates government, nonprofits, community *promotoras*, landlords, homeowners, and tenants. sdhc.org/Real-Estate-Housing.aspx?id=3684&terms=Home+Safe+Home

vi The California Building Standards Commission 2010 California Green Building Standards (CALGreen) Code went into effect on January 1, 2011. CALGreen addresses many intersections between buildings and health, including indoor air quality, indoor moisture control, bicycle parking, and changing/shower facilities.

comes.[97] Conditions that promote exposure to irritants and allergens such as second-hand smoke, house-dust mites, cockroach antigens, and mold spores are common in deteriorated housing, which is disproportionately occupied by low-income residents. All of these irritants and allergens can cause or aggravate diseases such as asthma, which is more prevalent in low-income populations.

Priority Actions that Have Health Impacts and Co-benefits

Focus energy-efficiency efforts on properties that are older or in substandard condition for a higher yield in GHG reductions and health improvements. Homes that are older and in substandard condition tend to have less insulation, older appliances, drafty windows, and other factors that decrease their efficiency. In partnership with public health home-visiting programs, these households can receive help from local government agencies to become more energy-efficient while addressing housing-related health issues.

Support programs that provide energy savings for low-income residents. Low-income residents are the most vulnerable to the rising cost of energy and may not have the money to participate in energy upgrades like weatherization or purchasing new, more efficient appliances. Those who spend a disproportionate amount of their income on energy bills can immediately benefit from weatherization, retrofit, and energy rebate programs as they save from reduced energy bills. Local jurisdictions investing in improving the energy efficiency of low-income households may provide them some protection as energy prices increase. Local agencies can also partner with local energy utilities to provide information to low-income residents about utility assistance programs. Public health departments may be able to help with outreach and messaging, to help ensure low-income and diverse members of the community know about energy-efficiency and weatherization and rebate programs. Renters are generally not eligible to participate in many energy-efficiency and rebate programs, although some cities have found ways to include renters in these programs.

Sample CAP Language: Health and Savings for Low-Income Residents

Oakland Energy and Climate Action Plan: Create a new energy retrofit program to facilitate energy efficiency and water conservation in existing renter-occupied residential properties, by supporting outreach and assistance in designing model tenant-landlord agreements so that all parties equitably share the costs and benefits of energy efficiency. Expand services to help low-to-moderate-income residents improve energy efficiency and reduce energy costs.

www2.oaklandnet.com/oakca/groups/pwa/documents/policy/oak024383.pdf

Planning Resource: Health and Savings for Low-Income Residents

To learn more about a wide variety of existing income-based energy efficiency programs, see **California Flex Your Power Programs** at www.fypower.org/feature/lowincome/lowincome_programs.html

Considerations and Avoiding Negative Health Impacts

Look for opportunities to integrate weatherization, healthy housing, respiratory health (e.g., asthma), and lead poisoning prevention efforts. Implementation of building efficiency standards that do not also address healthy housing can result in inadequate ventilation, increased mold and toxins, decreased overall indoor air quality, and other housing-related health issues, putting vulnerable populations at greater risk.[98]

Adopt measures that plan for a diversity of housing types, affordable housing, renter protections, and housing rights, to avoid displacement. When not carefully planned, dramatic improvements in housing stock can displace some of those most at risk from housing-related health hazards and most in need of housing upgrades. These provisions will ensure that low-income families can stay in their homes even as new construction is built near transit centers.

Urban greening and smart siting can provide natural shading to cool buildings. (See Urban Greening section, page 25.)

Resources

U.S. Department of Housing and Urban Development Healthy Homes Program: portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/hhi

The Surgeon General's Call to Action To Promote Healthy Homes: surgeongeneral.gov/topics/healthyhomes/calltoactiontopromotehealthyhomes.pdf

National Center for Healthy Housing: nchh.org and nchh.org/Research/HealthOpportunitiesDuringWeatherizationWork.aspx

Low-Income Energy Assistance and Energy Efficiency Programs:

- Energy Upgrade California, Income-Qualified Assistance Programs: energyupgradeca.org/income_qualified_overview
- California Flex Your Power Low Income Programs: fypower.org/feature/lowincome/lowincome_programs.html
- California Community Services Department, Low-Income Home Energy Assistance Program: csd.ca.gov/default.aspx

