

# CALIFORNIA

## CLIMATE CHANGE



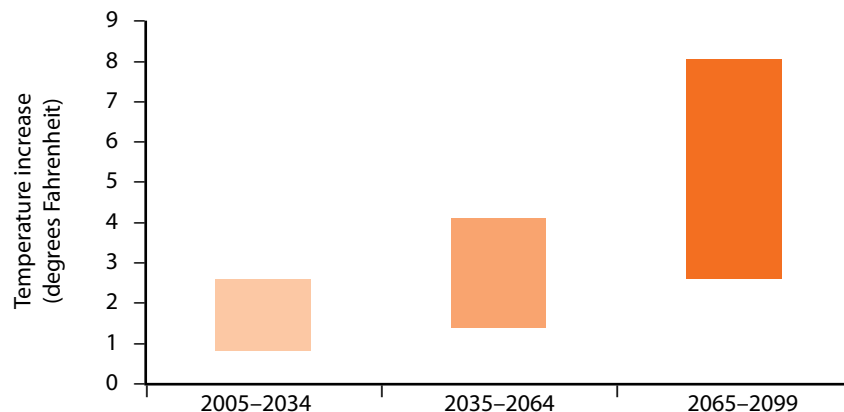
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### CLIMATE CHANGE THREATENS CALIFORNIA'S FUTURE

Increases in global emissions of greenhouse gases are leading to higher air and water temperatures as well as rising sea levels, with serious consequences for California. Air temperatures are projected to increase throughout the state over the coming century. Sea level is expected to rise 20 to 55 inches by 2100, and the frequency of extreme events such as heat waves, wildfires, floods, and droughts is expected to increase. Higher temperatures will result in more rain and less snow, diminishing the reserves of water held in the Sierra Nevada snowpack. Even if all emissions of greenhouse gases ceased today, some of these developments would be unavoidable because the climate system changes slowly.

### AIR TEMPERATURES ARE PROJECTED TO RISE IN CALIFORNIA, ESPECIALLY UNDER HIGH EMISSIONS SCENARIOS



SOURCE: D. R. Cayan, A. L. Luers, et al., "Overview of the California Climate Change Scenarios Project," *Climatic Change* 87 (2008): S1-S6.  
NOTE: Projected temperature increase relative to 1961-1990.

In the face of these threats, California has taken the lead in global efforts to reduce emissions. Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, requires the state to reduce greenhouse gas emissions to 1990 levels by 2020; this would result in emissions roughly one-third less than what would be expected under "business as usual." An executive order calls for emissions to be reduced to 80 percent below 1990 levels by 2050. Reductions of this magnitude are needed on a global scale to stabilize the earth's climate. California now faces a twofold policy challenge: finding the least expensive ways to reduce emissions and preparing for the climate changes that are expected even if emissions are successfully reduced.

California is not alone in tackling this global issue. But its actions are crucial, because they set an example for other states, regions, and the rest of the world, and others are already following its lead. To be effective, the state must continue to forge new strategies, even though the nature and timing of climate change are uncertain and global efforts to reduce emissions may or may not be successful.

## CALIFORNIA IS CHARTING NEW TERRITORY WITH ITS PLAN TO REDUCE EMISSIONS

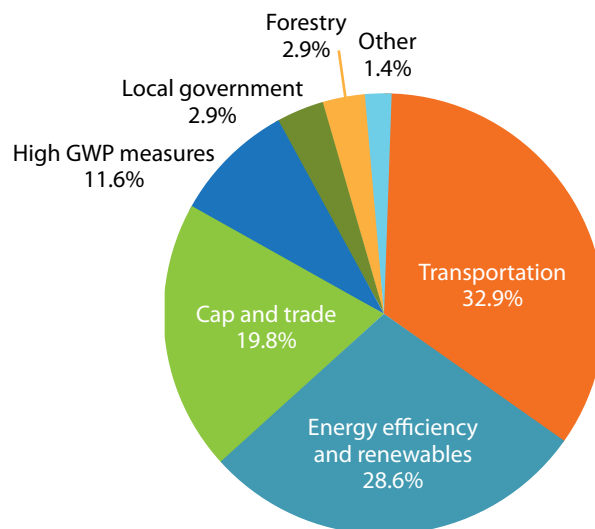
- **California's climate change plans generate interest . . .**

The California Air Resources Board (CARB) is responsible for implementing the Global Warming Solutions Act. In late 2008, CARB adopted a Scoping Plan, outlining the programs designed to reach the 2020 target. Because this is the first comprehensive plan of its kind within the United States (and one of the first such plans internationally), many are looking to California as a model for efforts elsewhere.

