

RESILIENT COMMUNITIES STARTER KIT

Guidelines for communities who are ready to build resilience to the impacts of climate change and are looking for a place to begin

Western Lands
and Communities

— A Joint Program of the —
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ABOUT THE STARTER KIT

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INTRODUCTION

THE STARTER KIT IS A COLLECTION OF RESOURCES AND CASE STUDIES TAILORED FOR THE ADOPTION AND IMPLEMENTATION OF CLIMATE RELATED ACTIVITIES THAT LOCAL GOVERNMENTS CAN EXPLORE TO CREATE MORE RESILIENT AND PREPARED COMMUNITIES.

WHAT IS RESILIENCE?

Resilience is defined as the capacity for a person or community to withstand, respond, and recover from anticipated and unanticipated changes. Resilience is often associated with climate adaptation measures, which are a set of strategies that are taken to reduce the vulnerability of natural and human system, such as a city, against actual or expected climate change effects. Climate adaptation measures may be planned in advance or put in place spontaneously in response to a local pressure or climate event. Actions could include infrastructure changes – such as improving the quality of road surfaces to withstand hotter temperatures – as well behavioral shifts such as individuals using less water, farmers planting different crops, and more households and businesses buying flood insurance.

Another approach that local governments take when planning for climate change are climate mitigation measures. Climate mitigation measures address the root cause of climate change and reduce greenhouse gas emissions. Common local climate mitigation actions include changing city fleet vehicles to hybrids or using less energy in a facility.

Climate mitigation and climate adaptation are both important components when addressing climate change. However, because severe climate impacts, such as wildfire, drought, and flash flooding are putting many Western communities in danger there is an urgency to put climate adaptation measures in place that can

help prepare a community for these damaging events. The Resilient Communities Starter Kit focuses on the development and implementation of climate adaptation strategies that can help prepare your community for future climate impacts.

WHAT IS THE RESILIENT COMMUNITIES STARTER KIT?

The Resilient Communities Starter Kit is a road map for making communities more resilient to shifting climates and changing environments. Tailored for communities in the Intermountain West, the Starter Kit addresses activities and actions that help prepare for climate related impacts such as increased wildfire, drought, excessive heat, urban heat islands, and other extreme weather events. To accommodate the specialized needs of each community, the Starter Kit is tailored to showcase a broad spectrum of strategies from which communities can choose to conduct cohesive and effective planning activities.

The Resilient Communities Starter Kit is designed for communities who are ready to build resilience to the impacts of a changing climate, but are not sure where to begin. The Starter Kit is intended to be used as a workbook that guides communities through each planning phase. While working through each chapter of the Starter Kit your community is gradually building their resilience and adaptive capacity. The Starter Kit provides guidance on building support and scoping your community vulnerabilities before exploring solutions. As you work through the Starter Kit your community will identify

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strategies that first address your short-term, most critical vulnerabilities and builds to more long-term action.

Once your community develops recommendations, the remaining chapters offer resources for conducting community outreach, implementing the actions, and methods for evaluating the success of your actions.

Each Starter Kit chapter includes resources and case studies that are tailored for the adoption and implementation of climate related activities that local governments can explore. Not all communities are affected by extreme weather events in the same way, so users can pick and choose the units that relate to their circumstances. This version includes two units covering wildfire mitigation and drought management; later versions will include topics on urban heat island and extreme events, such as flooding.



EDITIONS



1: IDENTIFY CLIMATE CONCERNS

Climate affects communities in a variety of ways. For instance, ski resort communities rely on cold weather and snow to fuel their local economy while farming communities rely on rain and water availability to support crops that provide food and essential goods. Increasing temperatures can make some places more livable yet make other areas uncomfortable, and sometimes even deadly. The resulting effect of climate on environments constantly impacts the operations of cities and towns. To best plan for current and future climate events and shifts, this starter kit begins with identifying climate concerns that are specific to your community. Armed with an understanding of the climate variability that your community faces will give you the means to start building support and taking action.

TACKLING CLIMATE CONFUSION

Climate change can be a contentious topic. Sometimes confusion arises over the vocabulary that educators and scientist use when discussing climate topics. Below are a few distinctions that everyone should understand before discussing weather, climate and climate change.

What is the difference between weather and climate? In short, the difference is a matter of time. Weather reflects short-term conditions of the atmosphere while climate is the average daily weather for an extended period of time at a given location. Another way to think about it is to keep in mind that climate is what you expect, weather is what you get.

Weather is what you see outside on any particular day. So, for example, it may be 75 degrees and sunny, or it could be 20 degrees with heavy snow. That's the weather.

Climate is the average of that weather. For example, you can expect high temperatures in July in the Southwest and snow in northern states in January. The climate record also includes extreme values such as record high temperatures and record amounts of rainfall. If you've ever heard your local weather person say "today we hit a record high for this day," she is talking about climate records.

Climate includes patterns of temperature, precipitation, humidity, wind, and seasons. Climate patterns play a fundamental role in shaping natural ecosystems, and the human economies and cultures that depend on them. But the climate we've come to expect is not what it used to be because the past is no longer a reliable predictor of the future.

WHAT IS CLIMATE CHANGE?

In short, climate change refers to changes in long-term averages of daily weather. In most places, weather can change from minute to minute, hour to hour, day to day, and season to season. Climate, however, is the average of weather over time and space. As many people have observed and scientists have proved, the climate is changing and that change is progressing faster than any seen in the last 2,000 years.

Rising levels of carbon dioxide and other heat-trapping gases in the atmosphere have warmed the Earth and are causing wide-ranging impacts, including rising sea levels; melting snow and ice; more extreme heat events, fires and drought; and more extreme storms, rainfall, and floods. Scientists project that these trends will continue, and in some cases accelerate, posing significant risks to

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human health, forests, agriculture, freshwater supplies, coastlines, and other natural resources that are vital to economies, environments, and quality of life.

Because so many systems are tied to climate, a change in climate can affect many related aspects of where and how people, plants and animals live, such as food production, availability and use of water, and health risks. For example, a change in the usual timing of rains or temperatures can affect when plants bloom and set fruit, when insects hatch, or when streams are at their crest. This can affect historically synchronized pollination of crops, food for migrating birds, spawning of fish, water supplies for drinking and irrigation, forest health, and more.

HOW IS CLIMATE CHANGE IMPACTING WESTERN COMMUNITIES?

In the West, annual temperatures are expected to increase 2-8 degrees by the end of the century. The hotter temperatures will likely appear during the summer, making summer temperatures hotter than normal on average. Increased temperatures are already impacting water resources in the Southwest. The declines in snowpack and Colorado River flows have caused water resources to decrease in a number of communities. Hotter summers are expected to

increase the length and severity of drought causing further reductions in water supplies, straining economic engines like agriculture and tourism, and putting environmental pressures on forest and other ecosystems.

Although there are some general climate issues that many communities in the West will face or are facing, it is important to determine how climate is affecting your particular community. To make these determinations, even at an introductory level, takes a little bit of digging and talking with people who understand the particular system intimately.

UNDERSTANDING HOW CLIMATE AFFECTS YOUR COMMUNITY

Thinking back on your time living in your community, you may remember certain weather related events that have caused issues with community functions. Perhaps a major storm felled powerlines leaving people without power for a few hours or a snow storm caused schools to close and roads to get backed up. However, to get a full picture on how climate affects your community, you can refer to resources published by people intensely studying climate change and speak with climate professionals working at the state or community level.

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RESOURCES

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency's website has a detailed description of climate impacts by region and by sector. This is a great place to get an overview of climate impacts in your region.

Web Address: www.epa.gov/climatechange/impacts-adaptation/

National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC)

NOAA's NCDC is responsible for preserving, monitoring, assessing, and providing public access to the Nation's treasure of climate and historical weather data and information. Climate Data Online (CDO) provides free access to NCDC's archive of historical weather and climate data in addition to station history information. These data include quality controlled daily, monthly, seasonal, and yearly measurements of temperature, precipitation, wind, and degree days as well as radar data and 30-year climate normals.

Web Address: www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers

Regional Climate Centers

Regional Climate Centers (RCCs) are a federal-state cooperative effort. NOAA's National Climatic Data Center (NCDC) manages the RCC Program. The six centers that comprise the RCC Program are engaged in the production and delivery of climate data, information, and knowledge for decision makers and other users at the local, state, regional, and national levels. The six RCCs are located at Cornell University in Ithaca, New York; the University of North Carolina at Chapel Hill; Louisiana State University in Baton Rouge; The University of Nebraska in Lincoln; the Illinois State Water Survey in Champaign; and the Desert Research Institute in Reno, Nevada.

Web Address: www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers

The resources listed can jump start your investigation, but to really understand how climate is impacting your community, you should go to the source. Conducting interviews with climate professionals working in your area or region can be immensely helpful. So is talking to people who are deal with climate issues on a daily basis. Check with your local or regional university to find professors and scientists working in climate and atmospheric sciences. Your city or town deals with the impacts of climate constantly; consult with department managers from environmental services, planning, public works, parks and recreation, community and economic development, fire, water and human services to learn more about climate impacts in your region.

For additional resources visit:

- [Yale Project on Climate Change Communications: Extreme Weather, Climate & Preparedness - http://environment.yale.edu/climate-communication/article/extreme-weather-climate-preparedness/](http://environment.yale.edu/climate-communication/article/extreme-weather-climate-preparedness/)
- [Georgetown Adaptation Clearinghouse - www.georgetownclimate.org/adaptation/clearinghouse](http://www.georgetownclimate.org/adaptation/clearinghouse)

LESSONS LEARNED

CITIES ROUTINELY WORK TO ADAPT TO THE CURRENT CLIMATE

Emergency preparedness plans, sound land use and transportation policies, heat relief initiatives, wildfire prevention measures, urban agriculture policy, water supply planning, and infrastructure design are all examples of how communities can employ adaptation planning. Cities possess much of the necessary expertise, mechanisms and tools to deal with climate change. Identify and harness the resources that are already available in your community to get this process started.

FOCUS ON THE IMPACTS

Instead of focusing on the source of climate change, focus on the impacts occurring in the community and projections for future impacts. This approach can also open the lines of communication with those who are climate change skeptics.

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CASE STUDIES

The following case studies can provide some guidance and different approaches to how communities went about researching and understanding their local climate conditions. These case studies and more can be found on SCOTie (www.scotie.org).

BOULDER COUNTY, COLORADO CLIMATE CHANGE PREPAREDNESS PLAN (C2P2)

Boulder County used downscaled climate modeling from the Intergovernmental Panel on Climate Change (IPCC) report along with a long-term climate record in which they looked at average daily minimum temperature, average daily maximum temperature, and monthly total precipitation. Your community can find these long-term climate records for your own region. These measures can provide you with a beginning point to show the climate trends from the past to present.

Web Address: www.scotie.org/main-search-results/225-boulder-county-co-climate-change-preparedness-plan-c2p2.html

FLAGSTAFF, ARIZONA RESILIENCY AND PREPAREDNESS STUDY

Flagstaff's approach to understanding their local climate conditions was slightly different than Boulder County's. Flagstaff pulled information from Southwest specific climate research conducted by University of Arizona, IPCC report information, and information from NOAA, and from research conducted by the U.S. Forest Service.

Web Address: www.scotie.org/main-search-results/226-flagstaff-resiliency-preparedness-study.html

STARTER KIT TIP

When comparing the two case studies above, you may not need to hire a consultant to run downscaled models like was done in Boulder County; however, that would be a more thorough and more progressive approach. Nonetheless, if you want to have a general idea of the climate trends you can use the resources in this chapter to help your community better understand the climate trends that have occurred in the past and how they might transform in the future.

WORKSHEET

Fill in the questionnaires below to help you identify specific weather and climate changes that have occurred in your community. The worksheet can be done internally by city staff and decision makers or could be tailored to use in the general public.

Question: Have you noticed changes in the overall climate in your community?

Yes No

If yes, what are the changes?

CLIMATE ISSUES AND CONCERNS QUESTIONNAIRES

PAST AND PRESENT CLIMATE ISSUES

The questionnaire below covers past issues related to water, weather and climate as well as issues that could affect your community in the future. This questionnaire can be useful when interviewing and speaking with folks in your area.

Current Impacts of Climate Change

Is your community currently affected by the following issues related to climate change?

Rank from 1-4 with 1 being that your community is not affected and 4 being that your community is significantly affected.

Issue	Ranking (1-4)	Details
Agriculture		
Energy		
Extreme Heat		
Flooding		
Forest, Ecosystems, and Wildlife		
Hiking and Camping		
Human Health		
Property Loss		
Slope Movement		
Snow and Extreme Cold		
Snow Recreation (e.g. skiing)		
Tourism		
Water Supply and Resources		
Wildfire		

PREDICTED LONG-TERM CLIMATE ISSUES

This questionnaire covers predicated climate issues related to water, weather and climate as well as issues that could affect your community in the future. Like the previous worksheet, this questionnaire can be useful when interviewing and speaking with folks in your area.

Future Impacts of Climate Change

Is your community projected to be affected by the following issues related to climate change?

Rank from 1-4 with 1 being that your community is not affected and 4 being that your community is significantly affected.

Issue	Ranking (1-4)	Details
Agriculture		
Energy		
Extreme Heat		
Flooding		
Forest, Ecosystems, and Wildlife		
Hiking and Camping		
Human Health		
Property Loss		
Slope Movement		
Snow and Extreme Cold		
Snow Recreation (e.g. skiing)		
Tourism		
Water Supply and Resources		
Wildfire		

2: BUILD SUPPORT

RECRUIT A RESILIENCY CHAMPION

Without someone to champion them, planning activities have little traction and can encounter major resistance. It's critical to get an individual on your side who has the influence and will to effectively make things happen. Once a general understanding of the climate landscape is understood, it is time to recruit a resiliency champion. Traditional champions include mayors, city council member's and city managers. An influential champion will support planning activities and help with the follow through of this process.