Economic Development

Climate mitigation efforts designed to spur economic development can also help improve community health. Poverty and low education are obstacles to achieving healthier lives for low-income, immigrants, and residents of color. Healthy, safe, and meaningful employment is critical to community health. Local governments that create sustainable business opportunities, green jobs, and green jobs training — particularly for low-income residents — are also making an investment in improving community health. The climate crisis may dramatically reduce or shift job opportunities in sectors such as agriculture and tourism, which predominantly employ low-income Californians, immigrants, and people of color.[99]

Priority Actions that Have Health Impacts and Co-benefits

Support the development of high-quality, living wage jobs offering green career pathways for local residents, especially low-income and youth. Economic development that prioritizes local, low-income populations who have had historic barriers to employment can help reduce health inequities, as employment is a strong determinant of health. Youth development through training and employment is an important public health investment that also improves the greater community.

Address provisions to ensure the health and safety of green-collar workers in contract language with partners. An initial investment of health and safety training, employer provision of necessary safety gear such as fall protection, and compliance with Cal OSHA regulations can ensure that these new local programs guard against injury and illnesses among green-collar workers. While cities may not be the employer in local green jobs programs, they may contract with or be part of efforts to recruit or direct residents to these programs.

Planning Example: Health in Economic Development

Richmond BUILD provides green collar training to low-income and minority participants, some of whom have a history with the justice system, and places them in well-paying jobs in the energy efficiency sector. Students participate in hands-on solar installations for low-income Richmond homeowners. Participants experience effective, real-world training in solar installation, homeowners receive a solar system financed by a low-interest loan that immediately reduces their energy bills, and carbon emissions are reduced. ci.richmond.ca.us/index.aspx?nid=1243

Community Engagement

Local governments are able to make more informed decisions and have a positive impact on their community when they increase the frequency, diversity, and level of engagement of community members. According to the American Planning Association's Policy Guide on Planning and Climate Change, "In particular, constituencies likely to experience disproportionate impacts should be proactively engaged in the climate planning process."[100] Involving all segments of the community in the creation of a CAP increases the likelihood that projects, solutions, and actions proposed will be widely accepted and relevant to community members, and increase the likelihood of successful long-term implementation of the CAP. Social and civic participation increases community cohesion and well-being and is associated with safer communities.

Priority Actions that Have Health Impacts and Co-benefits

Partner with existing public health community outreach and engagement efforts. Public health departments and agencies have long-standing connections with communities, have expertise in community education and organizing, and have built relationships with community-based organizations. For example, partner with health workers to facilitate the formation of neighborhood teams, invite people to community forums and meetings, and integrate CAP strategies into other community-based efforts and events (e.g., neighborhood watch, disaster preparedness, health fairs, and community health councils).

Increase participation of low-income, immigrant, non-English-speaking, racially and ethnically diverse, and special needs residents in initial CAP planning and implementation. Many health departments have bilingual community health outreach workers who have pre-existing relationships and access to low-income and underrepresented communities, and knowledge of community assets and vulnerabilities. These personnel

Planning Example: Health in Community Engagement

Oakland Climate Action Coalition's (OCAC) community organizing aimed its efforts at robust active participation to improve public health and climate goals. In the lead-up to the Oakland Energy and Climate Action Plan (ECAP), OCAC organized several community meetings to discuss the ECAP and the impacts it would have on ethnic and low-income communities—from adaptation and public health to GHG reduction and infrastructure (for example, transit-oriented development). There was active participation among Latina women through Mujeres Unidas y Activas (with a strong emphasis on interrelated concerns about food and families), as well as among residents from the West Oakland Environmental Indicators Project. ellabakercenter.org/index.php?p=gcjc_oakland_climate_action_coalition

can help cities and counties connect with many underserved and vulnerable populations, to disseminate information and gather input as the climate action plan is prepared, and simultaneously improve community health. Implementing climate change strategies requires long-term engagement and collaboration with the interrelated demands for economic justice, safe and affordable housing, access to healthy and affordable food, and concerns about neighborhood safety and violence. A high level of participation from vulnerable and impacted communities improves the CAP and the process through which it is produced.