- **. . . and controversy.**

Some legislators and interest groups have urged delaying compliance with AB 32 (and other environmental regulations) until the economy improves. Updated economic analysis by CARB shows that implementation will have little effect on the state's economy. At the same time, the Legislative Analyst has reported that the short-term impact on jobs is likely to be negative. Nonetheless, analysis of the potential impacts of climate change shows that large reductions in global emissions will be needed soon to avoid the most severe effects.

### ENERGY AND TRANSPORTATION ARE THE LARGEST COMPONENTS OF THE SCOPING PLAN



SOURCE: CARB, "Climate Change Scoping Plan: A Framework for Change" (2008).

NOTE: GWP = global warming potential; gases with high GWP include refrigerants and solvents.

- **New standards for passenger vehicles are key.**

California adopted the first-ever greenhouse gas emission standards for passenger vehicles in 2004. These standards will reduce emissions from new passenger vehicles by approximately 30 percent by 2016. The federal government has chosen to set standards equivalent to California's by 2016.

- **Partnerships to develop a cap and trade program are also in the works.**

California is reaching out to other states and Canadian provinces, through the Western Climate Initiative, to develop a cap and trade program. Under this program, firms that would need to spend a lot to reduce emissions would be allowed to trade emission reduction credits with firms that can reduce emissions at lower cost.

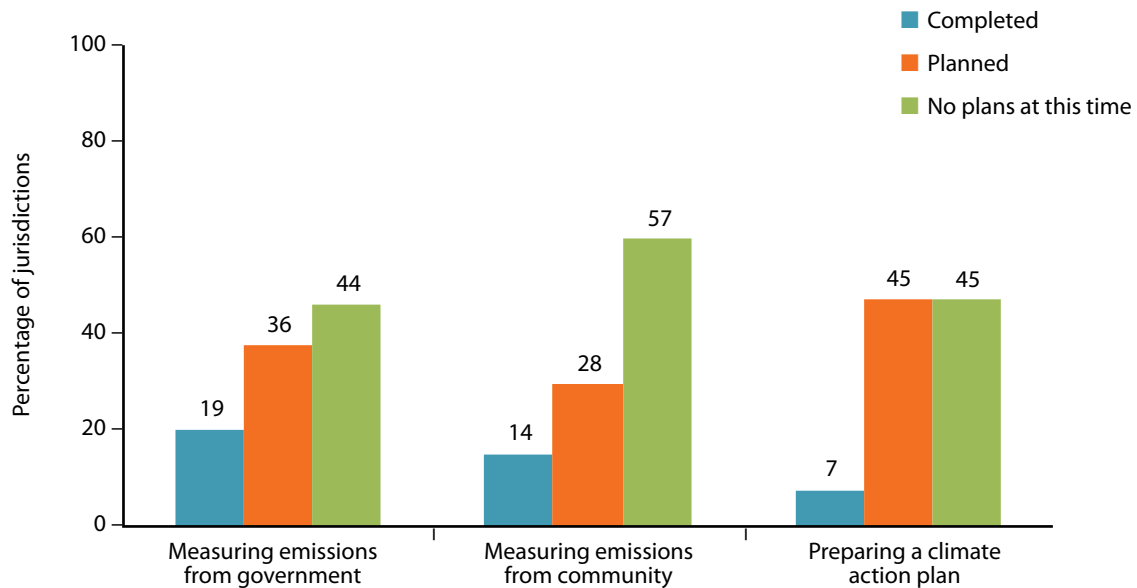
- **California has recently adopted more pathbreaking strategies.**

Adopted in 2008, Senate Bill (SB) 375 aims to reduce emissions by integrating investments in land use and transportation. This bill provides incentives to encourage regional transportation planning agencies and local governments to develop ways to reduce passenger vehicle use. Targets for 2020 and 2035 will be finalized by September 30, 2010.