A prominent, high-level official has the necessary clout to initiate the climate planning process, which requires the collaboration of departments, sister agencies, and community leaders. A climate champion shepherds the plan through the different stages of the process and supports the completion of the plan.

You may already have someone who can build support for adaptation planning, or you may be that person yourself. Oftentimes, a clear candidate for a resiliency champion may not be immediately apparent. In this case, look to community leaders outside of the government who might be interested and invested in climate resiliency efforts. Another option is to look to someone who is already a champion of environmental causes and see whether they would be willing to expand their focus to include a climate adaptation planning process. Other potential champions include:

- Former elected officials or department heads – i.e. former utilities director
- Business leaders
- Long range planners
- Respected community leaders
- Economic leaders – depending on the values of your

community, looking for the support of an economic leader may have more sway in the community than an environmental champion

BUILD SUPPORT

Enlisting a climate champion is the first step for building support, but other actors are needed to spread the word and support the planning process. Valuable partners often include: nonprofits, academic institutions, business leaders, foundations, research organizations and others.

An aligned communications strategy can go a long way in gaining support for the planning process, but as the City of Chicago discovered, it is important to give this committee a focus by doing the necessary research and identifying priorities before convening the communications committee. (See [Lessons Learned: Creating the Chicago Climate Action Plan - PDF download](#)).

Even with the most careful messaging, climate naysayers may require more time and effort before engaging fully in a climate planning process. Boulder County engaged with potential opponents at the very beginning of the planning process through community meetings, a survey, and online question and answer sessions. The questions and comments gathered during their outreach efforts were made available in the appendix of the final plan (See [Climate Change Preparedness Planning webinar at www.sonorainstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html](#)).

For a detailed look at communications activities and methods, see [Chapter 7: Conduct Community Outreach](#).

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LESSONS LEARNED

THE POWER OF LEADERSHIP

Flagstaff and Boulder County have strong leadership contingents that encouraged the adaptation planning process. This leadership can come from within the organization.

ADDRESS POTENTIAL OBJECTIONS FROM THE BEGINNING

Several months before the plan was released; Boulder County staff approached influential local climate naysayers and alerted them of the development of the adaptation plan. Questions and comments gathered during public meetings, surveys, and by email are listed in the appendix of Boulder County's plan along with staff responses to all feedback.

SUPPORT FROM GOVERNMENT, CIVIC, AND BUSINESS LEADERS FUELS ACTION

Early support from the environmental community, key business leaders, foundations, research organizations, and others propels a plan to completion.

CASE STUDIES

The following case studies would not have been successful without the recruitment of resiliency champions and the support of key stakeholders. These case studies, and more, can be found on the Successful Communities Online Toolkit (SCOTie) at www.scotie.org.

BOULDER COUNTY, COLORADO CLIMATE CHANGE PREPAREDNESS PLAN (C2P2)

As mentioned previously, Boulder County staff contacted known climate skeptics even before the plan was released. This approach ensured that there were no surprises or roadblocks down the line in the climate adaptation planning process. In addition, questions and comments gathered during public meetings, surveys, and by email are listed in the appendix of Boulder County's plan along with staff responses to all feedback. Web Address: <http://www.scotie.org/main-search-results/225-boulder-county-co-climate-change-preparedness-plan-c2p2.html>

FLAGSTAFF, ARIZONA RESILIENCY AND PREPAREDNESS STUDY

Flagstaff's Resiliency and Preparedness Study was developed through a key resiliency champion who reached out of the city staff to get support of the initiatives, which was critical particularly in a difficult political climate.

Web Address: www.scotie.org/main-search-results/226-flagstaff-resiliency-preparedness-study.html

HAILEY, IDAHO CLIMATE CHALLENGE

This is an example of a city that promoted climate action through a large-scale campaign that involved a climate challenge to help reduce community energy use. Along with this a documentary film called "Local Action" was created to highlight the challenge and the other environmental programs the city employs such as bike share, construction waste recycling, energy audits, plastic bag reduction, and energy efficiency measures. Your community can use this as an model to build support for your programs.

Web Address: www.haileycityhall.org/ClimateChallenge/Challenge.asp

For more case study examples visit the [EPA Climate Showcase Communities Program website at http://epa.gov/statelocalclimate/local/showcase/index.html](http://epa.gov/statelocalclimate/local/showcase/index.html).

RESOURCES

- [Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments – Chapter 5 \(PDF download\)](#)
- [Lessons Learned: Creating the Chicago Climate Action Plan \(PDF download\)](#)
- [Webinar: Climate Change Preparedness Planning - www.sonoraninstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html](http://www.sonoraninstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html)
- [British Columbia Climate Action Toolkit: Sustainability Checklist - www.toolkit.bc.ca/tool/sustainability-checklist](http://www.toolkit.bc.ca/tool/sustainability-checklist)

WORKSHEET

Now is a good time to think about your approach to messaging and public outreach. Below are a few questions to get the process started.

Name your “top five” traditional candidates for adaptation champions.

1. _____
2. _____
3. _____
4. _____
5. _____

Name your “top five” other potential candidates for adaptation champions.

1. _____
2. _____
3. _____
4. _____
5. _____

What form of public messaging has been popular in the past? List a few campaigns that have been successful.

What form of public messaging doesn't work? List a few campaigns that haven't achieved the desired results.

Take a look at the makeup of your community. Is it better to take an economic, social, or environmental approach to climate issues? Each approach has its strengths; your community may require a combination of more than one.

3: FORM A TASK FORCE

The first two chapters of this starter kit - identify climate concerns and recruit a resiliency champion – establish what is known about the current climate, scientifically and politically, and jump-starts the planning process. To dig deeper, many municipalities take an inclusive approach and establish a task force.

The task force is a group of people that help sift through the research and identify potential strategies for tackling climate issues. A task force can provide elected leaders and local government decision makers with information about establishing and implementing climate smart initiatives, can propose new ideas to its local government and can identify funding sources for projects and financial return from investments.

ESTABLISHING A TASK FORCE

1. Select Task Force Members
2. Determine the Task Force Structure
3. Define the Mission of the Task Force

SELECTING TASK FORCE MEMBERS

A task force should bring together different points of view from different sectors of the community. To ensure a broad spectrum of opinions and expertise, it is recommended to include a mix of government staff and volunteers, both expert and non-expert. It is helpful if participants already have a vision for how the community should respond to climate change issues as well as a grasp on how the community functions. The chart on page 17 provides guidance for suggested task force members that represent a well rounded combination of potential members.

TASK FORCE STRUCTURE

Once the task force has been selected, the governing body should designate a task force chair. The task force chair serves as a liaison among the governing body, chief executive and task force members. The chairperson should have a commitment to local climate action, good communication and organizational skills, demonstrated ability to motivate volunteers and the ability to manage relationships among elected officials, municipal staff, and volunteers.

DEFINE THE MISSION OF THE TASK FORCE

A mission helps guide the task force in accomplishing the task at hand. This mission should be reviewed and approved by the government body of the effort. Optional elements of task force mission statements include:

- Identifying local resources that are vulnerable to changes in climate
- Planning to reduce vulnerability, (or integrating climate adaptation considerations with existing local planning and programs)
- Developing a local action plan to implement emission reductions (or integrate emissions reduction with existing local planning and programs)

EXAMPLE TASK FORCE MISSION STATEMENTS

Below are some examples of task force mission statements that your task force can use to tailor your own mission statement.

TOWN OF HELENA, MONTANA TASK FORCE MISSION STATEMENT

1. Work with City staff and the International Council

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SUGGESTED TASK FORCE MEMBERS	ROLES
Elected officials	Implement policy changes and approve budgets
Department heads	Participate in planning, support energy efficiency audits and upgrades. Encourage staff to support the program
Finance department	Assist with financial planning, budgeting and grant applications
Facility/road maintenance staff	Identify retrofit and maintenance needs; maintain equipment to maximize efficiency
Building inspectors	Ensure enforcement of energy and building codes
Non-profit or city staff with a focus on conservation and environmental issues	Integrate climate change into existing environmental programs; help access technical support, grants, loans and other resources
Purchasing or procurement staff	Ensure purchasing of energy efficient products and services
Other public representatives and local experts, such as teachers, advocacy groups and providers of volunteer services (such as fire companies)	Professional insights, public outreach and intellectual resources (interns; technical advice and resources)
Interested citizens	Provide stakeholder insights, reality checking, volunteer work
Academic or Extension Staff with climate science background	Provide insight into the community's climate impacts
*Modified from New York State Department of Environmental Conservation (How to Set Up a Climate Smart Coordinator or Task Force at www.dec.ny.gov/energy/65489.html)	



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for Local Environmental Initiatives (ICLEI) to conduct an energy and GHG assessment for Helena’s municipal government.

2. Assess the vulnerability of Helena’s water supply system in light of continued climate change and make recommendations to secure adequate water supply.
3. Recommend actions to the City Commission to reduce both municipal and community-wide GHG emission levels.

JAMES CITY COUNTY, VIRGINIA BUSINESS CLIMATE TASK FORCE MISSION STATEMENT

Identify qualities, characteristics, and categories of businesses preferred in James City County and propose policies, programs and ordinance changes that will attract, retain, and expand those businesses.

TASK FORCE ACTIVITIES

Below is a list of common activities that a task force can do to move the planning process along. The Starter Kit chapters that can help complete the task are also listed.

- Gather information on current and future community climate impacts (expand the list in Chapter 1)
- Conduct a Vulnerability assessment to scope impacts and prioritize needs (Chapter 4).
- Create an inventory of existing buildings, businesses, homes, or populations that are most at risk from the effects of climate change (Chapter 4).
- Explore strategies and actions that address the climate impacts that affect the community the most (Chapter 5).
- Research existing programs that support climate action and may be expanded or may help task force members identify members of local government staff who are knowledgeable about climate impacts and resilience (Chapter 5).
- Assess existing land use plans and local policies to determine if there areas that related to climate-related impacts and climate resilience (Chapter 5).

- Identify similar initiatives in other localities (Chapter 5).
- Develop recommendations that address your community’s climate impacts and present to city council or other decision-making bodies (Chapter 6).
- Conduct community outreach to get feedback on climate impacts and potential strategies, plans, or policies that will address these impacts (Chapter 7).
- Gather information on available funding sources, technical assistance and other resources to assist with climate resilience strategies and actions (Chapter 8).
- Work with necessary city staff and community leaders to implement the strategies and actions (Chapter 8).
- Evaluate the measures that are implemented to ensure that they are accomplishing the outcomes they set out to accomplish (Chapter 9).

ASSIGN PROJECT MANAGERS

Project managers are responsible for bringing all the players together and guiding the planning process to completion. In the case of Boulder County, the Preparedness Plan required one person working full-time for about 2.5 years to complete the plan. In the City of Chicago, they suggested that the best combination to help the process move along is to hire “three part-time people, a project manager, and an internal process manager” (See Lessons Learned: Creating the Chicago Climate Action Plan). Depending on your community needs and the scope of your planning process, you may require more or less staff.

LESSONS LEARNED

WORKING WITH ELECTED OFFICIALS

Elected officials should try to leave their authority “at the door” so that all members feel free to participate fully.

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ENGAGE THE MANY DIFFERENT FACES OF YOUR COMMUNITY

Missoula's Mayor, John Engen, created and appointed representatives for a citizen task force made up of individuals with varying points of view. The Citizen Task Force included representatives from non-profit organizations, private businesses and industry, the local hospital, the University of Montana, and city staff. Together they developed a plan that demonstrated how climate action makes fiscal, environmental and social sense for the City of Missoula. A good way to promote interest in the task force is to hold a kick-off event and ask for enthusiastic volunteers to serve on the task force or work on subcommittees.

THINK TOGETHER AND THINK BIG

In 2005, Summit County was one of the first counties in Colorado to develop a Community Wildfire Protection Plan (CWPP), which are now required statewide. A grassroots task force made up of realtors, developers, contractors, and planners, helped to garner support for the plan.

CASE STUDIES

The following case studies provide a range of examples from communities who have brought together a task force to focus on local climate action. These case studies, and more, can be found on SCOTie.org.

VERMONT TOWN ENERGY AND CLIMATE ACTION GUIDE

This action guide outlines steps to form a committee to work on climate issues. The Vermont Town Energy and Climate Action Committee is an important way to help inform decision makers and voters on how to advance cost-effective strategies to save energy and reduce waste.

Web Address: <http://vnrc.org/programs/energy-climate-action/energy-committees-and-vecan/vermont-energy-and-climate-action-network/>

CALIFORNIA'S SMALL CITIES CLIMATE ACTION PARTNERSHIP (SCCAP)

This is a partnership of four communities in California: El Cerrito, Albany, Piedmont, and San Pablo. Under the ScCAP the cities are working together to share their work, processes, and best practices as they implement various energy efficiency projects and policies.

Web Address: <http://epa.gov/statelocalclimate/local/showcase/small-cities.html>

HELENA, MONTANA CLIMATE CHANGE TASK FORCE ACTION PLAN 2009

The Helena City Commission formed a citizen-managed task force to assess the City's GHG emissions and the vulnerability of the City's water supply.

Web Address: www.aeromt.org/energy/community-energy-projects/helena-climate-task-force/

MISSOULA, MONTANA CONSERVATION & CLIMATE ACTION PLAN

The Mayor appointed members to a task force from the Mayor's Advisory Group on Climate Change and Sustainability, the Greenhouse Gas Energy Conservation Team, and other key community members who were charged with drafting a Conservation & Climate Action Plan.

