PART 3: UNDERSTANDING REGIONAL CHARACTERISTICS

The APG is organized into a series of climate impact regions. The choice to designate regions is due to the statewide diversity in biophysical setting, climate, and jurisdiction characteristics. The regions allow for greater depth and more detailed guidance to be presented.

North Coast
- Sea Level Rise and inland flooding
- Threats to sensitive species (e.g. coho salmon)
- Reduced agricultural productivity

North
- Increased wildfire
- Reduced snowpack
- Ecosystem shifts & non-native species

Bay Area
- Coastal inundation & erosion
- Public heath – heat & air quality
- Reduced agricultural productivity (e.g. wine grapes)

Northern Central Valley
- Flooding – storm flows, snowmelt
- Reduced agricultural productivity
- Wildfire in the Sierra foothills
- Public health and heat

Bay-Delta Region
- Flooding – storm flows, snowmelt
- Reduced agricultural productivity
- Public safety

Southern Central Valley
- Reduced agricultural productivity
- Decrease in tourism – Sierra Nevada foothills
- Public heath – heat & air quality

North Sierra
- Reduced tourism
- Ecosystem change
- Increased wildfire

Southeast Sierra
- Reduced tourism
- Substantially reduced snowpack
- Flooding

Central Coast
- Reduced agricultural productivity
- Coastal flooding & infrastructure damage
- Biodiversity

South Coast
- Sea level rise – tourism & infrastructure
- Water supply
- Public heath – heat & air quality

Desert
- Reduced water supply
- Public health & social vulnerability
- Stress on special status species

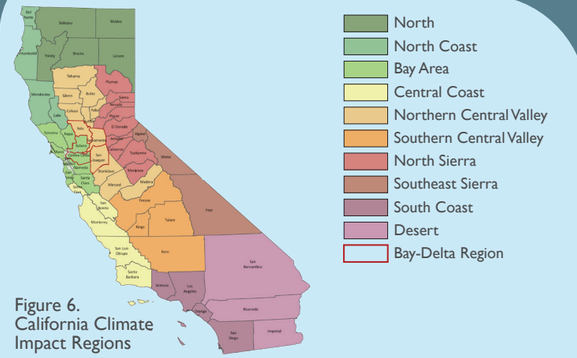


Figure 6.
California Climate Impact Regions

PART 4: IDENTIFYING ADAPTATION STRATEGIES

The community and regional strategies included in the APG are examples of adaptation strategies that can be implemented at a local level. They provide ways to address adaptation needs through familiar as well as new planning, development, environmental, and emergency management actions. To be useful, these examples of strategies must be tailored to fit local needs and conditions. Given the energy and innovation of California communities, many more creative adaptation solutions are likely to emerge.

To aid local jurisdictions in adjusting the strategies, the following information is presented for each strategy:

Description
A basic description of the strategy intent and structure

Factors to Consider
Things to keep in mind when tailoring a strategy for local or regional implementation

Sources of Information
Resources that provide additional detail on each strategy

Examples of Applications
Communities implementing similar strategies

Funding Sources
Possible sources of funding for the strategy (where applicable)

Sector Overlap
Other climate impact sectors addressed by the strategy (where applicable)

Co-benefits
Other community benefits resulting from the strategy (where applicable)

The APG provides a broad sampling of many different strategies, which can be implemented to tackle climate adaptation challenges facing California communities in the coming years. Involvement and participation of a wide variety of local stakeholders is important in addressing these challenges.

Download Copies of all four APG documents
http://resources.ca.gov/climate_adaptation/local_government/adaptation_policy_guide.html

FEMA · Cal EMA California Emergency Management Agency · California Natural Resources Agency

CALIFORNIA ADAPTATION PLANNING GUIDE

Is your community ready for Climate Change?

Climate change is already affecting California and is projected to continue to do so well into the foreseeable future. Current and projected climate change impacts include increased temperatures, sea level rise (SLR), reduced winter snowpack, altered precipitation patterns, and more frequent storm events. These changes have the potential for a wide variety of impacts such as altered agricultural productivity, wildfire risk, water supply, public health, public safety, ecosystem function, and economic continuity.

The Adaptation Planning Guide (APG)

The California Climate Adaptation Planning Guide (APG) details a step-by-step process to aid local communities and regional entities in evaluating vulnerability and devising strategies to address climate change impacts. "Climate adaptation" refers to strategies (policies, programs, or actions) that bolster community resilience in the face of unavoidable climate impacts. The APG is not prescriptive in its approach. Instead, it presents a decision-making framework that provides straightforward, yet flexible, guidance for communities to begin taking direct actions in response to climate impacts.