- **California’s local governments are also addressing climate change.**

Three-quarters of California’s cities and counties, encompassing over 90 percent of the state’s population, are taking measures to address climate change. In many instances, these measures are also promoted as ways to reduce energy costs and to promote broader sustainability goals. Moving forward, local governments would like more information on the costs and benefits of different actions, information on funding, and greater clarity in state law.

**LOCAL GOVERNMENTS ARE TAKING ACTION ON CLIMATE CHANGE**



SOURCE: Hanak et al., *Climate Policy at the Local Level: A Survey of California’s Cities and Counties* (PPIC, 2008). NOTE: “Don’t know” responses not shown.

**DESPITE THE RECESSION, CALIFORNIANS’ SUPPORT FOR THE STATE’S CLIMATE POLICIES IS STRONG**

	<b>% Favor (all adults)</b>
Global Warming Solutions Act of 2006	66
Emission standards for new passenger vehicles	78
Increasing the use of renewable energy	85
Requiring local governments to change land-use patterns so people drive less	78
Requiring an increase in energy efficiency for residential and commercial buildings and appliances	76
Requiring industrial plants, oil refineries, and commercial facilities to reduce emissions	80

SOURCE: Baldassare et al., *Statewide Survey: Californians and the Environment* (PPIC, July 2009).

## CALIFORNIA NEEDS TO PREPARE FOR THE EFFECTS OF CLIMATE CHANGE

California is well ahead of other states in developing information on the effects of climate change. But much work must be done to prepare for these effects.

- **The effects of climate change are already being seen around the state.**

Spring runoff from snowpack is occurring earlier now than it did in the first part of the 20th century. Some plant and animal species normally found in the southern part of the state have been observed in more northern locations.

- **Sea level rise threatens coastal infrastructure, homes, and habitat.**

Sea level is projected to rise 8 to 16 inches by 2050 and 20 to 55 inches by 2100. The Pacific Institute finds that at the higher end of this range, 1,750 and 1,800 miles of highways and roads along the ocean coastline and San Francisco Bay, respectively, are at risk of inundation. Coastal armoring (e.g., sea walls or breakwaters) can help protect infrastructure and homes along the coast, but these are expensive remedies and would eliminate some recreational and ecological uses of the coastline.

- **Water management faces challenges.**

The diminishing mountain snowpack reduces water storage and increases the risk of Central Valley flooding. Rainfall variability is also expected to increase, leading to more frequent droughts and floods. In addition, sea level rise poses threats to fragile Delta levees, currently important for the state's water supply.



■ Inundation with 16-inch sea level rise

■ Inundation with 55-inch sea level rise

SOURCE: Noah Knowles, "Potential Inundation Due to Rising Sea Levels in the San Francisco Bay Region" (California Climate Change Center, 2009).

NOTE: The map illustrates the potential inundation of 16 inches of sea level rise by 2050 and 55 inches by 2100.

- **Public health will be at risk.**

An increase in extreme events—heat waves, wildfires, and floods—will pose challenges to public health and the state's emergency preparedness agencies and health infrastructure. Case in point: A prolonged heat wave in 2006 resulted in over 140 confirmed deaths and a significant increase in emergency room visits and hospitalizations.

- **Air quality will worsen.**

The San Joaquin Valley and the Los Angeles area already have some of the worst air quality in the nation. Increasing temperatures and other effects of climate change will worsen air quality, likely requiring additional pollution controls to attain state and federal air quality standards.