Web Address: www.scotie.org/component/content/article/52-climate-action-plans/238-missoula-conservation-climate-action-plan.html

RESOURCES

- [New York State Department of Environmental Conservation: How to Set Up a Climate Smart Coordinator or Task Force - www.dec.ny.gov/energy/65489.html](http://www.dec.ny.gov/energy/65489.html)
- [Vermont Energy and Climate Action Network: The Town Energy and Climate Action Guide - www.vecan.net/forming-and-maintaining-a-town-energy-committee/](http://www.vecan.net/forming-and-maintaining-a-town-energy-committee/)

4. SCOPE IMPACTS AND PRIORITIZE NEEDS

CONDUCT A VULNERABILITY ASSESSMENT

In this chapter, the task force will weigh the vulnerabilities and risks that will affect the community in the short and long term. Conducting a vulnerability assessment will help the task force identify and prioritize the potential effects that a changing climate will have on municipal operations, community safety and well being. From the assessment, the task force can also prioritize what is most vulnerable and needs the most urgent action.

There are many ways to conduct a vulnerability assessment and we are using the seven step process developed by the Government of Newfoundland and Labrador Canada¹:

- Step One: Identify the types of climate and weather-related issues that have affected your community
- Step Two: Locate where these issues have occurred or could occur in your community;
- Step Three: Assess what municipal infrastructure and operations have been or will be impacted;
- Step Four: Identify who has been or will be most affected by the climate-impacts identified
- Step Five: Assess which business or industry who have been or will be most impacted by the issues;
- Step Six: Identify how the natural environment has been or will be affected; and
- Step Seven: Explore Adaptation Strategies and Activities based on the issues identified

STEP ONE:

IDENTIFY THE TYPES OF CLIMATE AND WEATHER-RELATED IMPACTS THAT HAVE IMPACTED YOUR COMMUNITY

Chapter One: Identifying Climate Concerns in the Starter Kit is where you can pull most of the information related to the types of climate and weather-related issues that impact your community.

It is likely that your community, county, or state has data useful to identify climate trends occurring in your community. For regional and local climate information, visit the [National Climactic Data Center at www.ncdc.noaa.gov](http://www.ncdc.noaa.gov). In addition to this great resource, the National Climate Assessment provides a look into the current status of climate change and its impacts in the United States and is organized by geographic regions.

STEP TWO:

LOCATE WHERE THESE ISSUES HAVE OCCURRED OR COULD OCCUR IN YOUR COMMUNITY

For this step you will need a map of your community; either physical or a map on a computer that can

STARTER KIT TIP

Organize a workshop or hold a meeting with your task force and other stakeholders to work through the vulnerability assessment and worksheet on page 24.

¹Vulnerability Assessment Steps were adapted from "7 Steps to Assess Climate Change Vulnerability in Your Community" by the Government of Newfoundland and Labrador Canada, Department of Environment and Conservation. 2013.

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be changed. If your community has a Geographic Information Systems (GIS) specialist or department they can help in this process. Using this map your task force will identify the areas within your community that are most vulnerable to climate impacts.

For example, increased flash flooding is a climate impact that may occur in your community. Flooding often happens within the 100-year flood zone or floodplain. Therefore on the map you can mark where the 100-year flood zone is in your community. Most cities already have maps made that identifies where the 100-year flood zone is located. In addition, wildfires are most likely to occur in the wildland urban interface (WUI). Therefore this area in your community would be most at risk to wildfires. On your map, mark the area in your community that is considered the WUI.

Drought is one impact that is difficult to map since the impact is experienced differently in one area from another. However, on the map you can mark the areas in a community that are not served by water infrastructure and also private well locations, which are most vulnerable to drought.

STEP THREE: ASSESS WHAT MUNICIPAL INFRASTRUCTURE AND OPERATIONS HAVE BEEN OR WILL BE AFFECTED BY CLIMATE IMPACTS

Using the map from Step Two, the task force will identify what municipal infrastructure and operation have been or will be most affected by climate impacts. The task force can use the map to mark where key populations exists in and around the vulnerable areas. After the mapping exercise, the task force can use the worksheet on page 24 and can make a list of the municipal infrastructure and operations most affect by climate impacts, , such as those located in the floodplain, WUI, and other vulnerable areas.

Key municipal infrastructure and operations include:

- Transportation
- Energy
- Water management
- Communications
- Solid Waste Management
- Education and Recreation

For example, if you have a city water treatment plant that is located in the 100-year floodplain, and it is also in a WUI area. Then your entire city wastewater operation would be extremely vulnerable to both a wildfire and flooding event.

The task force can assess the vulnerability of critical municipal infrastructure and operations by asking these questions:

1. Is the municipal infrastructure or operation vulnerable to a current or projected climate impact?
2. What are the potential impacts to the municipal operations or infrastructure?
3. Is the Municipality prepared for these impacts?
4. How is the Municipality prepared for these impacts?

Following the assessment of municipal operations and infrastructure, you should have an clear idea of which municipal infrastructure and operations are most at risk to climate impacts.

STEP FOUR: IDENTIFY THE COMMUNITY MEMBERS AND POPULATIONS WHO HAVE BEEN OR WILL BE MOST AFFECTED BY CLIMATE IMPACTS

Using the map from Step Two, the task force will identify community members or populations who have been or will be most affected by climate impacts.

The task force can use the map to mark where key populations exist in and around the vulnerable areas. After the mapping exercise, the task force can use

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the worksheet on page 24 and can make a list of the community members and populations who have been or will be most affected by climate impacts, such as those located in the floodplain, WUI, and other vulnerable areas.

Key populations that may need additional assistance are:

- Elderly
- Youth
- Single parent households
- Special needs
- Residents living in isolated locations

For example, if there is an elementary school that is located within the 100-year floodplain then this would be a vulnerable group to flooding. In addition, if there is a nursing home in a WUI then they would be most vulnerable to a wildfire.

The task force can assess the vulnerability of certain community population by asking these questions:

1. Are residents or specific community populations vulnerable to a current or projected climate impact?
2. What are the potential impacts to the community members or population?
3. Is the municipality prepared for these impacts?
4. How is the municipality prepared for these impacts?
5. Is there municipal staff, groups, or others who can assist these population in the event of a flood, wildfire, drought event?

Following the assessment, you should have a list of the most vulnerable populations in your community and an idea of municipal staff, groups, and others who can help those in need during a climate-related event.

STEP FIVE:

ASSESS WHICH BUSINESS, INDUSTRY, OR MAJOR EMPLOYERS WHO HAVE BEEN OR WILL BE MOST IMPACTED BY CLIMATE IMPACTS



Using the map from Step Two, the task force can identify the major businesses, industry, and major employers who are located in areas on the map that are most at risk to climate impacts, such as the floodplain, WUI, and other vulnerable areas.

The task force can use the map to mark where key businesses and employers exist in the most vulnerable areas of the community. After the mapping exercise, the task force can use the worksheet on page 25 and can make a list of the businesses most at risk.

For example, if your largest employer is located in the WUI then it is in an extremely vulnerable position for wildfires. For example, what if during the night a wildfire burns down the largest employer in your community, this has a major impact on your local and regional economy and can be more significant than a short-term impact.

The task force can assess the vulnerability of key business, industry, or major employers by asking these questions:

1. Are businesses, industry or major employers vulnerable to a current or projected climate impact?
2. What are the potential impacts to businesses, industry, and major employers?
3. Is the Municipality prepared for these impacts?
4. How is the Municipality prepared for these impacts?

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Following the assessment, you should have a list of the most vulnerable businesses, industries, and major employers in your community.

STEP SIX: IDENTIFY HOW THE NATURAL ENVIRONMENT HAS BEEN OR WILL BE AFFECTED

Using the map from Step Two, identify important ecological or environmentally sensitive areas that are located in the areas most prone to climate impacts.

The task force can use the map to mark where key businesses and employers exist in the most vulnerable areas of the community. After the mapping exercise, the task force can use the worksheet on page 25 and can make a list of the businesses most at risk.

Key ecological or environmental sensitive areas can include:

- Hazardous and toxic sites
- Oil facilities
- Ports
- Landfills
- Tailings ponds
- Pests and diseases
- Fish and wildlife areas
- Parks and protected areas
- Sensitive habitats

During this assessment, the task force can assess natural environment systems and areas are vulnerable by asking these questions:

1. Is the natural environment vulnerable to a current or projected climate impact?
2. What are the potential impacts to the natural environment?
3. Is the Municipality prepared for these impacts?
4. How is the Municipality prepared for these impacts?

Following the assessment, you should be able to determine which natural environmental areas are most at risk to climate impacts.

STEP SEVEN: EXPLORE ADAPTATION STRATEGIES AND ACTIVITIES BASED ON THE ISSUES IDENTIFIED

Using the worksheets and maps in this Chapter, your task force can prioritize the climate impacts that need to be addressed first. For example, if your key climate concern is wildfire and your municipal wastewater plant, a landfill, and hospitals are all located in the WUI perhaps strategies need to adapt the current situation to best prepare those facilities for wildfire.

The next chapter, [Explore Strategies and Activities](#), will guide you toward appropriate strategies for your community circumstances.

FEATURED CASE STUDY

FLAGSTAFF, ARIZONA RESILIENCY AND PREPAREDNESS PLAN

In 2012, the City of Flagstaff adopted the Resiliency and Preparedness Plan. In the process of making this plan the City used a vulnerability assessment methodology that identified sensitivities in the community related to climate change and also the adaptive capacity of the city to address these sensitivities. The templates that are included in this section use a similar approach.

To learn more about this case study and other similar efforts, visit [SCOTie.org](http://scotie.org) and search under the “Climate Resilience Planning.”

Web Address: www.scotie.org/main-search-results/226-flagstaff-resiliency-preparedness-study.html

WORKSHEET

Conducting a vulnerability assessment will help the task force identify and prioritize the potential effects that a changing climate will have on local government operations, community safety, and well being.

Assess what municipal operations and infrastructure have been or will be most impacted by climate impacts					
Municipal Infrastructure/ Operations	Vulnerable to Current Climate Impacts? Rank from 1-4. 1 is not vulnerable and 4 is extremely vulnerable	Vulnerable to Future Climate Impacts? Rank from 1-4. 1 is not vulnerable and 4 is extremely vulnerable	Potential Impacts?	Is the local government prepared for these impacts? Rank from 1-4. 1 is not prepared and 4 is extremely prepared	How is the local government prepared for these impacts?

Identify the community members and populations have been or will be most affected by climate impacts					
Community Population	Vulnerable to Current Climate Impacts? Rank from 1-4.	Vulnerable to Future Climate Impacts? Rank from 1-4.	Potential Impacts?	Is the local government prepared for these impacts? Rank from 1-4.	How is the local government prepared for these impacts?

Assess which business, industry, or major employers have been or will be most impacted by climate impacts					
Businesses, Industry, Major Employers	Vulnerable to Current Climate Impacts? Rank from 1-4.	Vulnerable to Future Climate Impacts? Rank from 1-4.	Potential Impacts?	Is the local government prepared for these impacts? Rank from 1-4.	How is the local government prepared for these impacts?

Identify how the natural environment has been or will be most affected by climate impacts					
Natural Environment	Vulnerable to Current Climate Impacts? Rank from 1-4.	Vulnerable to Future Climate Impacts? Rank from 1-4.	Potential Impacts?	Is the local government prepared for these impacts? Rank from 1-4.	How is the local government prepared for these impacts?

Based on the assessment for all of the topics, what are the top five most significant vulnerabilities in the community?

1. _____
2. _____
3. _____
4. _____
5. _____

5:EXPLORE STRATEGIES&ACTIVITIES

After completing the assessments and prioritizing the vulnerabilities in your community, use the priorities to begin exploring adaptation strategies and activities for your community's most urgent climate impact using the specific units of the Starter Kits.

If your community is dealing with wildfires and/or drought, please go to either the wildfire mitigation unit that begins on page 40, or the drought management unit that begins on page 47.

The units explore various strategies and actions to help mitigate your key vulnerabilities to wildfire and drought in your community. In addition, we provide links, resources, sample communication materials, and policy language for each action and strategy.

RESOURCE

Communities already have many adaptation strategies and opportunities within their community policies, codes and ordinances. Common local policies that can be tied to climate adaptation are:

- Emergency Preparedness and Management Plans
- Land use Policies
- Transportation Policies
- Building and Development Codes
- Heat Relief Initiatives
- Wildfire Prevention and Mitigation Measures
- Urban Agriculture Policy
- Water Supply Plans
- Flood Plain Ordinances
- Municipal Codes



6: DEVELOP RECOMMENDATIONS

Once the strategies are explored in detail, the task force will need to identify actions that apply to their community and prioritize the actions. In this section we will provide information on potential courses of action using a phased approach.

- Create Tailored Matrix Using the Template
- Identify Criteria
- Task Force and Stakeholders Rate Actions Against Criteria
- Prioritize Actions
- Develop a Set of Plan Recommendations

CREATE TAILORED MATRIX USING THE TEMPLATE

Weighing the various actions against criteria can help prioritize the easiest actions to implement and the more difficult strategies that may take more time to implement in the community. The sample matrix on page 30 provides a guide for how to create a tailored matrix consistent with your policy goals. The task force and stakeholders can use the matrix template below to create their own evaluation matrix.

IDENTIFY CRITERIA

Before your community develops a set of plan recommendations, the task force must first identify the criteria that are important to your community when preparing for climate impacts. Below is a list of potential criteria that your task force may use to evaluate the action items to make an informed response plan. Example criteria include:

- **Budget Availability:** Is there funding available to implement this strategy? Or will there be funding available in the future?
- **Effectiveness of Action/Leverage:** Is this action

effective in mitigating climate impacts? Does this strategy have high leverage in the community?

