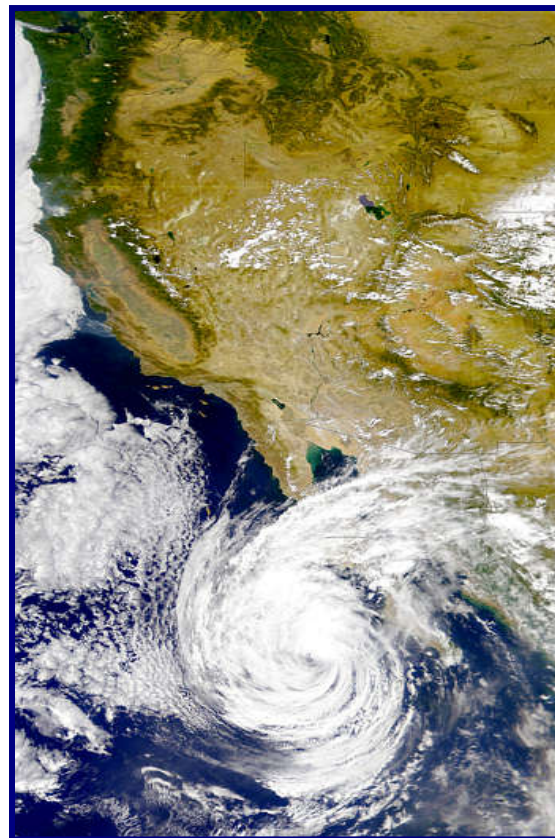


CLIMATE CHANGE IN CALIFORNIA: HEALTH, ECONOMIC AND EQUITY IMPACTS

Executive Summary
January 2006



CLIMATE CHANGE IN CALIFORNIA:

HEALTH, ECONOMIC AND EQUITY IMPACTS

Redefining Progress

Redefining Progress is a non-partisan public policy institute focused on the intersection between economics, social equity, and the environment. RP is a 501 (c) (3) non-profit organization started in 1994.

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Acknowledgments

Redefining Progress extends a sincere thanks to all individuals who took time to assist us with this research. In particular, we acknowledge and thank *Northeast States Center for a Clean Air Future (NESCAF), Inc* for their support and funding this work. Nothing in the report should be construed as necessarily reflecting the views of NESCAF.

We also wish to thank the Natural Resources Defense Council (NRDC) and the Union of Concerned Scientists (UCS) for sharing their advice and insights as well as related research. We want to thank the organizations that sponsored community meetings. In particular, we thank the American Lung Association of Central California, Busriders Union of the Labor Community Strategy Center, Coalition for West Oakland Revitalization, Community Health Initiative of Richmond, Latino Issues Forum and La Union del Pueblo Entero.

We also want to thank Katharine Hayhoe at Atmos Research & Consulting and Larry Kalkstein at Applied Climatologists Inc. for their significant analytical and data contributions as well as Brent Takemoto and Linda Smith at the California Air Resources Board for their ongoing insights.

Many people and organizations assisted in the conception, creation, and content of this report. In particular, we would like to thank Jose Bravo, Luis Cabrales, Jose Carmona, Henry Clark, Sandra Eaton, Michelle Garcia, Tom Goldtooth, Margaret Gordon, Pam Graybeal, Nancy Halpern Ibrahim, Jill Johnston, Angela Jones, Yuki Kidokoro, Phil Klasky, Emily Lee, Rey Leon, Zuri Maunder, Liseth Romero-Martinez, A.J. Napolis, Maria Morales, Monsa Nitoto, Shereri Norris, Karen Pierce, Cynthia Rojas, Parin Shah, Dong Suh, Manuel Toledo, Jessica Guadalupe Tovar, the Transportation Justice Working Group of the Bay Area Social Equity Caucus, Max Weintraub, Sunyoung Yang, and Lei Zhan.

A special thank you goes to Jihan Gearon and Serena Retna, who played a critical role in making the community outreach a success, and Anjali Upadhyay, who assisted with final editing.

