

Developing Sound Adaptation Strategies



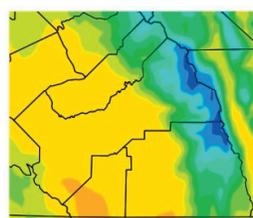
The Need for Climate Change Adaptation

Climate change is well underway. Global temperatures have increased 1.5° F. Sea level has risen 8 inches. Forest and rangeland fires have increased. Fish, wildlife, and plants are on the move. Climate change is expected to progress more quickly throughout the next century. Many changes will occur regardless of how well we curtail future greenhouse gas emissions, so we need to prepare for those impacts in order to protect people and wildlife. Preparing for and responding to a changing climate is called climate change “adaptation.” Unfortunately, we can no longer simply use past conditions to plan for the future.

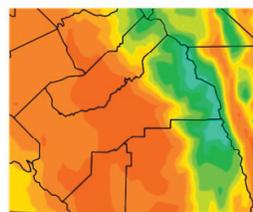
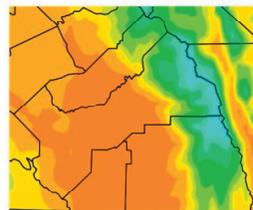
About the Process

At the National Center for Conservation Science and Policy, we developed a process that walks a community, watershed, county, federal planning unit, or region through a process that helps them begin to plan for climate change. We call this process ClimateWise®. The ClimateWise® process begins by sharing information about local impacts of climate change, based on output from downscaled global climate models.

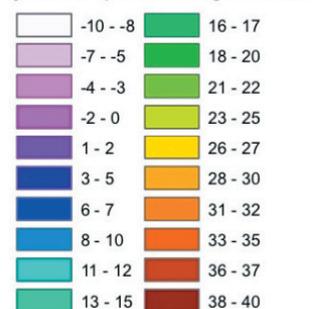
Next we identify where a community or region is most vulnerable to climate change regarding both human and natural systems. Finally, we work closely with local leaders and experts to develop strategies to increase resilience in the face of climate change.



HADCM



Monthly Mean Temperature in Degrees Celsius



Historic (1961-1990) temperature (top) and future projected temperature for two time periods, 2035-45 (middle) and 2075-85 (bottom) across Fresno County and surrounding counties, based on one global climate model (we use three in our assessments).

As a group works through this process, a variety of benefits are realized. These include increased understanding of the local impacts of climate change, communication among diverse stakeholder groups, an integrated approach to both mitigation and adaptation, greater awareness of vulnerable populations and more effective regional planning. During this process, leaders in the community naturally begin to adopt the recommendations and move them toward implementation. The National Center continues to support them as they take action (presentations, data, funding opportunities, etc.). Through this process, climate change adaptation is realized in two primary ways: (1) implementation of strategies focused specifically on climate change adaptation, and (2) incorporation of climate change adaptation into the normal planning process (forest plans, county strategic plans, city growth plans, etc.).

In the following section, the individual steps in the ClimateWise® process are described in more detail, in chronological order.

1. Local Taskforce. In preparation of the ClimateWise® process, a local Climate Change Taskforce is developed by the sponsoring entity (county or municipal government, council of governments, federal agency, etc.) to guide the local process, assist in integrating the results of the workshops into prioritized recommendations, and issue a final report to the community. The Taskforce is formed of local leaders from the various sectors who are enthusiastic about the process, knowledgeable about issues of the region, and willing to help identify and prioritize strategies that can work across different sectors. By identifying strategies that work across sectors, the potential for conflict as climate change progresses is reduced.



2. Climate Change Science Report. The National Center works closely with scientists at the Pacific Northwest Research Station (USDA Forest Service) to obtain model output at locally applicable scales (8km). We present output from three different global climate models (projecting temperature and precipitation

Typical Participants in the Natural Systems Workshop

County natural resource experts
Federal or state land/wildlife managers
Fire ecologists
Hydrologists
Range ecologists
University researchers
Cooperative extension researchers
Forest/NPS/BLM supervisors
Soil scientists
Botanists
NGO scientists
Water distribution and storage experts
Renewable energy representatives
Elected officials & other policy-makers

through 2100) as well as a vegetation model (projecting fire and vegetation change). In addition, we use model output that provides projections for snowpack, hydrology, species range shifts, and other variables of interest to the local area. All information is presented in simple language in a single report. The scientific background, model uncertainty, and complexity of interrelationships are all explained in this report.

3. Natural Systems Workshop. The third step in the ClimateWise® process is to convene a workshop of local scientists and land, water, and wildlife managers. At this workshop, the local projections and latest climate change science are presented to the group and discussion ensues about the likely impacts of climate change to species, ecosystems, ecosystem services, and specific habitats or areas of interest.

Identification of populations of species or locations that are especially vulnerable, important, or resilient, is elicited and recorded. Breakout groups are tasked with identifying risks and threats based on a subset of the natural systems, with experts on that subset working together (e.g., grasslands,

coastal areas, and coniferous forests). After threats and risks are identified, the same groups develop recommendations for reducing those threats and increasing the resilience of natural systems to climate change. Participants are encouraged to be visionary and not constrained by current policy or funding barriers in their recommendations. Finally, throughout the discussions, research needs are identified and recorded.



4. Socioeconomic Vulnerability Report. Working with social scientists and experts in community development, we conduct a review of four main socioeconomic systems – infrastructure (buildings, roads, energy supply, etc.), social services (health care, emergency response, low-income services, farm worker support, etc.), culture (immigrant communities, Native American customs, etc.), and economics (agriculture, forestry, tourism, business, etc.). Within the context of climate change, vulnerabilities of these systems are assessed. A report is compiled that outlines the current status and vulnerabilities of each system specific to the area.