THE APG IS ORGANIZED INTO FOUR PARTS:

Part 1: Planning for Adaptive Communities. Part 1 is intended for all APG users. This document presents the basis for climate change adaptation planning and introduces a step-by-step process for local and regional climate vulnerability assessment and adaptation strategy development.

Part 2: Defining Local and Regional Impacts.
This supplemental document provides a more in-depth understanding of how climate change can affect a community. Seven "impact sectors" are described to support communities conducting a climate vulnerability assessment.

Part 3: Understanding Regional Characteristics.
The impact of climate change varies across the state. This supplemental document identifies climate impact regions, including their environmental and socioeconomic characteristics

Part 4: Identifying Adaptation Strategies.
The final part explores potential adaptation strategies that communities can use to meet adaptation needs. Adaptation strategies are organized using the same impact sectors identified in Part 2. The document includes examples from jurisdictions already pursuing climate adaptation measures and offers considerations for tailoring potential strategies to local needs.

Figure 1. The four California Adaptation Planning Guide (APG) documents.

The APG is structured for all users to start with the Planning for Adaptive Communities document. The other three documents support the process presented in the first document by providing additional information and greater detail.

PART 1: INTRODUCTION AND FRAMEWORK

LOCAL ADAPTATION STRATEGY DEVELOPMENT

Adapting to the projected impacts of climate change poses challenges for community and regional policy-makers. These include the evolving nature of climate science and breadth of community assets potentially affected. The APG presents a decision-making framework that supports forward-looking action in the face of uncertainty, while fully considering local needs and characteristics.

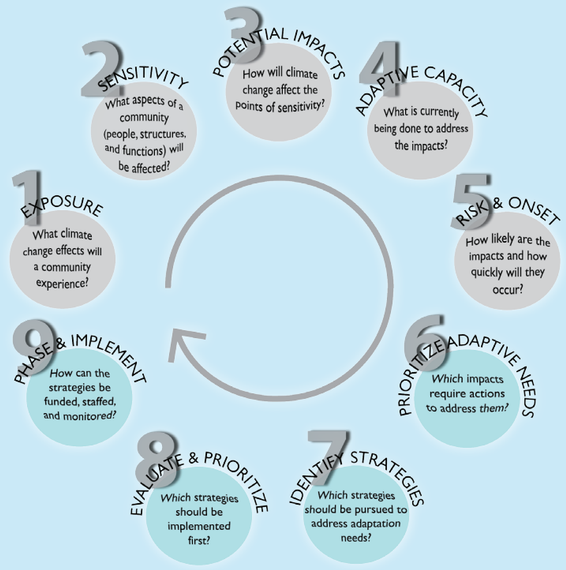


Figure 2. Steps in Adaptation Strategy Development. The boxes shaded in gray ar considered part of local vulnerability assessment.

CLIMATE VULNERABILITY ASSESSMENT (STEPS 1-5)

Climate vulnerability assessment is a method for determining the potential impacts of climate change on community assets and populations. Communities that understand these impacts can prepare climate adaptation strategies to increase resilience to climate change. Vulnerability assessment includes the following steps.

1. Exposure:

Identify the climate change effects that a community may experience. This includes a basic assessment of the projected difference from current conditions, the speed of onset, and the spatial extent of potential impacts.

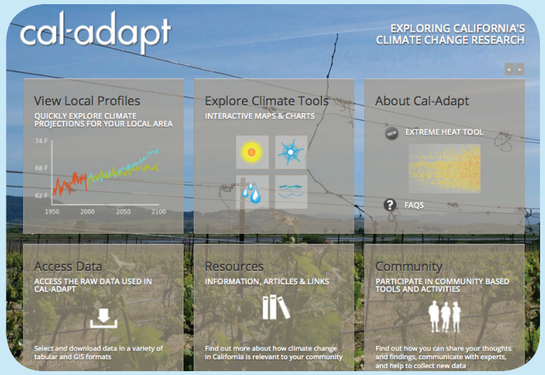


Figure 3. Cal-adapt.org is a good starting point for communities to determine climate exposure.

2. Sensitivity:

This step is a systematic assessment to identify those aspects of a community (structures, people, and functions) that may potentially be affected by the impacts identified in Step 1.

3. Potential Impacts:

Analyze how the climate change will affect the community based on the points of sensitivity identified in Step 2. This step relies heavily on the expertise of the staff and other local stakeholders to accurately assess potential climate consequences.

4. Adaptive Capacity:

Evaluate existing policies, plans, programs, resources, or institutions that are already in place or can be implemented with little effort to adapt to climate change and reduce potential impacts. Step 4 asks that communities carefully evaluate existing measures to determine level of preparedness for projected impacts.