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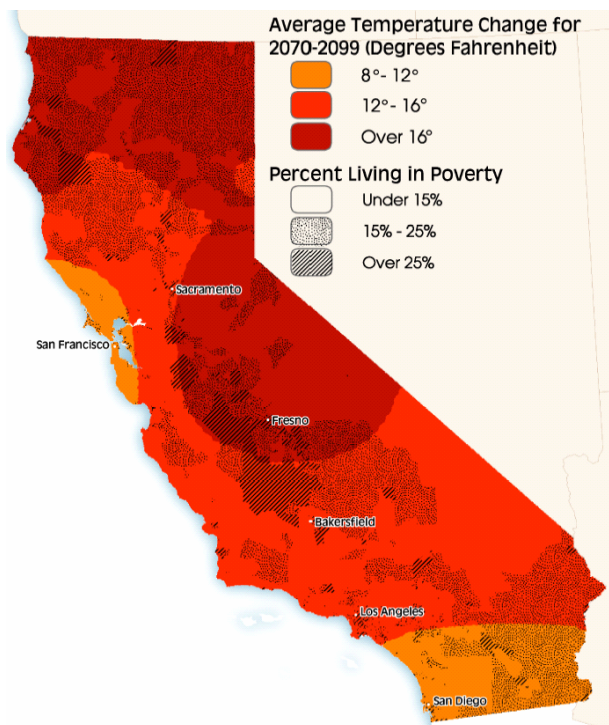
Climate change poses a widespread and growing risk to every Californian. Climate change threatens to increase temperatures; reduce water resources; alter coastal areas as sea levels rise; introduce new patterns of vegetation and infectious diseases; and increase the prevalence of fires, droughts and floods. Although climate change will affect the entire state, the impacts will not have a uniform distribution.

The health implications of increased air and water pollution, heat waves and other weather-related crises will disproportionately affect people of color and low-income communities. Similarly, the economic impacts of climate change—such as higher prices for food, water, and energy—will impose new economic burdens on low-income households. To answer the question of how climate change affects low-income communities and people of color, this report relies heavily on both community testimony and scientific data.

Health Impacts

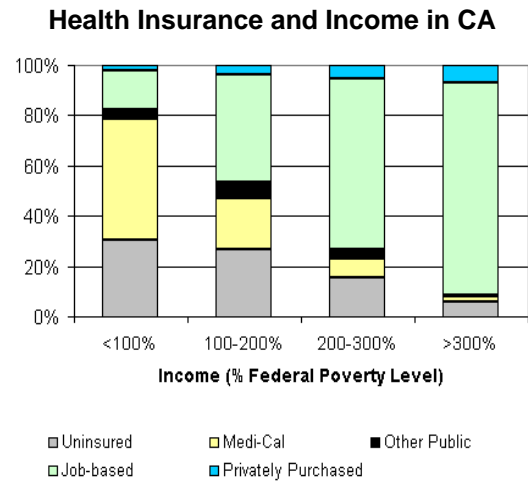
Health problems due to climate change will likely impact all Californians, but low-income communities and communities of color remain particularly susceptible. These communities do not have the resources for adaptation and mitigation as they face reduced mobility and more financial constraints, particularly in obtaining health care. This report focuses on health insurance, heat-wave mortality, the relationship between ozone levels and asthma, and water-and vector-borne diseases.

Lack of Health Insurance: Vulnerability to health risks reflects not only exposure to hazards but also access to healthcare and basic health maintenance practices. People without health insurance are vulnerable to ailments that timely and continual access to health care could minimize. These access disparities exist for different income,



geographic and racial groups in California and reflect differences in employment-based insurance, access to public welfare programs such as Medi-Cal, and the ability to purchase private insurance.

- Hispanics are three times more likely to lack health insurance than Whites.
- Health insurance rates fall as income rises. Californians in the lowest income category, below the federal poverty level, are five times more likely to be uninsured than those in the highest income category (see figure).
- The San Joaquin Valley, an area with one of the highest percentages of low-income residents and people of color, has the highest percentage of uninsured people and the lowest percentage of job-based insurance in the state.



Ozone and Asthma: All Californians will suffer as air quality deteriorates during this century. As temperatures and ozone-precursor emissions rise, the ideal conditions for additional ozone formation will materialize. Unhealthy ozone exposures translate into higher risks of asthma and chronic bronchitis. Low-income communities and people of color in California today face significantly higher unhealthy ozone exposure than other groups. Health burdens clearly differ for specific racial and income groups.

- Asthma mortality among Blacks is 2.5 times higher than for Whites.
- Blacks face asthma hospitalization rates three times higher than any other racial group.