- **Political Will:** Is this strategy supported by the city council and mayor?
- **Public/Community Support:** Is this strategy supported by the community and public?
- **Staff Availability:** Is there enough staff available to implement this action?
- **Successful Examples:** Has this action been successfully implemented in other communities?
- **Partners:** Are there partners or other jurisdictions necessary to implement the action?
- **Others:** Are there other criteria that your community identifies as important?

Once the task force and stakeholders identify the important criteria, you can tailor your matrix using the template in the worksheet section.

Along the top of the matrix, place 3-6 criteria across the top of the cells.

TASK FORCE AND STAKEHOLDERS RATE ACTIONS AGAINST CRITERIA

Conditions are different for every community and therefore it is necessary to bring the task force and other stakeholders together to go through the process of weighing each action against the criteria selected in the previous step. The task force and stakeholders should then rate each action against the criteria at the top of the matrix. For ease, the task force can use a 1-4 rating system to rate each action against the criteria, with 1 being the lowest rating and 4 the highest.

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Rating	Description
1	Lowest
2	Average
3	Better
4	Best

Refer to the matrix on page 30 for an example for how to fill out the matrix with each of the criteria.

PRIORITIZE ACTIONS

When each of the actions has been rated from 1-4 (4 being the highest) based on the key criteria, the task force can add up the number across each action to determine rankings.

Once the actions are prioritized, the task force can establish a set of plan recommendations to present to the community and key stakeholders. The highest rated actions go in the first tier and the actions with the lowest ratings should go in the last tier, and the other actions in the two middle tiers depending on what the task force decides where they should fall.

Based on the number in the ‘Total’ column in the sample matrix, the actions would be grouped into these tiers. However, it is up to the task force and stakeholders to decide how they want to tier the various actions.

In the sample matrix on page 30, the action ‘Research Local and/or Regional Wildfire Risks’ was ranked the highest, and therefore could be the first priority to address. ‘Vulnerability Assessment of community wildland urban interface (WUI)assets’ falls into the second tier of priorities

Rating	Description
Tier One	Research Local and/or Regional Wildfire Risks using available information.
Tier Two	Vulnerability Assessment of community WUI assets
Tier Three	Train fire staff and/or forestry staff to conduct evaluations of wildfire risk around home
Tier Four	N/A

in this example. It lacks public or community support, and therefore may require a robust public outreach effort to get it implemented in the community.

Tier One actions are the first type of actions to pursue. Tier One actions could either be low-hanging fruit actions or can also include the first step to a larger project or action that may cost more or take longer to implement. Tier Two would be next; Tier Three would follow; and Tier Four (if applicable) would be last. This phased approach can guide your community through a gradual process to accomplish your climate adaptation goals.

There are many benefits to using this type of prioritization. First, the prioritization process serves as a policy evaluation that city council and other elected officials will need before they approve funding for implementation of the actions. Second, this ranking of actions will show the task force and other staff which actions require more public outreach to gain public or community support. Last, prioritizing actions will help the task force easily create a set of plan recommendations using the tiered approach outlined in this chapter.

DEVELOP A SET OF PLAN RECOMMENDATIONS

When the actions and strategies are prioritized and ordered, it is time to pull together all of the information gathered during this process and define a set of plan recommendations to present to the community and governing body. The recommendations should include a summary of the issue, a set of recommended strategies, and tools for monitoring goals and indicators for tracking progress. Since communities already have many adaptation strategies and opportunities within their current community policies, codes and ordinances, the plan recommendations can also be incorporated into these existing plans. For a list of community policies, codes, and ordinance that have climate adaptation aspects see [5: Explore Adaptation Strategies and Activities](#).

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STARTER KIT TIP

The strategies in this chapter are one way to prioritize climate action in your community. There is a key thing to examine when using this approach. It is likely that due to the nature of our economic, political, and social systems that from year-to-year there will be changes in public support, finances and municipal budgets, and political will for some of these strategies. However, using the tiered approach and being flexible when things change is one way to overcome that challenge.

In addition, it is important to think about the strategies in terms of not only the actions that have a “bang for your buck” but those actions that will be the most effective in addressing your climate issue, but may be more costly and take more time to implement. For example, it could be in your community that the most critical strategy to prevent wildfire or manage drought is a strategy that costs more money than the municipality can spend at the moment. You should not rule out the strategy simply because at the moment it is not fundable. However, there can be small investments now that can help move the strategy forward. When the time comes that your municipality has more money then you can pursue the strategy with more vigor using those resources.

WORKSHEET

PRIORITIZING PROPOSED ACTIONS AND STRATEGIES

The matrix below is an example of what your table may look like when you work through the steps outlined in this section. The key criteria are identified and placed along the top of the matrix. The task force and stakeholders then rate the actions against the criteria using a rating scale from 1-4. When all of the actions are rated against the key criteria the cells are added together and the actions and strategies that have the highest number can be prioritized first. Using the priorities, the task force and stakeholders should identify a set of plan recommendations to present to decision makers. The ratings in the table are an example of actions to address wildfire. The actions in this matrix are pulled from the Wildfire Mitigation Unit beginning on page 40.

Actions & Strategies	Key Criteria			
	Budget Availability	Political Will	Community Support	Total
Wildfire Risk Assessment Mapping				
Research Local and/or Regional Wildfire Risks	4	4	4	12
Train fire/forestry staff to conduct evaluations of wildfire risk around homes	2	1	2	5
Vulnerability Assessment of community Wildland Urban Interface assets	2	4	1	7

7: CONDUCT COMMUNITY OUTREACH

Community outreach is an important step when planning for climate impacts. Without community engagement it is unlikely that the community will reach its resiliency goals. Climate change in many Western communities is a controversial topic that leads to strong opinions that divide the public. It is essential to have the right messaging and communication strategy in order to move past dissenting views on climate change and take actions to prepare your community for climate impacts. To minimize controversy over climate change, this step offers resources and guidance on communicating climate issues.

OUTREACH GUIDELINES

There are certain steps that many community outreach strategies have in common. Using these as a guideline, we offer six steps to direct your community through the process of developing and executing community outreach on the topic of climate impacts²:

- Frame the objective of the outreach
- Identify your target audience(s)
- Develop tailored message(s) to each target audience and identify the appropriate messenger
- Select the medium for outreach
- Conduct community outreach
- Evaluate your audience, message, messenger, medium and methods

FRAME THE OBJECTIVE OF THE OUTREACH

The first step to community outreach is bringing the task force together to frame the objective of the outreach. Ask these questions to frame the objective:

- What are we trying to accomplish through community outreach?
- What results or outcomes do we want to see from community outreach?

For example, your task force objective may be as simple as raising awareness of climate issues in the community. Or perhaps your objective is to change attitudes about climate change. Maybe your objective is more ambitious and seeks to change behaviors in your community related to seeing your climate action. Changing behaviors is not an easy task and can take years to see the results. Your objective may even be a combination of all of these.

Once the task force is able to frame the objectives of the outreach they can then identify the target audience for the objectives.

IDENTIFY YOUR TARGET AUDIENCE(S)

The second step is to identify whom we want to engage in our outreach. Based on the objectives outlined in step one, it is important to reach the audience directly affected by the policy or who can assist with its adoption or implementation.

Target audiences can include a group of people, a neighborhood, particular sectors of the population, specific demographic groups, climate skeptics and supporters, or others. The following questions will help determine target audiences:

- Who is currently affected by the climate impact we are addressing?
- Who will be affected by future climate impacts?
- Who will be affected by the mitigation actions?
- Who is currently involved with climate impact

²Adapted from ICLEI's Outreach and Communication Resource Guide, January 2009.

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mitigation?

- Who has influence over the adoption of mitigation actions?
- Who are additional stakeholders?

Once the task force creates a list of target audience(s) they can then develop tailored messages to each target audience based on the larger objective identified in step one.

DEVELOP TAILORED MESSAGE(S) TO THE TARGETED AUDIENCE AND IDENTIFY A MESSENGER

The third step is to develop tailored messages for your target audience(s). Messaging is a key part of effective climate communication and tailored messaging can promote effective engagement with your target audience. For example, you will have a different message regarding climate impacts to the general public than you will with large employers in the area.

When building climate messages, word choice can help, or hinder your outreach. As communicators it is essential to avoid words that are likely to invoke negative reactions from a certain audience and also avoid jargon. Therefore, it is important to understand your audience to know if the term ‘climate change’ or ‘global warming’ is appropriate. Research has identified specific differences in the way that people interpret the terms ‘climate change’ and ‘global warming’, with ‘global warming’ perceived as more emotionally engaging than ‘climate change’. If neither ‘climate change’ nor ‘global warming’ are appropriate, terms like climate variability or warming climate may be options. Climate word choice may be different depending on your target audience. To assist with building tailored messages, ask the following questions:

- What climate term (climate change, global warming, climate variability, or others) is most appropriate for the target audience?

STARTER KIT TIP

Understanding core values are an important component to reach and create policies that meet the needs of your community. Values are the beliefs that one holds that are stable and do not waiver in uncertainty. Values are often shared across diverse groups; however, these diverse groups may use different words to talk about the same value. Understanding these values can help build consensus and agreement around an issue and can help prioritize what the community really wants based on their values. In addition, identifying values can help create a shared language or common dialogue within a diverse community. There are many ways to understand your community values and one successful example is highlighted below.

In 1997, Envision Utah launched an unprecedented public effort aimed to keep Utah beautiful, prosperous, healthy, and neighborly for future generations. A key part of this effort was understanding the core values of those living in Utah. Envision Utah conducted over 80 indepth laddering interviews to find out what residents value about living in Utah with the objective to guide the public, community leaders, and policy makers in making better informed and coordinated decisions to protect, promote and preserve what people truly care about.

Envision Utah applied their community values to their communication strategies and to the development of policies to ensure that community needs were met in the process.

For more information on Envision Utah, visit envisionutah.org.

³From Whitmarsh, L. (2009). What's in a name? Commonalities and differences in public understanding of "climate change" and "global warming." Public Understanding of Science, 18(4), 401-420.

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OUTREACH MEDIAS BY AUDIENCE SIZE

Large Audiences	Smaller Audiences
For general communication to a large audience these are the best media to use:	To engage a targeted, smaller audience these are the best media to use:
Newspapers	Public Meeting
Television	Public Forum
Radio	Focus Groups
Brochures, Pamphlets, Fact sheets, etc.	Neighborhood Meetings
Social Media – Facebook, Twitter, etc.	Workshops
Website	Conferences
Blogs	Webinars
Journal and Magazines	Presentations
Memos	Word of Mouth
Reports	Town Hall

- Using the list of target audience(s), how will the audience(s) be impacted by climate change?
- What are the core values of the target audience(s)? How will these values be affected by climate impacts?

Highly trusted messengers – different messengers for different audiences - lend credibility and importance to the message. For example, it might be best to have a community leader, rather than a city staff member, share information with a group who might not particularly trust city staff. However, in many cases city staff or city council member are the best people to deliver the message. When the appropriate messenger is selected, you must select the media for outreach.

STARTER KIT TIP

Images and visuals are a powerful communication tool and have been proven to be useful in communicating climate issues.

Research shows that using images that induce fear are good to attract attention, but do not motivate action. Whereas images that are not threatening and link to people’s everyday actions and concerns were more effective in spurring action.⁴

SELECT THE MEDIA FOR OUTREACH

Once the messages and messenger are selected, it is important to be strategic in how you select the media for outreach. Refer to the table titled “Outreach Medias by Audience Size” to explore some common communication medias. This can help you sort through which media is most appropriate for the type of community outreach you want to conduct. If you are having trouble selecting the appropriate media for the outreach, consult with your messengers as they will be familiar with the audience you are trying to reach. In many cases, more than one media is the most effective way to reach a large audience as individuals take in information differently.

CONDUCT COMMUNITY OUTREACH

This is the step where you put your plan into action and conduct the community outreach using the information you collected from steps one through step four to present the set of recommendations compiled by the task force. When conducting your community outreach it is likely that depending on your communication objective you could have multiple messages and various medias to reach your specific audiences.

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EVALUATE YOUR AUDIENCE, MESSAGE, MESSENGER, AND MEDIA

After you conduct your community outreach, it is important to evaluate your target audience(s), outreach message, messengers, and media to make sure that efforts met your objectives. Evaluation can be done by conducting surveys or polls of the public, or an internal evaluation by the task force.

Following community outreach, ask these questions:

- Was the appropriate target audience appropriate? Who was missing or left out?
- Were the appropriate messengers chosen to assist with outreach?
- Were the tailored messages appropriate for each target audience?
- Was the communication media appropriate for the messages and target audience?
- What improvements could be made?
- Were the objectives of the community outreach achieved?

After evaluating your community outreach, it may be appropriate to conduct additional outreach if you identify changes that need to be made. If so, make the necessary changes and begin the process again. Once community outreach is complete and you have reached the objective of your outreach, it is time to implement your plan of recommendations.

RESOURCES

- EcoAmerica's Communicating on Climate 13 Steps and Guiding Principles - <http://ecoamerica.org/research/#13steps>
- ICLEI Climate Communication for Local Governments - www.icleiusa.org/climate_and_energy/climate_mitigation_guidance/climate-communication-for-local-governments
- George Mason Center for Climate Change Communications - www.climatechangecommunication.org/
- Yale Project on Climate Change Communications - <http://environment.yale.edu/climate-communication/>
- Talking Climate - talkingclimate.org/guides/communicating-climate-change/
- Climate Access - www.climateaccess.org/



COMMUNICATING CLIMATE CHANGE: 12 EFFECTIVE GUIDELINES⁵

START WITH PEOPLE, STAY WITH PEOPLE

Doing homework on your audience and their work and concerns demonstrates respect. If you can connect what they care about to climate change using their own words, they will listen to you. Employing research to understand their needs and relate to them where they are, will open hearts and minds. Start from their perspective, and infuse what they care about throughout the entirety of your conversation or communication.