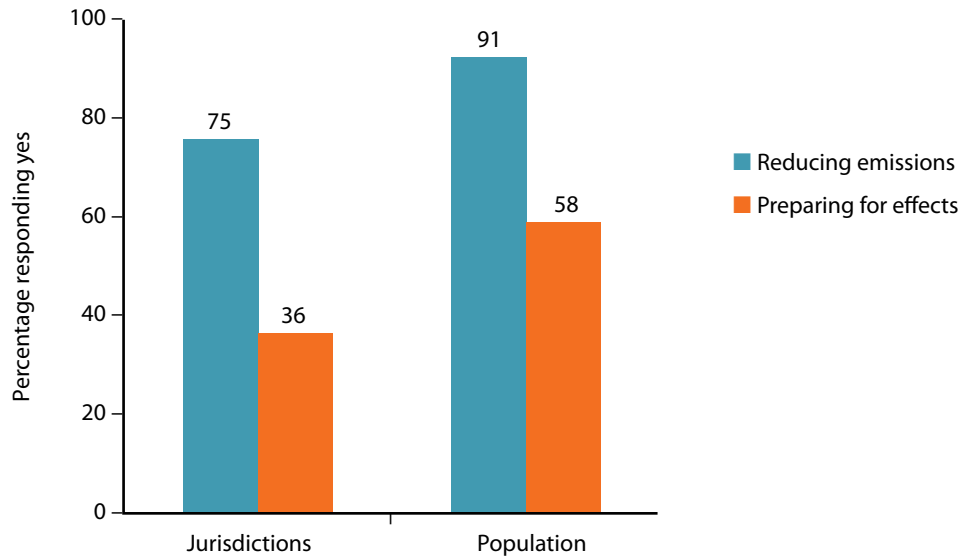
- **Biodiversity is under threat.**

Climate change places an additional burden on many of the state's plants and animals. As temperatures rise, many species will need to migrate to more hospitable areas. Current development patterns could hinder this movement and threaten extinction for some species.

- **Readiness to cope is variable.**

Water and electric utilities have begun to consider climate change in their long-range planning and have tools available to develop adaptation strategies. But in areas such as ecosystem management and flood control, the institutional and legal frameworks are ill-equipped to handle the changes. Some regions are taking the lead in thinking about adaptation (e.g., San Diego and the Bay Area). The Natural Resources Agency has developed an adaptation strategy for the state.

## CALIFORNIA'S LOCAL GOVERNMENTS ARE LESS FOCUSED ON PREPARING FOR CLIMATE EFFECTS



NOTE: Survey covered 310 cities and counties. "Jurisdictions" shows the share of cities and counties covered, and "population" shows the share of sampled population covered by the action. SOURCE: Hanak et al., *Climate Policy at the Local Level: A Survey of California's Cities and Counties* (PPIC, 2008).

### LOOKING AHEAD

To lessen the effects on California, emission reductions will be needed on a global scale. Even with these reductions, the state needs to prepare for some inevitable effects of climate change.

- **Develop an integrated climate change policy.**

An integrated climate change policy that includes efforts to reduce emissions and plans to prepare for climate change will ensure that mitigation and adaptation policies are complementary.

- **Achieve near-term greenhouse gas emission reductions.**

Actions taken today will affect the concentration of greenhouse gases in the atmosphere several decades from now. Therefore, near-term emission reductions are needed to work toward future climate stabilization.

- **Undertake some "no regrets" measures now.**

In some areas, failure to consider future climate changes in current planning will result in unacceptably high costs. For example, considering climate change in today's land-use planning decisions could facilitate species' migration as the climate changes. Limiting development in areas at increasing risk of flooding will avoid future costs.

- **Tap into local enthusiasm for undertaking climate action.**

The state should build on local momentum to implement state-level climate policies. Local governments' experience and learning will be especially important in meeting the greenhouse gas emission reduction targets set under SB 375, the state's transportation and land-use law.

- **Continue to develop information to reduce policy uncertainties.**

Better information is needed to assess progress toward meeting emission reduction targets and the cost-effectiveness of policy options. Assessments of climate effects at a local or regional scale will help pinpoint vulnerabilities and develop priorities for adaptation.

- **Continue to play a leadership role.**

California is a leader on environmental policy. Climate change is no exception. This leadership is important for encouraging other governments to take actions to reduce climate change. Without global cooperation to reduce emissions, the consequences for California's economy and society may be severe.

**We invite you to dig deeper at [ppic.org](http://ppic.org). Related PPIC resources include:**

*Climate Change Challenges: Vehicle Emissions and Public Health in California*

*Preparing California for a Changing Climate*

*PPIC Statewide Survey: Californians and the Environment (July 2009)*

*Climate Policy at the Local Level: A Survey of California's Cities and Counties*

*Latino Attitudes and the Environment*

**Contact a PPIC expert:**

Louise Bedsworth

Ellen Hanak

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Public Policy Institute of California  
500 Washington Street, Suite 600  
San Francisco, CA 94111  
T 415 291 4400 F 415 291 4401

PPIC Sacramento Center  
Senator Office Building  
1121 L Street, Suite 801  
Sacramento, CA 95814  
T 916 440 1120 F 916 440 1121

[www.ppic.org](http://www.ppic.org)

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