Resources

ICLEI/Local Governments for Sustainability Community Engagement Tool: icleiusa.org/action-center/learn-from-others/small-communities-toolkit/community-engagement

Institute for Local Government Climate Change and Public Engagement Resources (Includes case studies of successful city and county efforts to engage the public in sustainability planning and projects, plus the publication "How to Harness the Power of Your Community to Address Climate Change: A Local Official's Guide"): ca-ilg.org/promoting

Climate Adaptation

Climate adaptation refers to the "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."[101] A community that invests in its residents' health now will build a foundation for community resilience against climate change impacts in the future. The health consequences of climate change put all Californians at risk, but the poor, those with chronic diseases, the elderly, and people of color are likely to be impacted the most. As we have seen from natural disaster and extreme weather events such as Hurricane Katrina, certain groups of people are disproportionately affected by both the event itself and the aftermath effects.[102]

Priority Actions that Have Health Impacts and Co-benefits

Link CAP to local jurisdiction's emergency preparedness plans. Public health departments work closely with local Office of Emergency Services (OES) managers and Department of Social Services staff to identify and plan for vulnerable and special needs communities and individuals. Making clear the connections between climate mitigation and emergency preparedness during the CAP development process can provide a foundation for climate vulnerability assessment and adaptation planning.

Planning Example: Healthy Adaptation

San Luis Obispo's County Health Department identified key health linkages in the local CAP and Adaptation Plan, such as:

- Mitigate the urban heat island effect by planting urban forests and using light-colored building and pavement materials.
- Encourage businesses and local and regional agencies to participate in PG&E's Demand Response Program, to reduce energy use during peak demand.
- Establish formal partnerships with health agencies and organizations, local parks and recreation departments, and YMCA to identify health risks and conditions that may compromise the population's ability to withstand health-related stressors.
- Identify specific populations with limited capacity to adapt to health-related stressors such as heat waves, disease outbreaks, or poor air quality events.
- Identify potential costs and funding sources for protecting the population from increased public health risks.
- Update the SLO County Emergency Operations Plan to incorporate public health–related events or outbreaks, and procedures to protect the population.
- Contact and advise vulnerable populations during public health–related events.
- Identify locations for public cooling centers during extreme heat events.

Available at slocounty.ca.gov/Assets/PL/CAP-LUCE/final/7-SLOCoEWP_Ch7.pdf

Prioritize mitigation policies that can also assist in adaptation. An example of this is planting trees, which capture and store carbon dioxide, capture particulate matter, provide shade and cooling, and retain and filter storm water. These strategies also help achieve water quality and conservation goals. Better management of surface water-storage reservoirs can provide climate change mitigation (water-related energy use in California consumes approximately 20% of the state's electricity, and 30% of the state's non-power-plant natural gas[103]) and adaptation.

Support plans, standards, regulation, incentives, and investments to reduce the impacts of climate change on those populations most vulnerable to the impacts of climate change.

Facilitate community engagement and participation in decision-making to improve adaptation plans. Partnering with public health and other social services agencies (e.g., senior services, disability, and civil rights groups) can ensure that underrepresented and at-risk groups have a voice in the planning process and can identify specific needs and concerns. Demonstrating a strong commitment to inclusion and equity can enhance community buy-in and support for implementing the plan's action steps.

Resources

While this guide does not address climate adaptation in any detail, new resources are becoming available to help communities understand their climate risks and begin to plan for adaptation and resilience. State resources for understanding climate impacts at the local level and identifying vulnerable populations and adaptation priorities are under development, such as Local Climate Adaptation Policy Guide from Cal Emergency Management Agency (Cal EMA, due out June 2012).