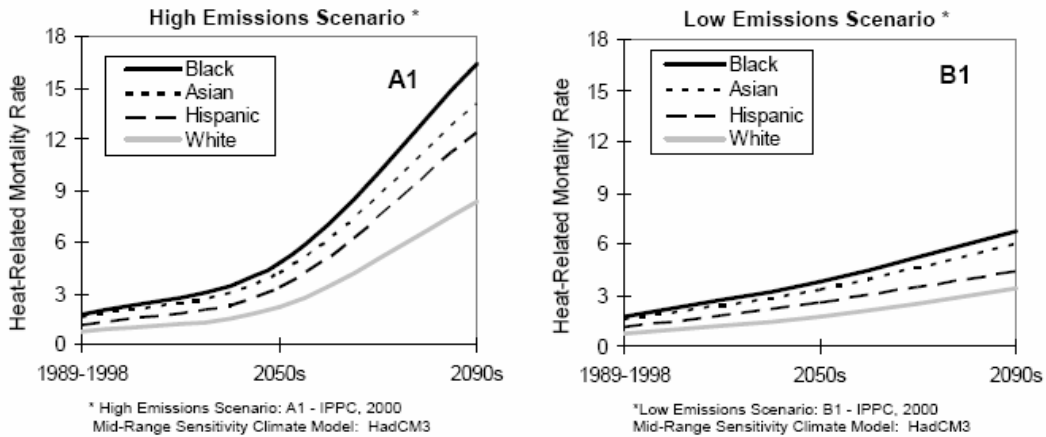
“My family is uninsured and make[s] below 20,000 a year. I can predict future costs in terms of treatment for West Nile Virus; and also with ground level ozone or smog increasing with the heat, my family will most likely contract some kind of respiratory problem—not that we’re not suffering from the consequences of bad air already in LA.”

Los Angeles participant

Heat-Related Mortality: As temperatures increase during this century, the frequency of heat wave events will also rise, especially in urban areas. Increases in the occurrence and severity of heat waves could lead to a rise in heat-related deaths.

- L.A. residents will face significant heat-related mortality increases. Under a high emissions scenario, heat-related mortality rates could increase sixteen fold for Blacks, fourteen fold for Asians, twelve fold for Hispanics, and eight fold for Whites by 2090 (see figure below). Heat-wave mortality will rise under both the high emissions scenario (A1fi) and the low emissions scenario (B1).
- Heat-waves in the coming years will increasingly impact cities such as Fresno, Los Angeles, Sacramento, San Bernardino, and San Francisco.

Heat-Related Mortality Rate Predictions for Los Angeles by Race/Ethnicity

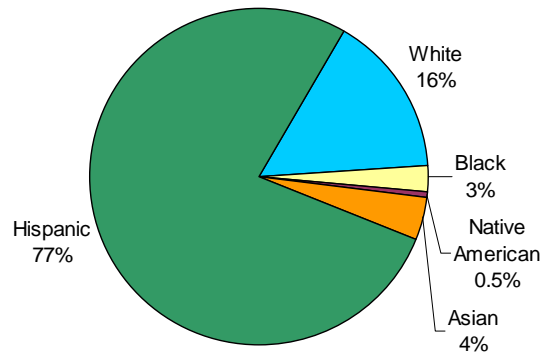


Water-and-Vector Borne Diseases: With projected increases in temperature and flooding, the incidence of water-and vector-borne disease could also rise. Lack of both health insurance and awareness of government-funded intervention programs will likely place greater burdens on low-income communities and people of color if outbreaks occur among these groups. Encephalitis and other mosquito-borne diseases may increase as California becomes a more favorable environment for mosquitoes. One study suggests that a 5.4° to 9° F temperature increase could cause a northern shift in the distribution of both St. Louis and Western Equine Encephalitis. This temperature shift could occur by mid-century under the high emissions scenario and by the end of the century under the low emissions scenario.

Economic Impacts

Public infrastructure and large climate sensitive industries are projected to suffer due to climate change. Reduced water resources, sea-level rise, a shift in snowfall patterns and increased frequency of floods, fires, and droughts all threaten to significantly undermine productivity for California industries. Low-income communities and people of color will likely endure a disproportionate economic burden due to climate change.

Agriculture, Forestry, Fishing & Hunting Employment by Race/Ethnicity, 2003



Employment and Revenue Impacts: Climate change in California may adversely impact agriculture and tourism, both in terms of employment stability and revenue losses.