CONNECT ON COMMON VALUES

Many people talk about the science of climate change, the causes and consequences, and what must be done to address the issue. However, if you want people to care and act, you need to make the issue relevant to them. Connecting on values that bring us together – family, community, and America – creates emotional and motivating bonds that humanizes all parties involved and forms the foundation of a productive discussion on climate change.

ACKNOWLEDGE AMBIVALENCE

Not all of us have the same information on climate change, and many Americans are focused on other priorities. If you start out assuming everyone knows, or should know, or cares, or should care as much as you do, you will lose much of your audience. A simple line like, “Some people worry more about climate change, and some people are less concerned,” will allow people to be comfortable where they are, and listen to you with an open mind.

SCALE FROM PERSONAL TO PLANET

People understand what they can see around them with their own eyes. If you talk about Superstorm Sandy or wildfires in the Rockies, people get that. Then you can scale up to other areas of the country or the planet. Starting with global catastrophe leads to fatalism, since many people can't see how their actions could address such a big problem.

SEQUENCE MATTERS

Research reveals that you can take the same set of facts, arrange them in different ways, and end up with very different results.. If you start with the negative and impersonal, global catastrophe for example, it's very hard to get to the positive, personal, and relevant. Follow the sequence above: connect on common values, acknowledge ambivalence, and scale from personal to planet.

USE “FACTS,” NOT SCIENCE

Every time you read about science, it refutes some other science. We have our scientists, and the other side has theirs. Everyone knows scientists argue, and that science can be mutable. Talking about science opens the door to question and debate. It's better to assume the science, and talk about the facts. Over 80 percent of Americans notice that the climate and weather are changing. Talk about the facts of warmer summers and droughts. After all, you don't talk about the science of smoking cigarettes - you talk about health.

⁵EcoAmerica's 13 Steps and Guiding Principles for communicating on climate. December 2013.

COMMUNICATING CLIMATE CHANGE: 12 EFFECTIVE GUIDELINES

INSPIRE AND EMPOWER

The most important thing to do to engage people on climate change is to convey a sense of hope and potential. Many of us avoid the subject because it can be depressing. America has doubled the supply of solar energy in just the past two years. America has solved great challenges before, and we know we can solve this one too.

BE SOLUTIONS-FOCUSED

If climate change is as large of a problem as we say it is, Americans will expect, and respond better to, practical solutions that match at scale. Even if you talk about light bulbs, it's about what can happen when all of us change them. Show the path to achieve your solution. Will it seem realistic? Overwhelm problems with solutions, presenting five solutions for every one problem, ensuring you focus on solutions actively in place all around them. Doing so will quell any feelings of futility and fatalism, while at the same time motivating them on what is possible. Avoid suggesting people make sacrifices. Americans have shallow tolerance for more problems; they are strapped for time, resources, and money. Offer a path to a better life, not a lesser life.

DESCRIBE, DON'T LABEL

Labels are code words that bring up other, sometimes negative, associations. Abstractions don't have the same power as concrete terms. A lot of climate change terms, like "mitigation," don't mean much to Americans. Rather than talk about "alternative energy," talk about wind and solar power. Rather than "ecosystem collapse", talk about the plants and animals that we depend on to survive. The most persuasive language is vivid, familiar, and descriptive.

HAVE AT LEAST ONE POWERFUL FACT FROM A TRUSTED MESSENGER

One or two facts with a lot of emotional power can add significant weight to your message. Highly trusted messengers - different for different audiences - lend credibility and importance. Find a great, relevant quote from someone your audience knows and trusts.

SPEAK FROM THE MOUNTAINTOPS, DON'T FIGHT IN THE TRENCHES

Focus on the big picture, on what's important, on working together to achieve common good. Arguing details turns off your audience and distracts from the important point. Whether the drought is the worst or the second worst ever is not the point. The point is the trend, the big issue, and the solutions. Message discipline is critical: simple messages, repeated often, by trusted messengers are powerful.

For more information on this research, visit [EcoAmerica's website at http://ecoamerica.org/research/#13steps](http://ecoamerica.org/research/#13steps).

8: TAKE ACTION

Moving from the planning phase to implementation takes the same amount of collaboration and diligence as the previous phases – if not more. Creating a realistic action plan with measurable goals and outcomes is pivotal to your community’s success in implementation. With the feedback from the community and governing body, the task force is now ready to develop a plan of action. For each strategy, the plan should outline specific implementation components, critical steps, costs and timelines. This plan can then go to the local governing board for approval.

IMPLEMENTATION TOOLS

Implementation tools represent ways that the government has control or influence in policy, planning and infrastructure.

- Zoning rules and regulations
- Taxation (include tax incentives)
- Building codes/design standards
- Public safety rules and regulations
- Issuance of bonds
- Infrastructure development
- Permitting and enforcement
- Management practices
- Outreach and education
- Emergency management powers
- Partnership building with other communities

British Columbia’s climate action toolkit has a detailed resource to explore plans, policies, projects, or processes with information on how the strategies were implemented. There is also a section called ‘Taking Action’, which contains actions that can be taken at the government operations level, community wide, and quick start actions for small, rural, medium

and large communities. The link is provided in the resources section.

It may also be helpful to create an Implementation Task Force that mirrors the planning task force and includes stakeholders from that group. A dedicated support person (full- or part-time) may prove useful in managing the implementation of the plan. This person can use the tools for monitoring the goals and indicators for tracking progress to guide their efforts.

PARTNERSHIP BUILDING WITH OTHER COMMUNITIES

Recruiting new members and broadening your network of partners can be effective tools for implementing certain actions. Sometimes it is necessary to work with a neighboring community to make sure everyone within the community limits has access to emergency services.

FUNDING

If the plan of action or individual strategies are approved by the governing body (i.e. City Council, Town Council), staff can partially implement the measure based on available funding and should act to pursue additional external funding sources to support long-term plan implementation.

Potential external funding sources include federal and state grants. A governing body approved plan can make a community more competitive in soliciting funding sources because the plan can provide a broader framework and an explicit commitment which many funding agencies seek in applicants.

RESILIENT COMMUNITIES STARTER KIT

In the best case scenario, the plan or strategy approval should not create a new impact to the communities operating budget and in some cases may generate utility cost savings for municipal operations and the community over time. Staff has the responsibility to identify new opportunities to leverage existing municipal efforts and work plans to cost-effectively implement the plan's strategies.

LESSONS LEARNED

START ON IMPLEMENTATION EARLY IN THE PROCESS

Implementation activities help meet goals, identify barriers, incite early progress to build local support and counteract skepticism, and help to determine the full costs and benefits of actions.

EMPHASIZE THE COST OF INACTION

In Chula Vista's Climate Adaptation Plan Strategies, the plan maintains that "The cost of "no action" could be significant in the long term through public and private

infrastructure damages (due to wildfire), public safety and health issues (due to extreme heat, wildfires, and poor air quality), and energy and water shortages (due to higher local demand)."

RESOURCES

- [Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments – Chapter 11: Implement your preparedness plan \(PDF Download\)](#)
- [British Columbia Climate Action Toolkit: Planning and Implementation and Taking Action Sections - www.toolkit.bc.ca/tools](http://www.toolkit.bc.ca/tools)
- [City of Los Angeles West Adams-Baldwin Hills-Leimert Implementation Tools - sites.google.com/site/westadamsnpc/Implementing-the-Plan](https://sites.google.com/site/westadamsnpc/Implementing-the-Plan)



9: EVALUATION AND ACCOUNTABILITY

EVALUATE PERIODICALLY

It is important to accurately and regularly report on outcome measures and readjust your action plans based on this data if needed – the ability to course-correct during this phase is driven by accuracy in measurement. Periodically re-evaluate your progress, redefine your goals, and set new opportunities.

REMAIN ACCOUNTABLE

Government staff should document the status of the implementation plan and keep the community informed of the progress being made. Since most community members have access to digital platforms, communities can give status updates on webpage or via email. Within the plan, each strategy should have a timeline for implementation and a mechanism for evaluation along with the person or department responsible for seeing the activity through.

LESSONS LEARNED

ADAPT THE PROCESS AS YOU GO

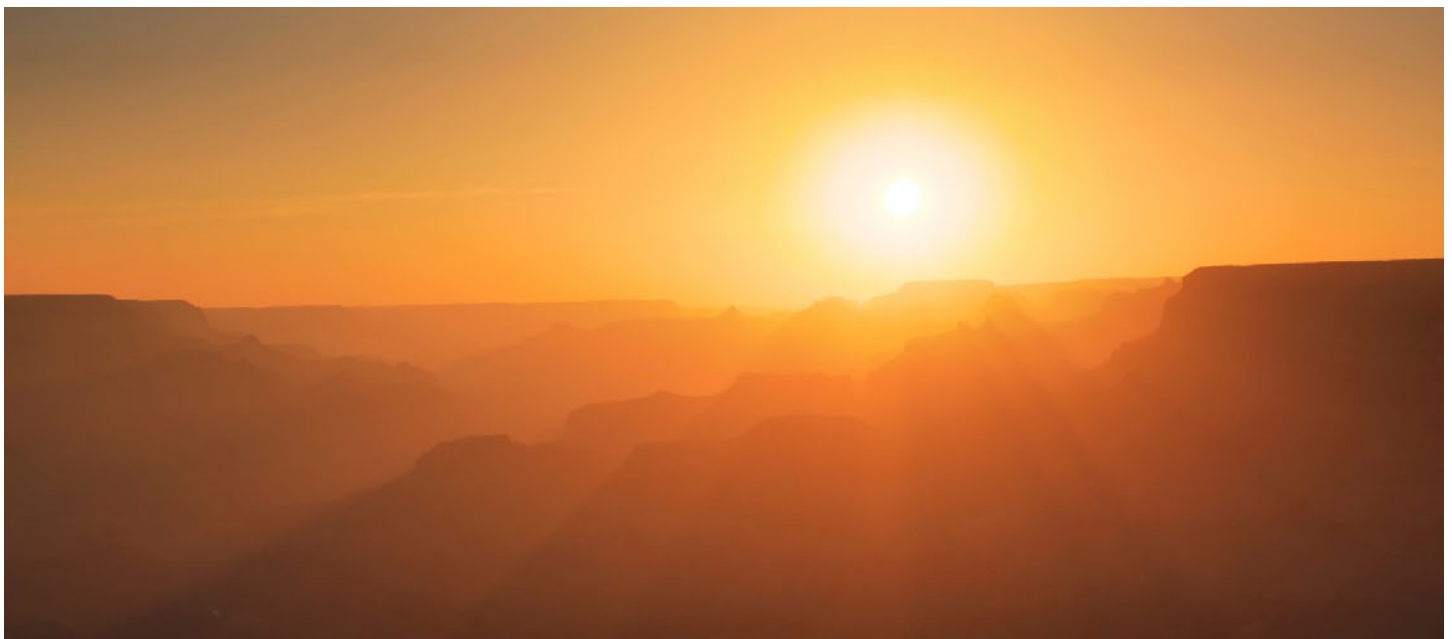
Flagstaff set out to create a climate preparedness plan, but changed course and opted for an in-depth study of municipal climate-related risks and vulnerabilities, which guided the adoption of a resolution with the goal of institutionalizing resiliency into city decisions; municipal resources were allocated to accomplish that goal.

FOCUS INTERNALLY ON THE THINGS THAT YOU CAN CONTROL FIRST

Flagstaff's plan focused on internal operations and how the functions of individual departments will be impacted by climate change.

CELEBRATE!

Celebrate your progress and recognize employers and others who are making great strides toward achieving shared goals.



WILDFIRE MITIGATION UNIT

INTRODUCTION TO WILDFIRE

Wildfires are a normal process in nature that can benefit forests and ecosystems. However, rising temperatures, prolonged drought, and reductions in spring snowpack and soil moisture contribute to larger and more frequent wildfires in the West. The frequency of wildfires in the West has increased dramatically. When compared to wildfires in the 1970's there are currently 7 times more fires greater than 10,000 acres each year.

Growing populations, particularly in rural and amenity communities, also push new development further into the wildland-urban interface, or WUI, which is the zone where the built environment is located close to or within forested lands with highly flammable vegetation that pose significant wildfire risks to people and property. Building homes and businesses in the WUI endangers the safety of the residents as wildfires continue to increase in frequency. Local governments can implement various actions and strategies to help mitigate the risk of wildfire in Western communities.

WILDFIRE MITIGATION ACTIONS

The Wildfire Mitigation Unit provides a thorough examination of wildfire actions generally found in Wildfire Protection Plans and other wildfire planning activities, audience tailored communications materials, and a series of community specific checklists. A checklist of all of the actions is located at the end of this chapter.

The major sections include⁶:

- Wildfire Risk Assessment and Mapping
- Homeowner Assistance and Public Education
- Regulatory and Planning Activities
- Demonstration Projects, Trainings and Workshops

WILDFIRE RISK ASSESSMENT AND MAPPING

Risk assessments and maps are one critical way for communities to see where the highest risk parcels and assets are located. Many U.S. states have developed risk assessment maps that show the areas in the state that are most and least at risk to wildfire. Assessments at the regional, state, and county level are used to target high-risk areas for intervention based on GIS data using remote sensing and fire behavior models.