5. Socioeconomic Systems Workshop. The climate change science report (step 2), natural systems report (step 3) and socioeconomic vulnerability report (step 4) all form the basis for a socioeconomic workshop. This workshop brings together local leaders and experts from many sectors of the community. Together, the participants learn about climate change impacts, the importance of ecosystem services, and the vulnerabilities of their community. In breakout groups that focus on certain topics (agriculture, tourism, Native American issues, health and emergency response, etc.), the participants identify potential impacts and recommendations for addressing those impacts to prepare for climate change. The larger group is given an opportunity to comment on output from individual breakout groups so that impacts across different areas can be discussed.

This workshop has great value. First, it leads to a better understanding of vulnerabilities of different groups in the community. It also moves the group from a situation of conflict (e.g., water use) to one where they have a common threat (e.g.,



Typical Participants in the Socioeconomic Workshop

Infrastructure-

Water distribution and storage experts
Renewable energy representatives
Power plant representatives
City and county planners and engineers

Economics-

Business leaders
Foresters
Farmers/Ranchers
Industry specialists

Social Services-

Health care professionals
Emergency response experts
Church officials

Culture-

Native American representatives
Churches associated with minority groups
Environmental justice experts
Leaders in immigrant communities

Others-

Elected officials and other policy-makers
NGOs from a variety of sectors
Smart growth experts
University researchers

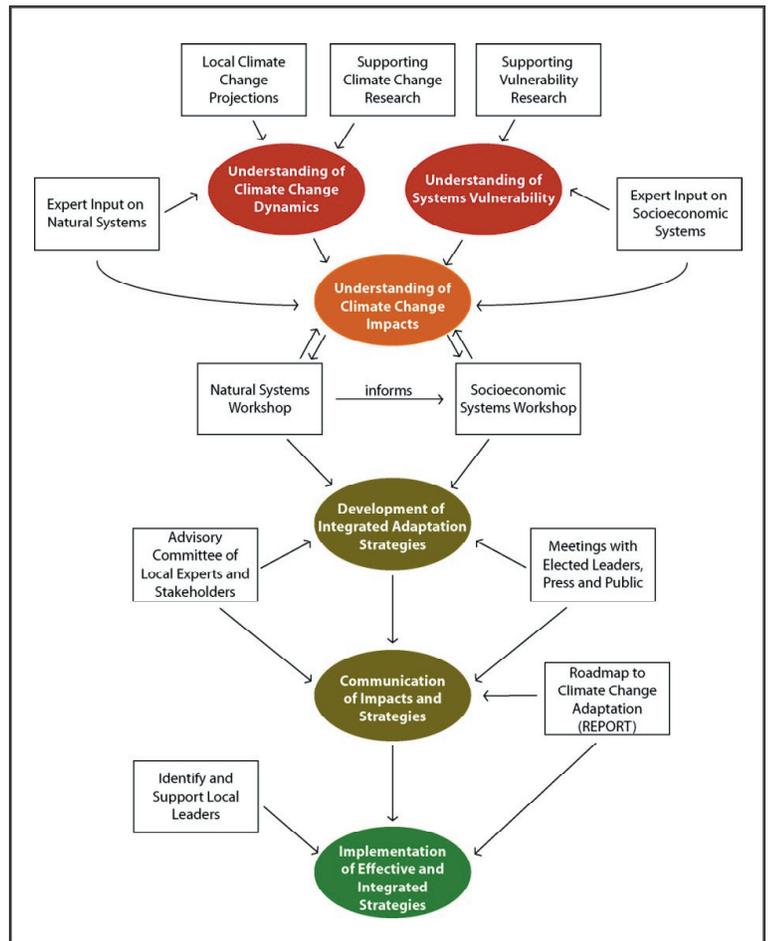
climate change) that can be addressed as a team. Many people come into this workshop with doubts about climate change, but once they understand the science more completely and the likely impacts to themselves, their communities, and their livelihood, they become more interested in contributing to a solution.

6. Final Report. Working with the local Climate Change Taskforce, the National Center pulls information gathered throughout this process into a final report. The report describes the threat of climate change to the area in a scientific, yet easily understood manner. It outlines the potential impacts from climate change to the different systems (natural systems, infrastructure, economics, social services, and cultural systems). Finally, the report prioritizes recommended strategies for action.

The Taskforce is tasked with integrating strategies across sectors and in-depth report review (all of the workshop participants also have an opportunity to review the report). The Taskforce plays an important ongoing role in educating the community and spurring action to move the recommended strategies toward implementation.

7. Follow-up. Activities that occur after the release of the final report often include media events, meetings with county and city officials, outreach to the general public, and assistance in implementation planning. Different areas require different types of activities depending on the level of engagement in the issue, current efforts, and availability of individuals to continue to address the issue and implement strategies. Our staff is available to assist with a variety of outreach activities, depending on the needs and wants of the region.

8. Planning and implementation. Because our process involves many, if not most, local and regional planners and decision makers, the information gathered during this process and disseminated in the final report is expected to be incorporated into on-going planning processes. Those processes will vary by location. In some areas, our results are incorporated directly into the county's Climate Action Plan. In other areas, consideration of climate change is integrated into the established planning process. We work closely with planners and policy makers to ensure that climate change is considered and implementation is effective in all planning efforts.



ClimateWise®

**Learn More.
Call Today.**

To learn more about ClimateWise® or to discuss what your community needs and how ClimateWise® could help you, please contact:

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