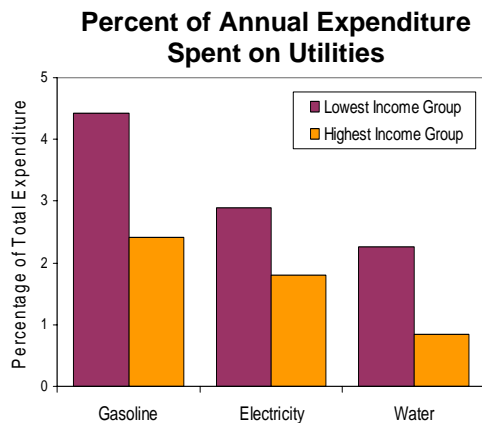
- Potential impact on employment levels in the agriculture and tourism industries negatively affects low-income communities and communities of color, since these

communities constitute up to 50 to 75% of the employees in tourism and almost 85% of the employees in agriculture in California.

- The tourism industry will be impacted as ski seasons may shorten. Annual estimated losses range between \$205-430 million, depending on the emissions scenario. Coastal regions and infrastructure—including tourist destinations such as the Santa-Cruz Boardwalk, which attracts three million visitors a year— could face weather-related damages.
- California agriculture will be impacted as water scarcity may reduce annual agriculture income as much as \$1 to 1.5 billion.
- Recent studies project considerable productivity losses in the dairy and wine industries. In the Central Valley, where over 40 percent of California’s wine-grapes grow, higher temperatures could impair grape quality as early as 2020.
- Floods and fires could produce extensive crop losses through the century.

“[We may see] higher cooling and water rates as these are issues that we are starting to deal with now, but the full brunt of the impact hasn’t really hit yet.”
 –Jose Bravo, Just Transition Alliance

Energy and Water Costs: Climate change threatens to limit basic resources such as water and electricity. Supply reductions and demand increases together will increase water and energy prices, placing significant burdens on California businesses and households. Reduced hydroelectric production due to lower water flows to the main reservoirs and a rise in cooling demand due to warmer temperatures could lead to higher electricity prices. Estimates project a 20% increase in annual electricity expenditures in the state.



- Higher energy and water costs will hit low-income households the hardest because these costs make up a larger proportion of their expenditures – almost double the proportion of the highest income families (see figure).
- Existing utility problems such as water contamination and power blackouts will likely become more prevalent as demand for water and electricity increase due to temperature changes and population growth.

Additional economic effects: Increased extreme weather events could generate economic instability and threaten property and infrastructure at all levels.

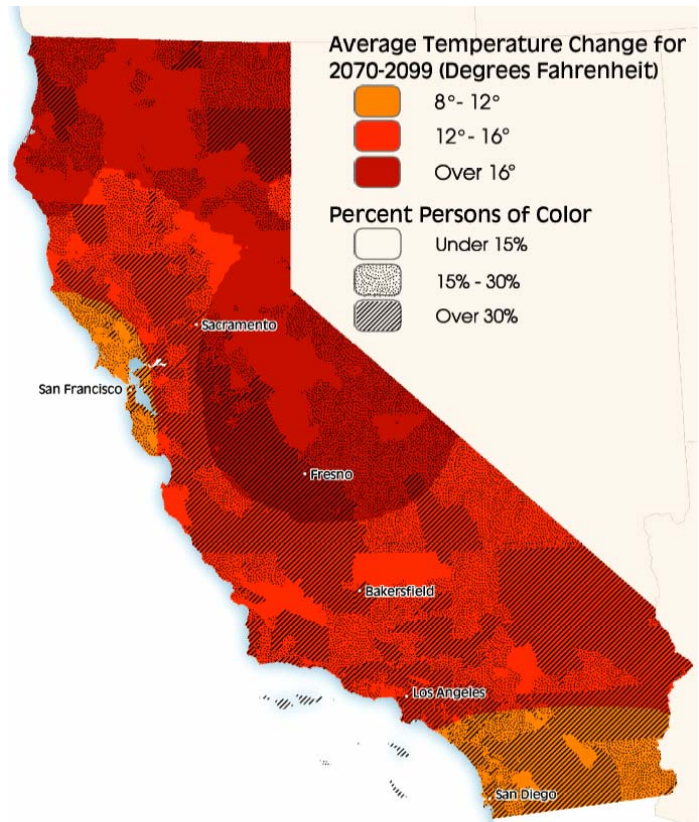
- Businesses and households will face increased insurance costs and decreased property values.
- State government will have to address increased expenditures on levee maintenance, infrastructure reconstruction and disaster relief. These expenditures will likely reduce investments in health, education and other essential social services.

Community Testimony

This report assesses the impacts of climate change on low-income communities and people of color in California. In keeping with the environmental justice principle of “we speak for ourselves,” this report also benefits from the voice of people living in these communities. Through surveys with California environmental justice leaders and community meetings in Fresno, Los Angeles, Oakland, and Richmond, we asked people about their observations on climate change and its current and expected impacts.