- Cal Adapt: www.cal-adapt.org
- 2009 California Climate Adaptation Strategy, Public Health Chapter: www.cdph.ca.gov/programs/CCDPHP/Documents/CA_Public_Health_Adaptation_Strategies_final.pdf
- ICLEI Resources:
  - Climate Resilient Communities Program: www.icleiusa.org/climate_and_energy/Climate_Adaptation_Guidance/CRC-program-overview/?searchterm=Climate Resilient Communities Program
  - Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments: www.icleiusa.org/action-center/planning/climate-adaptation-planning-resources/adaptation-guidebook
- Cal EMA: www.calema.ca.gov/Pages/default.aspx
- California Natural Resources Agency: www.resources.ca.gov/
- California Sustainability Alliance: www.sustainca.org/
- National Oceanic and Atmospheric Administration: www.noaa.gov/climate.html
- Environmental Protection Agency Resources:
  - Climate Change: www.epa.gov/climatechange/
  - Adaptation for Health and Environmental Effects: www.epa.gov/climatechange/effects/adaptation.html

IV. Performance Metrics and Data

Accessing and Using Relevant Local Health Data

Public health agencies can provide or identify data that can be used to evaluate the likely health impacts of planned actions to reduce GHG emissions. (Refer to *Checklist for Integrating Health in a Climate Action Plan*, page 13.)

In California, more than 35 county and local health departments compile periodic, statistical snapshots of the health status of communities. A listing of these reports can be found at cdph.ca.gov/programs/CCDPHP/Documents/Co_Health_Status_Reports2011.xls

In addition, several organizations have compiled county-level comparison data.[104,105,106]

At a minimum, these reports provide data on:

- Community demographics such as age, sex, race/ethnicity, and poverty
- Deaths from chronic diseases, including cardiovascular disease and asthma
- Traffic-related injuries and mortality
- Illnesses caused by infectious diseases

This core of information is sometimes complemented by:

- Police reports of traffic injuries and violent crimes
- Hospitalizations and emergency room visits for diseases/injuries by zip code level
- Survey data on health behaviors such as physical exercise, nutrition, and tobacco and alcohol use at the level of county and school district

These reports often contain tables and graphs with time trends for heart disease and stroke, diabetes, asthma, and other conditions that make people more sensitive to the negative effects of heat, poor air quality, and other environmental changes linked to climate change.

Planning Resource: Healthy and Sustainable Community Indicators

Human Impact Partners identified priority indicators for use by California Metropolitan Planning Organizations (MPOs) that monitor health determinants such as vehicle miles traveled, emissions, access to goods and services, as well as actual health outcomes such as injuries from vehicular, pedestrian, and bicycle collisions. See the full list of indicators at humanimpact.org/component/jdownloads/finish/16/132/0

Rural counties are less likely to have health status reports. However, some health information may be available from individual national and statewide surveys and databases (see Addendum). Placer County has published a resource guide for these data sources.[107]

Private, non-profit hospitals are required under the state's Hospital Community Benefits Program to conduct community health assessments every three years. This can also be a valuable source of local health data.[vii] Health statistics broken down by age, income or poverty status, race/ethnicity, and fine geographic subdivisions such as census tract can be used to better locate subgroups that have existing vulnerabilities that could be magnified by climate change.

In combination with health data, the U.S. Census Bureau's American Community Survey, which relies on a continuous sample, collects data on educational attainment, income, access to personal motor vehicles, housing, and environmental hazards. This provides a means for weighing a community's assets and deficits, and making an overall assessment of a community's vulnerability and resiliency.[108]

This data can also be mapped with environmental hazards related to climate change such as proximity to flood, forest fire, and coastal zones; air pollution basins; and footprints of urban heat islands.

Health Impact Assessment (HIA)

Local governments are increasingly seeking public health input on the likely health impacts of planning and development decisions. Many public health agencies are developing their capacity to conduct HIA. This review process may be used to identify and understand the health impacts of CAP strategies. For example, Health Impact Assessments may provide information useful for evaluating the impact of proposed public transit systems on physical activity, air quality, and pedestrian safety levels, and thereby may influence choices made by transportation planners. A number of innovative evidence-based tools for assessing the health impacts of public policies and land use development exist to support use of HIA. If used, HIA should be performed early in CAP development in order to evaluate the potential impacts and avoid negative health consequences.