Actions Include:

- Research local and/or regional wildfire risks using available information.
- Inventory community assets in the wildland urban interface (WUI).
- Complete an assessment of community WUI assets using inventory of assets in WUI, rank the assets that are most vulnerable and map the findings.
- Train fire staff and/or forestry staff to conduct evaluations of wildfire risk around homes by taking NFPA's "Assessing Wildland Fire Hazards in the Home Ignition Zone" seminar.
- Use NFPA's sample home ignition evaluation form to assess risk at home sites.

⁶Categories were adapted from "The National Wildfire Mitigation Programs Database: State, County, and Local Efforts to Reduce Wildfire Risk" by Terry Haines, Cheryl Renner, Maragaret Reams, and James Granskog. 2004.

RESILIENT COMMUNITIES STARTER KIT

RESOURCES

NFPA'S ASSESSING WILDLAND FIRE HAZARDS IN THE HOME IGNITION ZONE SEMINAR

The two-day “Assessing Wildfire Hazards in the Home Ignition Zone” and the one-day “Assessing Residential Wildfire Hazards” mitigation courses are based on research and post fire investigations. These identify the mitigation techniques that are most effective in reducing wildfire damage potential in the home ignition zone (HIZ) – the home itself and everything around it within 100 to 200 feet.

The courses are taught by experienced wildland fire specialists and focus on both the physical and behavioral sciences behind successful wildfire mitigation. They are also the only national standardized trainings that offer factual solutions and action strategies regarding modern wildfire mitigation.

Web Address: www.nfpa.org/safety-information/for-consumers/outdoors/wildland-fires/assessing-wildfire-hazards-in-the-home-ignition-zone-courses

FIREWISE HOME IGNITION ZONE ASSESSMENT MITIGATION GUIDE (PDF DOWNLOAD)

This resource can be used to identify wildfire vulnerabilities for property and landscaping.

CASE STUDY

DOUGLAS COUNTY, COLORADO WILDFIRE HAZARD OVERLAY DISTRICT AND STANDARDS

Douglas County responded to severe wildfire danger by adopting a Wildfire Hazard Overlay District, guided by the State Service Standards for Defensible Space. With cooperation and input from the State Forest Service the public, and other stakeholders, the county mapped out areas threatened by wildfires, based on a site-specific rating and analysis system. These analyses and ratings served as the basis for the overlay zone's standards and are used to identify new development areas

which will be considered for the overlay. The criteria for designating a parcel of land within the Overlay District are based on six classifications: 1) wildland/urban interface or wildland/urban intermix boundaries; 2) slope hazard rating; 3) structure hazard rating; 4) additional factors rating; 5) wildland/urban interface or wildland/urban intermix hazard rating; and 6) fuel hazard rating.

Web Address: www.douglas.co.us/zoning/zoning-resolutions/section_17_wildfire_hazard_-_overlay_district/

HOMEOWNER ASSISTANCE AND PUBLIC EDUCATION

Community action taken under this category includes providing information and publications to the general public and homeowners who are at risk to wildfire, including those who live in the wildland urban interface. Homeowners assistance also includes direct assistance including evaluation of individual home's wildfire risk, debris disposal, and prescriptions for fuels reduction. Public education includes wildfire curriculum for K-12 classrooms, work training, or other workshops. In addition, it includes fire officials conducting community and neighborhood meetings that discuss risks and issues related to wildfire.

Actions Include:

- Add wildfire information and homeowner safety tips to website.
- Mail educational material on defensible space and wildfire risks to WUI homeowners.
- Offer WUI homeowners a form to take a self-assess their vulnerability to wildfire risks.
- Offer publications that promote hazard reduction, fire protection and safety, and list of recommended fire-resistant plant species.
- Encourage homeowner participation in the national Firewise Communities/USA® recognition program.
- Develop public health information program related to wildfire smoke.

RESILIENT COMMUNITIES STARTER KIT

RESOURCES

FIREWISE BROCHURE: A FIREWISE HOME (PDF DOWNLOAD)

This is a homeowner's guide for protecting your property from wildfire.

ARIZONA COOPERATIVE EXTENSION WILDFIRE HAZARD SEVERITY RATING CHECKLIST FOR ARIZONA HOMES AND COMMUNITIES (PDF DOWNLOAD)

This checklist is designed to assist an individual homeowner or a group of homeowners living in a remote area to assess the relative wildfire hazard severity around a home, neighborhood, subdivision, or community.

ONLINE FIRE HAZARD TEST FROM FIREWISE VIRGINIA AND VIRGINIA DEPARTMENT OF FORESTRY

This online test screens how vulnerable your home is to wildfire. After you take the assessment and hit submit your hazard rating and some recommendations will appear in a new window. Use this test to evaluate the fire hazard of your home. In some cases an image is provided to illustrate a good or bad condition. Other images represent a balance between good and bad. Web Address: <http://dof.virginia.gov/fire/firewiseva/hazard-test.htm>

WILDFIRE WIZARD

The interactive WildFIRE Wizard is a tool designed to help those in wildfire prone areas understand how landscaping, terrain, and structural features increase or decrease their home's vulnerability during a wildfire. The Wizard allows the user to input details about features including windows, doors, roof, exterior walls, and landscaping and then creates a homeowner-friendly, customized report that includes specific recommendations about how to reduce the home's potential to ignite during a wildfire. Web Address: <http://flash.org/wfwizard/>

HOMEOWNER'S WILDFIRE MITIGATION GUIDE FROM UNIVERSITY OF CALIFORNIA, BERKELEY

This website provides homeowners information about how homes ignite and are destroyed in wildfires. It offers strategies to create more resilient homes and property that can withstand a wildfire.

Web Address: <http://ucanr.edu/sites/Wildfire/>

FIRE-RESISTANT LANDSCAPING FACT SHEET FROM COLORADO STATE UNIVERSITY EXTENSION

This resource provides information about landscaping defensible space or clearing vegetation around a home in order to protect the home and property from wildfires.

Web Address: www.ext.colostate.edu/pubs/natres/06303.html

FIREWISE COMMUNITIES/USA® RECOGNITION PROGRAM

The Firewise Communities/USA® Recognition Program is a process that empowers neighbors to work together in reducing their wildfire risk. Join the growing network of more than 1,028 recognized Firewise communities taking action and ownership in preparing and protecting their homes against the threat of wildfire.

Web Address: www.firewise.org/usa?sso=0

OREGON STATE WILDFIRE SMOKE AND PUBLIC HEALTH CAMPAIGN

The Oregon Health Authority has a public health initiative to educate the public about the health impacts from wildfire smoke. In addition, there are some recommendations for how to best protect yourself and your family from the smoke.

Web Address: https://public.health.oregon.gov/Preparedness/Prepare/Documents/OHA_2014_WilfireFAQs.pdf

REGULATORY AND PLANNING ACTIVITIES

Regulatory and planning activities include plans, laws, ordinances, or regulations pertaining to wildfire planning, fuels treatment, or other wildfire mitigation practices.

RESILIENT COMMUNITIES STARTER KIT

Most of the regulations exist at a county level, but more cities are adopting plans, ordinances, and other regulations to protect themselves from wildfire risks. Regulatory and planning activities include community wildfire protection plans, zoning ordinances, subdivision regulations, and building and fire codes.

Actions Include:

- Develop a community wildfire protection plan.
- Hire a wildfire protection coordinator/wildland fire coordinator.
- Adopt model standards for new development in wildfire risk areas that require, for example, creation and maintenance of defensible space, fire-resistant landscaping, screens on all chimneys and vents, ignition-resistant or non-combustible roofing and building materials, access for emergency vehicles, water supply for fire suppression, multiple roadways for escape routes, etc.
- Adopt fuels reduction strategies on public land and private land in the wildland urban interface.
- Conduct regular prescriptive burns to reduce wildfire risk and enhance natural habitats.

RESOURCES

[PREPARING A COMMUNITY WILDFIRE PROTECTION PLAN HANDBOOK \(PDF DOWNLOAD\)](#)

This Handbook is intended to provide communities with a concise, step-by-step guide to use in developing a Community Wildfire Protection Plan (CWPP). It addresses, in a straightforward manner, issues such as who to involve in developing a plan, how to convene other interested parties, what elements to consider in assessing community risks and priorities, and how to develop a mitigation or protection plan to address those risks.

[NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS](#)

Here is a list of the National Fire Protection Standards that communities can use for new development in wildfire risk areas:

- [NFPA 1141: Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas](#)
- [NFPA 1144: Standard for Reducing Structure Ignition Hazards from Wildland Fire.](#)

Web Address: www.nfpa.org/codes-and-standards

CASE STUDIES

[PARK COUNTY, MONTANA COMMUNITY WILDFIRE PROTECTION PLAN \(PDF DOWNLOAD\)](#)

Park County, population 15,636, covers 1.7 million acres in south-central Montana, and is bordered by Yellowstone National Park to the south. The county seat is Livingston, home to 7,000 residents. Other towns include rural communities and gateways to Yellowstone. As the local population grew in the 1990s and early 2000s, developments infringed upon forested areas, putting people and property at greater risk from wildfire.

In 2006, Park County completed a Community Wildfire Protection Plan (CWPP) meeting the requirements of the federal 2003 Healthy Forests Restoration Act. The plan includes maps of the wildland urban interface, fire districts, and fire-risk maps based on historical fire starts, population density, structural density, vegetation, weather, slope, and aspect. The section on structural ignitability focuses on what homeowners can do to reduce risks on their properties.

[COLORADO SPRINGS, COLORADO VEGETATION MANAGEMENT GUIDELINES \(PDF DOWNLOAD\)](#)

Wildfires are recently occurring in the Colorado Springs region. Therefore, the Colorado Springs Fire Department released suggested vegetation management guidelines that homeowners can follow to reduce their risk to wildfire and protect their property.

[SANTA FE COUNTY, NEW MEXICO WILDLAND URBAN INTERFACE CODE \(PDF DOWNLOAD\)](#)

The Wildland Urban Interface Code provides special regulations to mitigate the fire and life safety hazards in the urban wildland interface areas in Santa Fe

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County. The objective of this Code is to minimize the occurrence of fires and the potential threats to life and property from fire and resulting erosion, and provide for adequate fire apparatus access to control the spread of fire in urban wildland interface areas.

UNDERWOOD CONSERVATION DISTRICT, WASHINGTON HOME MAINTENANCE PROGRAM

The Underwood Conservation District (UCD) helps landowners and land managers enhance and protect natural resources on a voluntary basis. The UCD includes Skamania County and western Klickitat County in Washington State. One component of the UCD is the forest health and Firewise programs, which encourage regular maintenance of home and property in order to reduce wildfire risk.

Web Address: www.ucdwa.org/cat/firewise/

BIG BEAR LAKE, CALIFORNIA WOOD SHAKE SHINGLE REPLACEMENT ORDINANCE

Due to the flammable nature of wood shake shingles and the wildfire prone conditions of Big Bear Lake, the City Council adopted an Ordinance that structures and buildings with wood shake shingles have five years to replace the existing shingles with shingles that consist of fire-resistant materials – consistent with their Municipal Code.

FIRE SAFE COUNCIL OF NEVADA COUNTY, CALIFORNIA CHIPPING PROGRAM

The Fire Safe Council of Nevada County has a program that will chip any brush that is cleared from defensible space of any permanent structure and/or 30 feet from any roadside or driveway used for evacuation purposes. For this program, the Council provides limited grant funding to homeowners and land owners who would like to have their brush chipped.

Web Address: http://thinisin.org/home/index.php?option=com_content&view=article&id=26&Itemid=17

CITY OF BOULDER, COLORADO WILDLAND FIRE COORDINATOR

Wildfire is a big issue for the region in and around the City of Boulder, Colorado. The City decided that a full-time staff member who works solely on the mitigation of wildland fire in the city would be the best approach for implementing wildland fire mitigation actions in their community.

Web Address: <https://bouldercolorado.gov/fire-rescue/wildland-home>

DEMONSTRATION PROJECTS, TRAININGS AND WORKSHOPS

Demonstration projects provide examples of fuels treatment for homes or small forest areas. These projects give homeowners an opportunity to see fuels treatment in a landscape similar to their own and also present an example of the best way to create defensible space around a home. In addition, demonstration projects can include the planting of fire-resistant, native species in a landscape. Trainings and workshops include actions that train the public, fire officials, or fire crews on different mitigation and wildfire fighting strategies. Actions Include:

- Offer demonstration projects to provide examples of fuels treatment for homes and landscapes.
- Train fire crews to fight wildland fires as well as structure fires.
- Organize a wildland urban interface fire summit or conference.
- Coordinate a regional wildfire mitigation task force made up of city and county staff, additional stakeholders, and experts to work on wildfire issues in the community.

RESILIENT COMMUNITIES STARTER KIT

RESOURCES

NATIONAL FIRE PROTECTION ASSOCIATION FIRE FIGHTER SAFETY SERIES

The Firefighter Safety Series is a free multipart information package from the National Wildland/Urban Interface Fire Program. It addresses problems faced by structural and wildland firefighters when fighting fires, especially those threatening structures in the wildland urban interface. An important goal is to improve knowledge of firefighter safety and survival issues.

Web Address: www.nfpa.org/catalog/product.asp?pid=FWC302DPK

CASE STUDIES

FIREWISE GARDEN WITHIN IDAHO BOTANICAL GARDEN IN BOISE, IDAHO

The Firewise Garden, located within the Idaho Botanical Gardens in Boise, has over 300 native and non-native fire-resistant plants. The Garden was developed in partnership with the Bureau of Land Management, College of Western Idaho's Horticulture Program, and the Idaho Botanical Garden.