Better understanding of this testimony will help guide lawmakers in developing climate policy that protects all Californians. The testimony highlights the vivid connections between existing inequalities, disproportionate impacts and climate change.

- People of color and low-income communities are concerned about climate change as it compounds existing environmental, social, and economic injustices.
- Respiratory ailments and lack of health insurance are the top climate-related concerns.
- Community members across the state raised concerns about working in agriculture and construction as temperatures rise and weather variability increases.
- Policymakers should act quickly to slow climate change and provide assistance to community members who will face disproportionate challenges in adapting to climate change. Some suggestions for assisting adaptation include relocation assistance for extreme weather events, improved bus shelters for increased precipitation, more paratransit for the elderly, improved housing quality, cooling centers for heat waves, and increased education on heat exposure risks.



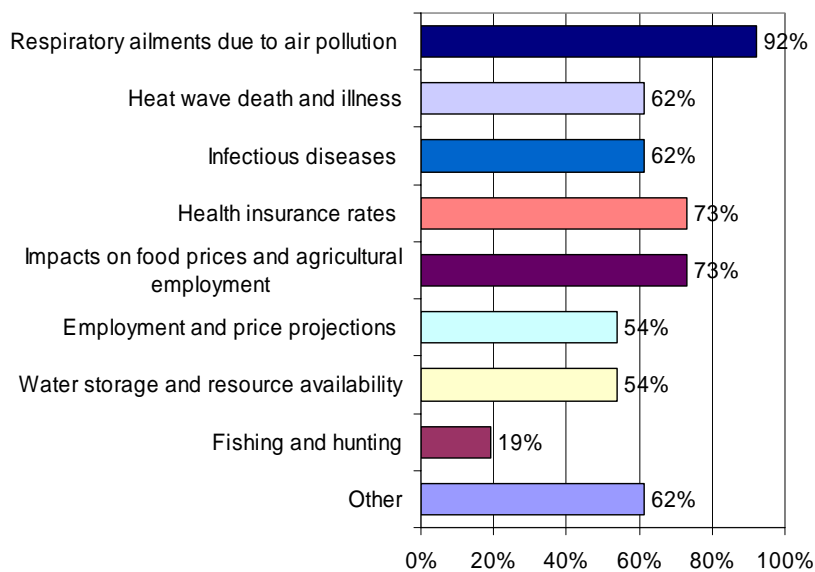
This community testimony process suggests that there remains a need for greater awareness regarding the connection between environmental justice and climate change for

“We need to tie the issue of global warming to larger environmental justice and environmental health issues.”
 –Jose Carmona, Center for Energy Efficiency and Renewable Technologies

the general public and policymakers alike. Most people have noticed rising temperatures. And, as one leader observed, “community awareness about environmental justice has increased.” However,

there is not yet widespread understanding about the connection between climate change and environmental justice concerns. “It’s hard to draw attention to the issue of global warming because there are problems happening NOW: communities that have poverty, live in the shadow of power plants, ports, and refineries,” said one leader. “We need to tie the issue of global warming to larger environmental justice and environmental health issues.”

Distribution of Interest for Study Variables.



Synthesis and Policy Implications

California is an economic, technological and regulatory leader. It has a unique capacity to take a lead on cutting-edge climate policy for the 21st century. Climate change in California will not be experienced equally even though exposure to climate change will be widespread. Existing inequality and disparities in health and economic factors promise that climate change will disproportionately affect California’s most vulnerable people.

This report suggests a few basic policy directions and flags the key regions that California policy-makers ought to consider. Those directions include:

- focus on policies that reduce CO₂ emissions in California,

- take near-term action to develop fair climate policy, and
- provide adaptation assistance to those most vulnerable to climate change.

The key regions of concern are the top agricultural counties, the areas that house snow-dependent economies, the ozone-polluted regions and the state's largest cities. The relative proportion of low-income people and people of color in each of these regions vary. Also, as addressed in the report, a regional focus can mask the disproportionate climate impacts that do not operate along a geographical dimension.

Awareness of these disproportionate impacts allows lawmakers to craft laws that consider the needs of each and every Californian. This awareness requires an understanding of the role that existing inequality plays in climate change as well as the disproportionate impacts that arise from climate change. The sum result of inequality and climate change together will mean unrecoverable losses and damage to the livelihood of low-income people and people of color. Some have called this total impact "prosperity damage."