Planning Example: HIA and CAPs

Eugene, Oregon conducted a Health Impact Assessment (HIA) on their CAP's transportation policies, available at eugene-or.gov/portal/server.pt/gateway/PTARGS_0_2_361131_0_0_18/05_CEAP_Appendix5_pg69.pdf

viiThe Hospital Community Benefit Program (HCBP) is a result of legislation passed in 1994 (SB 697), which states that private not-for-profit hospitals "assume a social obligation to provide community benefits in the public interest" in exchange for their tax-exempt status. They are required to conduct a community needs assessment every three years, develop a community benefit plan in consultation with the community, and annually submit a copy of the plan to the Office of Statewide Health Planning and Development (OSHPD).

Resources

A Guide for Health Impact Assessment, CDPH: cdph.ca.gov/pubsforms/Guidelines/Documents/HIA%20Guide%20FINAL%2010-19-10.pdf

San Francisco Bay Area Health Impact Assessment Collaborative Tools: hiacollaborative.org/tools

Additional Climate Action Planning Resources

Governor's Office of Planning and Research: opr.ca.gov

Statewide Energy Efficiency Collaborative resources: californiaseec.org/tools-guidance/advanced-resources

ICLEI's Climate Mitigation Program: icleiusa.org/action-center/planning/climate-action-planning

Cool California: coolcalifornia.org

Institute for Local Government: ca-ilg.org/sustainability

Local Government Commission: lgc.org

California Sustainability Alliance: sustainca.org

California Air Pollution Control Officer's Association (CAPCOA), Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures: capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

V. Conclusion

The Climate Action Plan offers a multitude of opportunities to help build healthy, equitable, and sustainable communities. The CAP strategies a local community adopts and commits to implementing have the potential to avert further climate change, improve the environment, reduce government and household spending, avert healthcare costs and human suffering, and proactively improve the health of communities.

This document provides a starting point for local planners and public health practitioners seeking to understand the health impacts of climate change and identify public health co-benefits in climate action planning. It provides supportive rationale, evidence, and data for incorporating health considerations into climate action planning through summaries of research linking health outcomes to climate mitigation strategies. It provides suggestions for creating dialogue and partnerships between public health agencies and climate action planners, optimally resulting in long-term collaborative relationships that leverage the strengths, skills, and resources of multiple agencies. Finally, this guidance places a high value on meaningful participation of residents and a high level of community engagement in each stage of the CAP process, in order to identify locally relevant strategies, and improve implementation of those policies and strategies.

Addendum: Key Data by Topic

Overweight and Obese	• California Health Interview Survey (CHIS): www.chis.ucla.edu/get-data.html • California Child Health and Disability Prevention Program (CHDP): Ask local health department • California Healthy Kids Survey (CHKS): http://chks.wested.org/reports
Physical Activity	• California Health Interview Survey (CHIS): www.chis.ucla.edu/get-data.html • California Healthy Kids Survey (CHKS): http://chks.wested.org/reports • Surgeon General's Recommendations for Daily Physical Activity: www.cdc.gov/nccdphp/sgr/summ.htm[109] • California Department of Education's Physical Fitness Testing: www.cde.ca.gov/ta/tg/pf/pftresults.asp • Census data on distribution of commute to work by walking and biking (choose time period, geography, and table BO8301 for journey to work) http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml • California Safe Routes to Schools travel to school mode data: www.casaferoutestoschool.org/safe-routes-to-school-basics/gather-data/
Chronic Disease[1]	• California Health Interview Survey (CHIS): www.chis.ucla.edu/get-data.html • Emergency room data (local health department) • Hospitalization data (local health department) • Death data (local health department) • County health profiles (local health department)
Nutrition	• Network for a Healthy California - GIS Map Viewer: www.cnngis.org/ • California Department of Education Food Programs: Child nutrition programs data and statistics, including county profiles, free and reduced price data, school meal nutrition analysis, and summer meal service sites. www.cde.ca.gov/ds/sh/sn/
Asthma	• Emergency room data (local health department) • Hospitalization data (local health department) • California Health Interview Survey (CHIS): www.chis.ucla.edu/get-data.html • California Healthy Kids Survey (CHKS): http://chks.wested.org/ • California Breathing: www.californiabreathing.org/asthma-data/county-asthma-profiles
Traffic Injuries, Fatalities, and Collisions	• Statewide Integrated Traffic Records System (SWITRS): www.chp.ca.gov/switrs/switrs2000.html

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