5. Risk and Onset:

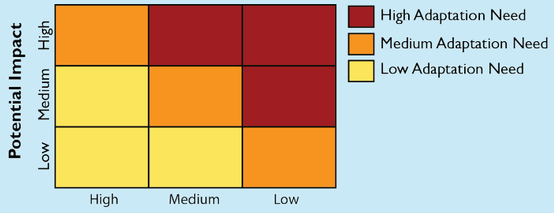
Adjust the impact assessment to account for the likelihood of an impact (uncertainty) and how quickly it is projected to occur.

ADAPTATION STRATEGY DEVELOPMENT (STEPS 6-9)

The strategy development phase translates the identified vulnerability and risk into implementable actions. One way to navigate what can be a complex, time-consuming process is through the use of decision frameworks (i.e. Figures 4 and 5). Strategy development includes the following steps:

6. Setting Priorities for Adaptation Needs:

Prioritize adaptation needs based on the vulnerability assessment and the certainty of the impact. Figure 4 illustrates how potential impact (Step 3) and adaptive capacity (Step 4) can be combined. Additional matrices can be used to account for impact uncertainty.



Adaptive Capacity- The current community capacity to address a potential impact.
[High= community is well prepared for an impact;
Low= community is unprepared for an impact]

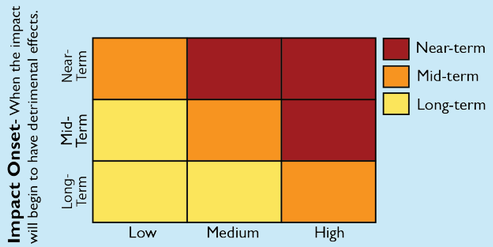
Figure 4. A sample adaptation need matrix.

7. Identifying Adaptation Strategies:

Identify strategies to address the highest priority adaptation needs. Strategies should be flexible, specific to the identified impacts, cost-effective, and integrative.

8. Evaluating and Setting Priorities for Strategies:

Prioritize strategies based on the projected onset of the impact, strategy cost, co-benefits, and other feasibility factors.



Cost - Ease of obtaining funding
Co-benefits - Benefit to the community beyond adaptation
Duration - Ease of implementation (from the perspective of time)
Social - Level of community &/or political support

Figure 5. Sample decision matrix for strategy evaluation.

9. Establishing Phasing and Implementation:

Develop an implementation plan that includes phasing of strategies and a monitoring system to assess effectiveness.

PART 2: DEFINING LOCAL AND REGIONAL IMPACTS

Climate change impacts (temperature, precipitation, sea level rise, ocean acidification, and wind) affect a wide range of community structures, functions, and populations. These impacts are separated into a series of "sectors" that serve as the organizing framework for the community vulnerability assessment and determination of adaptation needs.

Public Health, Socioeconomic, and Equity Impacts:

This sector consists of the public health and socioeconomic impacts of heat events, average temperature change, intense rainstorms, reduced air quality, and wildfires on people, focusing on groups who are most sensitive to these impacts because of both intrinsic factors (e.g., age, race/ethnicity, gender) and extrinsic factors (e.g., financial resources, knowledge, language, occupation).

Ocean and Coastal Resources:

Changes such as sea level rise, intensification of coastal storms, and ocean acidification may affect ocean and coastal resources. Potential environmental impacts of these changes include coastal flooding/inundation, loss of coastal ecosystems, coastal erosion, shifts in ocean conditions (pH, salinity, etc.), and saltwater intrusion.

Water Management:

This sector includes climate changes such as altered timing and amount of precipitation and increased temperatures that influence the availability of water supply. In addition, the sector includes an evaluation of the role that intense storms and rapid snowmelt can play in flooding.

Forest and Rangeland:

Climate can have an influence on forest health and wildfire risk. In forest ecosystems, climate change can alter the species mix, moisture and fuel load, and number of wildfire ignitions. These changes in wildfire character are related to a range of forest health indicators such as growth rate, invasive species, erosion, and nutrient loss.

Biodiversity and Habitat:

Climate change may affect terrestrial and freshwater aquatic habitats and the species that depend on them. Changes in the seasonal patterns of temperature, precipitation, and fire due to climate change can dramatically alter ecosystems that provide habitats for California's native species. These impacts can result in species loss, increased invasive species' ranges, loss of ecosystem functions, and changes in growing ranges for vegetation.

Agriculture:

The threats posed by climate change have the potential to influence crop and livestock operations. Climate change can affect agriculture through extreme events (e.g., flooding, fire) that result in large losses over shorter durations, or through more subtle impacts such as changes in annual temperature and precipitation patterns that influence growing seasons or livestock health.

Infrastructure:

Infrastructure provides the resources and services critical to community function. Roads, rail, water (pipes, canals, and dams), waste (sewer, storm, and solid waste), electricity, gas, and communication systems are all needed for community function. Climate change increases the likelihood of both delays and failures of infrastructure.