Web Address: <http://idahobotanicalgarden.org/garden-features/our-gardens/>

NEVADA WILDLAND URBAN INTERFACE FIRE SUMMIT

The Nevada Wildland Urban Interface Fire Summit has been held each year since 2007 to bring together community, firefighter, and county representatives from each of the extreme-, high-, and moderate-wildfire hazard communities in Nevada. During the Summit, participants discuss ways to help reduce the wildfire risk in their communities and to promote action at the local level.

Web Address: www.livingwithfire.info/wui-fire-summit

COLORADO WILDFIRE INSURANCE AND FOREST HEALTH TASK FORCE

In 2013, Colorado's Governor John Hickenlooper created the Task Force on Wildfire Insurance and Forest Health through Executive Order B 2013-002. The group was asked to identify and reach agreement on ways to encourage activities, practices and policies that would reduce the risk of loss in wildland urban interface (WUI) areas and provide greater customer choice and knowledge of insurance options.

Web Address: www.dora.state.co.us/taskforce/



WILDFIRE MITIGATION ACTION CHECKLIST

WILDFIRE RISK ASSESSMENT AND MAPPING

- Research local and/or regional wildfire risks using available information.
- Inventory of the community assets in the wildland urban interface (WUI).
- Vulnerability assessment of community WUI assets - Using inventory of assets in WUI rank the assets that are most vulnerable and map the findings.
- Train fire staff and/or forestry staff to conduct evaluations of wildfire risk around homes by taking the National Fire Protection Association (NFPA) “Assessing Wildland Fire Hazards in the Home Ignition Zone” seminar.
- Use NFPA’s sample home ignition evaluation form to assess risk at home sites.

HOMEOWNER ASSISTANCE AND PUBLIC EDUCATION

- Add wildfire information and homeowner safety tips onto website
- Mail educational material on defensible space and wildfire risks to WUI homeowners.
- Offer WUI homeowners a form to self-assess their vulnerability to wildfire risks.
- Offer publications that promote hazard reduction, fire protection and safety, and list of recommended fire-resistant plant species.
- Encourage homeowner participation in the national Firewise Communities/USA® recognition program.
- Develop public health information program related to wildfire smoke.

REGULATORY AND PLANNING ACTIVITIES

- Develop a Community Wildfire Protection Plan
- Hire a Wildfire Protection Coordinator/Wildland Fire Coordinator

- Adopt model standards for new development in wildfire risk areas that require, for example, creation & maintenance of defensible space, fire-resistant landscaping, screens on all chimneys and vents, ignition-resistant or non-combustible roofing and building materials, access for emergency vehicles, water supply for fire suppression, multiple roadways for escape routes, etc.
- Establish ordinances or voluntary guidelines requiring or recommending vegetation management to reduce wildfire fuels on home landscapes
- Establish ordinances or programs requiring or encouraging regular, periodic home maintenance to reduce fire risks
- Establish programs to provide financial or technical support for the retrofit of existing properties that are fire-prone (e.g., have aging wood roofs and/or significant amounts of heavy brush or other vegetative fuel).
- Adopt fuels reduction strategies on public land and private land in the wildland urban interface.
- Conduct regular prescriptive burns to reduce wildfire risk and enhance natural habitats.

DEMONSTRATION PROJECTS, TRAININGS AND WORKSHOPS

- Offer demonstration projects to provide examples of fuels treatment for homes and landscapes.
- Train fire crews to fight wildland fires as well as structure fires
- Organize a wildland urban interface fire summit or conference
- Coordinate a regional wildfire mitigation task force made up of city staff, county staff, additional stakeholders and experts to work on wildfire issues in the community.

DROUGHT MANAGEMENT UNIT

INTRODUCTION TO DROUGHT

Most Western states have experienced severe drought conditions over the past ten years. A drought is a period of unusually dry weather that persists long enough to cause environmental or economic problems, such as crop damage and water supply shortages. Projections forecast that future droughts will become more prolonged and severe.

While conditions affecting the Colorado River, the water lifeline of many Western cities, are complex, the decline in the snowpack of Western mountain states caused by lack of precipitation may precipitate critical shortages of the Colorado River's water supply. Water scarcity in the lower levels of the Colorado River, coupled with a growing water demand in Western cities, will present significant supply challenges ahead. With worsening drought, it is important for local and county governments to take action to help to manage drought in their communities.

DROUGHT MANAGEMENT ACTIONS

The Drought Unit provides a thorough examination of drought mitigation actions that are commonly found in Drought Management Plans and other drought planning activities, audience tailored communications materials, and a series of community specific checklists. A checklist of all of the actions is located at the end of this chapter.

The major sections include⁶:

- Emergency Response and Monitoring
- Homeowner Assistance and Public Education
- Regulatory and Planning Activities

EMERGENCY RESPONSE AND MONITORING

Planning for and managing drought requires regular monitoring of water availability and climate factors to effectively gauge the severity of drought in your community. The following actions can help monitor the drought conditions in your community and also provides emergency response actions to take when drought is particularly severe.

Actions include:

- Develop an emergency drought rating system that corresponds to your jurisdiction's water supply.
- Adopt water use constrictions.
- Establish water hauling programs.
- Provide emergency water to domestic well users.
- Implement water use restrictions during water emergencies.

RESOURCES

WELLOWNER.ORG

Private well owners should be informed about their well's health and functionality particularly in the face of drought. The website wellowner.org provides basic information on wells and tools for regular maintenance. In addition, they have information related to drought and well use.

UPPER COLORADO RIVER REGIONAL DROUGHT EARLY- WARNING SYSTEM

The National Integrated Drought Information System (NIDIS) selected the Upper Colorado River basin to pilot the first drought early-warning and information system in the United States. NIDIS worked with the Colorado Climate Center (CCC) on monitoring efforts as well as

⁶Categories are adapted from the American Planning Association Publication "Planning and Drought". James C. Schwab AICP. January 2014.

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the development of the early-warning system. The system enhances local, state, and regional capabilities; builds better partnerships; and provides local expertise to the U.S. Drought Monitor.

This early-warning system provides timely and effective information that allows individuals and communities to prepare for drought, reduce vulnerability to drought conditions, and plan effective responses. NIDIS and the CCC continue to talk with stakeholders and evaluate the system to provide an accessible, “one-stop-shop” data resource. Web Address: www.drought.gov/drought/content/regional-programs/regional-drought-early-warning-system

CASE STUDY

JOSHUA BASIN, CALIFORNIA WATER DISTRICT WATER HAULING PROGRAM

Rural communities, such as Joshua Tree, may still have some areas that remain unconnected to the municipal water system. As water is a critical element for desert dwellers, water “hauling” remains a second option for obtaining potable water. There are three different scenarios related to water hauling in the Joshua Tree region.

Web Address: www.jbwd.com/customer-service/water-hauling/

SAFFORD, ARIZONA WATER USE RESTRICTIONS

The City of Safford has emergency water use restrictions in place when the municipality declares a water emergency. The restrictions indicate that water customers may water no more than two days a week based on the following schedule. Properties with addressing ending in even numbers can water on Wednesday and Saturday, while properties with addresses ending in odd numbers can water on Tuesday and Friday.

Web address: www.cityofsafford.us/index.aspx?NID=411

HOMEOWNER ASSISTANCE AND PUBLIC EDUCATION

Community action taken under this category includes providing information and publications to the general public and homeowners to help reduce water consumption and provide general information about drought risks. Homeowner assistance includes direct assistance including water audits. Public Outreach includes demonstration projects, such as a waterwise garden and educational materials such as fact sheets and brochures.

Actions include:

- Add drought and water conservation tips onto website.
- Mail educational material on drought, water supply, and water conservation to property owners.
- Provide materials and assistance to homeowners to get leaks fixed in order to reduce water waste in the community.
- Develop drought public education campaign with long-term and short-term strategies.
- Create a water wise demonstration garden and/or xeriscape garden.
- Provide a list of drought tolerant plants to residents.

RESOURCES

SAVE WATER SANTA FE WEBSITE

This website created by the City of Santa Fe Water Conservation Office is a one-stop resource for anyone interested in learning more about drought management, water saving tips, and searching for incentives that the city and county offers to residents wanting to upgrade to water efficient appliances, etc. Web Address: <http://savewatersantafe.com/>

TEXAS WATER DEVELOPMENT BOARD WATER CONSERVING TIPS BROCHURE

This resource provides tips to residents about ways to conserve water inside and outside of your home. Web Address: www.twdb.state.tx.us/publications/brochures/conservation/

RESILIENT COMMUNITIES STARTER KIT

ARIZONA DEPARTMENT OF WATER DROUGHT TOLERANT/ LOW WATER USE PLANT LISTS

The Arizona Department of Water Resources publishes extensive lists of native, drought-tolerant and low water-use plants, trees, and shrubs. The lists are custom-drawn for a variety of elevations in Arizona, from the desert valleys of the Phoenix area to the mile-high mountains of the Prescott region. Also there are specialized lists for Tucson, which is 1,100 feet higher than the Phoenix area, and for Santa Cruz County, which is at a higher altitude and features a different set of flora.

Web Address: www.azwater.gov/azdwr/WaterManagement/AMAs/LowWaterUsePlantList.htm

CASE STUDIES

FIX A LEAK WEEK FROM EPA WATERSENSE

Program Fix a Leak Week, which runs each year in March, was created to help show people that finding and fixing household leaks - inside and outside - saves water and reduces water and energy costs. This initiative is a part of the Environmental Protection Agency WaterSense program.

Web Address: www.epa.gov/watersense/our_water/fix_a_leak.html

CALIFORNIA WATER AWARENESS CAMPAIGN

The California Water Awareness Campaign is a year-long effort by organizations throughout California to heighten public awareness about the conservation, supply, quality, and distribution of water.

Web Address: www.wateraware.org/

CITY OF GLENDORA, CALIFORNIA EXTREMELY WATER WISE DEMONSTRATION GARDEN

The Glendora Library installed the city's first water wise demonstration garden. There are three garden sections: sun, shade, and hummingbird. The plants were donated by a local greenhouse. The garden is to encourage residents to discover examples of the many diverse and beautiful drought tolerant plants available.

Web Address: www.ci.glendora.ca.us/departments-services/planning/environmental-services/drought-tolerant-landscaping

REGULATORY AND PLANNING ACTIVITIES

Regulatory and Planning activities include plans, laws, ordinances, or regulations pertaining to drought planning and other drought management practices. Regulations exist at both the city and county level. Regulatory and planning activities include drought management plans, water restrictions, and landscaping and building codes.

Actions include:

- Create a drought management plan.
- Adopt landscaping watering restrictions for water customers, which include mandatory seasonal scheduling and time of day restrictions.
- Adopt watering restrictions on community use recreational turf areas.
- Adopt outdoor water use restrictions, including vehicle and equipment washing.
- Create landscaping development codes for new construction.
- Adopt conservation provisions for golf course irrigation.
- Adopt an emergency water conservation ordinance.
- Adopt regulations for man-made lakes, ornamental fountains and other water features.
- Research, and if appropriate develop drought surcharge rates.
- Create a monetary penalty system for water waste during high drought times.
- Develop incentives and rebates for residents to reduce water consumption, replace existing non-water efficient appliances, and even replace non-native vegetation such as grass.
- Coordinate a regional drought management task force made up of city and county staff, additional stakeholders, and experts to work on water and drought issues in the region.
- Offer free or discounted water-use audits for property owners.

RESILIENT COMMUNITIES STARTER KIT

RESOURCES

MUNICIPAL DROUGHT MANAGEMENT PLAN GUIDANCE DOCUMENT

This resource is for cities and counties who want to develop a drought management plan.

Web Address: <http://cwc.state.co.us/technical-resources/drought-planning-toolbox/Pages/%C2%ADDroughtPlanningResources.aspx>

SAMPLE OF A MUNICIPAL DROUGHT MANAGEMENT PLAN

This is an example of a community drought management plan and what is included if your municipality is interested in creating your own.

Web Address: <http://cwc.state.co.us/technical-resources/drought-planning-toolbox/Pages/%C2%ADDroughtPlanningResources.aspx>

DROUGHT READY COMMUNITIES – A GUIDE TO COMMUNITY DROUGHT PREPAREDNESS

This guide provides a step by step process for preparing a community for drought.

Web Address: <http://drought.unl.edu/Planning/PlanningProcesses/DroughtReadyCommunities.aspx>

NATIONAL DROUGHT MITIGATION AND MONITORING RESOURCES

The National Drought Mitigation Center (NDMC) is the go to resource on anything to do with Drought Planning. The website offers introductory information on key concepts around drought and a list of state and local drought plans to review.

The NDMC has worked closely with the National Integrated Drought Information System (NIDIS) on the [U.S. Drought Portal \(www.drought.gov/drought/\)](http://www.drought.gov/drought/) as well as workshops and webinars for stakeholders, planners, and scientists, a national drought forum, and the establishment of regional drought early-warning systems.

The U.S. Drought Monitor is a national collaborative effort that provides a weekly map of drought conditions across various regions in the United States.

Web Address: <http://droughtmonitor.unl.edu/>

AMERICAN WATER WORKS ASSOCIATION (AWWA) INFORMATION ON DROUGHT SURCHARGE AND RATES

Chapter Four of the AWWA publication titled Principles of Water Rates, Fees and Charges (2012) provides a comprehensive look at Drought Surcharge Rates and what that means to a water supplier.

Web Address: www.awwa.org/portals/0/files/publications/documents/samples/M1WaterRates-ChV3.pdf

CASE STUDIES

SOUTHERN NEVADA WATER AUTHORITY DROUGHT PLAN LANDSCAPE WATERING RESTRICTIONS

The Southern Nevada Water Authority (SNWA) was formed in 1991 by a cooperatives agreement among seven water and wastewater agencies in Southern Nevada. The SNWA Drought Plan was adopted in 2003 and later updated in 2007. The plan has strict landscaping watering restrictions which includes mandatory seasonal scheduling and time of day restrictions. The restrictions prohibit sprinkler watering from 11am to 7pm from May 1 through September 30. Based on the different seasons there are specific day of the week watering restrictions (see below).

	Drought Watch	Drought Alert
Winter (November – February)	One Assigned Day per Week	One Assigned Day per Week
Spring (March – April)	3 Assigned Days per Week + Sunday optional	3 Assigned Days per Week
Summer (May – August)	Any Day	Any Day
Fall (September– October)	3 Assigned Days per Week + Sunday optional	3 Assigned Days per Week

Web Address: www.snwa.com/consv/restrictions.html

RESILIENT COMMUNITIES STARTER KIT

SOUTHERN NEVADA WATER AUTHORITY DROUGHT PLAN COMMUNITY USE RECREATIONAL TURF AREAS WATERING RESTRICTIONS

The SNWA Drought Plan outlines specific watering restrictions for community use recreational turf areas. The plan states that “public and private community use recreational turf areas (for example, athletic parks) are permitted to water turf areas twice per week during the months of November through February” (SNWA Drought Plan, 2007).

Web Address: www.snwa.com/consv/restrictions.html

DENVER WATER OUTDOOR WATER USE RESTRICTIONS

Denver Water has adopted a Drought Response Plan that provides a framework for addressing droughts. Four levels of drought severity have been defined, based on various drought indicators. The basic response to a Stage 1 drought is voluntary; Stage 2 drought results in mandatory restrictions; Stage 3 drought imposes prohibitions on lawn watering; and water rationing stems from Stage 4 drought. The 15.02.7 Section of the Ordinance is related to washing of vehicles and equipment.

Web Address: www.denverwater.org/OperatingRules/OperRules15/

LOS ANGELES COUNTY, CALIFORNIA DROUGHT-TOLERANT LANDSCAPING CODE

The purpose of the code is to establish minimum standards for the design and installation of landscaping using drought-tolerant plants and native plants that require minimal use of water. These requirements will ensure that the County conserves water resources by requiring landscaping that is appropriate to the region’s climate and nature of the use. This code is applicable to all new construction.

Web Address: <http://planning.lacounty.gov/green>

SOUTHERN NEVADA WATER AUTHORITY DROUGHT PLAN GOLF COURSE WATERING RESTRICTIONS

The SNWA Drought Plan outlines specific watering

restrictions for golf courses. The plan states that “golf courses are required to comply with water budgeting policies in lieu of specific water schedules” (SNWA Drought Plan, 2007).

Web Address: www.snwa.com/consv/restrictions.html

CITY OF TUCSON EMERGENCY WATER CONSERVATION ORDINANCE

In order to ensure Tucson Water can maintain adequate water supplies to provide for life safety and fire protection, an Emergency Water Conservation Ordinance was approved by Mayor and Council in 1995. The Ordinance gives the Council, the Mayor, or his or her designate, the authority to declare a water emergency and to implement mandatory water conservation measures targeting non-essential uses. While a water emergency may never occur, it is prudent to have measures in place which allow the City to prohibit non-essential water use to protect public health and safety.

Web Address: <http://water.tucsonaz.gov/water/emergency-ord>

DENVER WATER OUTDOOR WATER FEATURE RESTRICTIONS DURING TIMES OF DROUGHT

Denver Water has an ordinance that regulates the use of outdoor water features during times of drought in the region. The ordinance states: Customers shall be prohibited from operating any existing outdoor fountain or waterfall that sprays water into the air and that operation of outdoor misting devices shall be prohibited (Ordinance 15.02.6).

Web Address: www.denverwater.org/OperatingRules/OperRules15/

SOUTHERN NEVADA WATER AUTHORITY DROUGHT PLAN WATER WASTE ENFORCEMENT PENALTIES

The SNWA developed a system of penalties that the cities and counties can enforce during No Drought, Drought Watch and Drought Alert times (these categorizations were developed by the SNWA).

Web Address: www.snwa.com/consv/restrictions.html

RESILIENT COMMUNITIES STARTER KIT

CITY OF AUSTIN REBATES

The City of Austin offers extensive rebates to residents who want to reduce their water consumption and replace non water efficient appliances, among other things. For a complete list of the rebates for residential customers and business visit the web address below.

Web Address: www.austintexas.gov/department/water-conservation-rebates

BUTTE COUNTY, CALIFORNIA DROUGHT TASK FORCE

In order to help develop the County's Drought Plan, a task force was formed to help create and implement the County Drought Plan. In addition the task force monitors hydrologic conditions throughout the water year and report the findings to the Water Commission and the Board of Supervisors annually in non drought situations, and biannually, quarterly, or monthly as a drought progresses.

Web Address: www.buttecounty.net/waterresourceconservation/DroughtInformation.aspx

DENVER WATER FREE WATER AUDITS

Denver Water offers free water audits in order to educate users how their water is used and areas where it can be saved. Denver Water audits the following types of properties:

- High Bill Audit for Single-Family Residential
- Large-scale Irrigation System Audits
- Indoor Audit: Multi-Family Residential
- Indoor Audit: Commercial and Industrial Buildings

Web Address: www.denverwater.org/Conservation/Audits/

CITY OF LAS VEGAS WATER SMART LANDSCAPES REBATE

Las Vegas offers residents a rebate to replace their existing grass lawns. The Water Smart Landscapes Rebate offers to upgrade grass to water-smart landscaping receive a rebate of up to \$1.50 per square foot of grass converted to xeriscape.

Web Address: www.lvvwd.com/conservation/ws_rebates.html



RESILIENT COMMUNITIES STARTER KIT

DROUGHT MANAGEMENT ACTION CHECKLIST

EMERGENCY RESPONSE AND MONITORING

- Develop a emergency drought rating system that corresponds to your jurisdiction's water supply
- Establish water hauling programs
- Provide emergency water to domestic well users

HOMEOWNER ASSISTANCE AND PUBLIC OUTREACH

- Add drought and water conservation tips onto website
- Mail educational material on drought, water supply and water conservation to property owners
- Provide materials and assistance to homeowners to get leaks fixed in order to reduce water waste in the community
- Develop drought public education campaign with long-term and short-term strategies
- Create a water wise demonstration garden and/or xerioscape garden
- Provide a list of drought tolerant plants to residents

REGULATORY AND PLANNING ACTIVITIES

- Create a drought management plan
- Adopt landscaping watering restrictions for water customers, which includes mandatory seasonal scheduling and time of day restrictions
- Adopt watering restrictions on community use recreational turf areas
- Adopt outdoor water use restrictions, including vehicle and equipment washing
- Create landscaping development codes for new construction
- Adopt conservation provisions for golf course irrigation
- Adopt an emergency water conservation ordinance
- Adopt regulations for man-made lakes, ornamental

fountains and other water features

- Research and if appropriate develop drought surcharge rates
- Create a monetary penalty system for water waste during high drought times
- Develop incentives and rebates for residents to reduce water consumption and replace existing non-water efficient appliances
- Coordinate a regional drought management task force made up of city staff, county staff, additional stakeholders and experts to work on water and drought issues in the region.
- Offer free or discounted water-use audits for property owners

GLOSSARY OF TERMS

ADAPTIVE CAPACITY

Adaptive capacity is the ability of a person, institution, system, or community to adjust and re-adjust as conditions shift and change, such as a more unpredictable climate.

CLIMATE

Climate in a narrow sense is usually defined as the “average weather,” or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period is three decades, as defined by the World Meteorological Organization. These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

CLIMATE ADAPTATION

Climate adaptation refers to the ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damage, to take advantage of opportunities, or to cope with the consequences.

CLIMATE CHANGE

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

CLIMATE MITIGATION

Climate mitigation is any action taken to permanently eliminate or reduce the long-term risk and hazards of climate change to human life and property.

CLIMATE VARIABILITY

Climate variability refers to the climatic parameter of a region varying from its long-term mean. Every year in a specific time period, the climate of a location is different. See climate change and global warming.

COMMUNITY WILDFIRE PROTECTION PLANS

Local wildfire protection plans can take a variety of forms, based on the needs of the people involved in their development. Community Wildfire Protection Plans may address issues such as wildfire response, hazard mitigation, community preparedness, structure protection, or all of the above.

DROUGHT

A drought is a period of unusually dry weather that persists long enough to cause environmental or economic problems, such as crop damage and water supply shortages. But because dry conditions develop gradually and impact different regions differently, there’s no agreed upon way to pinpoint when a drought begins or ends, or to objectively assess its severity.

GLOBAL WARMING

A gradual increase in the overall temperature of the earth’s atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, chlorofluorocarbons, and other pollutants. See climate change and climate variability.

GREENHOUSE GAS

Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

RESILIENT COMMUNITIES STARTER KIT

GREENHOUSE GAS EFFECT

Greenhouse gas effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. Some of the heat flowing back toward space from the Earth's surface is absorbed by water vapor, carbon dioxide, ozone, and several other gases in the atmosphere and then reradiated back toward the Earth's surface. If the atmospheric concentrations of these greenhouse gases rise, the average temperature of the lower atmosphere will gradually increase.

INTERMOUNTAIN WEST

The Intermountain West, or Intermountain Region, is a geographic and geological region of western North America, in the Western United States. It is located between the Rocky Mountains on the east and the Cascade Range and Sierra Nevada on the west.

PRESCRIBED FIRE (ALSO KNOWN AS CONTROLLED FIRE)

Prescribed fire is the knowledgeable and controlled application of fire to a specific land area to accomplish planned resource management objectives. These fires are managed in such a way as to minimize the emission of smoke and maximize the benefits to the site.

RESILIENCE/RESILIENCY

A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

VULNERABILITY

Vulnerability is the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed; its sensitivity; and its adaptive capacity.

WATER CONSERVATION

Water conservation encompasses the policies, strategies, and activities to manage water as a sustainable resource, to protect the water environment, and to meet current and future human demand. Population, household size and growth and affluence all affect how much water is used in a community.

WATER RESTRICTIONS

An outdoor water-use restriction is a ban or other lesser restrictions put into effect that restricts the outdoor use of water supplies. It can affect the irrigation of lawns, car washing, recreational uses such as filling swimming pools and using water slides, planting of grass or control of the types of grass planted, and hosing down pavement areas.

WILDFIRE

A wildfire, or forest fire, is a large, uncontrolled fire that can burn through brush and forest, with the possibility of endangering homes and other structures in surrounding communities. The difference between a wildfire and a prescribed fire, sometimes referred to as a controlled burn, is that a wildfire is unplanned, unpredictable, and dangerous while a prescribed fire is started deliberately by professionals under specific circumstances to reduce the risk of a catastrophic wildfire or generally improve the forest ecosystem.

WILDLAND URBAN INTERFACE

Wildland urban interface (WUI) is defined as areas where homes are built near or among lands prone to wildland fire.

XERISCAPE (XERISCAPING)

Xeriscape (also known as xeriscaping) is a style of landscape design requiring little or no irrigation or other maintenance, used in arid regions.

WEBSITES FOR FURTHER READING

CASE STUDIES

- Successful Communities Online Toolkit information exchange (SCOTie) - www.scotie.org
- EPA Climate Showcase Communities Program website - <http://epa.gov/statelocalclimate/local/showcase/index.html>

RESOURCES

CHAPTER ONE

- EPA Climate Showcase Communities Program - <http://epa.gov/statelocalclimate/local/showcase/index.html>
- NOAA Regional Climate Centers (RCCs) - www.ncdc.noaa.gov/customer-support/partnerships/regional-climate-centers
- Yale Project on Climate Change Communications: Extreme Weather, Climate & Preparedness - <http://environment.yale.edu/climate-communication/article/extreme-weather-climate-preparedness/>
- EPA: Climate Change Impacts and Adapting to Change - www.epa.gov/climatechange/impacts-adaptation/
- Georgetown Adaptation Clearinghouse - www.georgetownclimate.org/adaptation/clearinghouse

CHAPTER TWO

- Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments – Chapter 5 build and maintain support to prepare for climate change (PDF Download)
- Lessons Learned: Creating the Chicago Climate Action Plan (PDF Download)
- Webinar: Climate Change Preparedness Planning - www.sonoraninstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html

[webinar-climate-preparedness.html](http://www.sonoraninstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html)

- British Columbia Climate Action Toolkit: Sustainability Checklist - <http://www.toolkit.bc.ca/tool/sustainability-checklist>

CHAPTER THREE

- New York State Department of Environmental Conservation: How to Set Up a Climate Smart Coordinator or Task Force - www.dec.ny.gov/energy/65489.html
- Vermont Energy and Climate Action Network: The Town Energy and Climate Action Guide - www.vecan.net/forming-and-maintaining-a-town-energy-committee/

CHAPTER FOUR

- National Climactic Data Center - www.ncdc.noaa.gov/
- United States Drought Monitor - <http://droughtmonitor.unl.edu/>

CHAPTER FIVE

- Webinar: Climate Change Preparedness Planning - www.sonoraninstitute.org/planning-in-the-west-webinars-adapting-to-rising-temperatures-series/webinar-climate-preparedness.html

CHAPTER SEVEN

- EcoAmerica's Communicating on Climate 13 Steps and Guiding Principles - <http://ecoamerica.org/research/#13steps>
- ICLEI Climate Communication for Local Governments - www.iclei.usa.org/climate_and_energy/climate_mitigation_guidance/climate-communication-for-local-governments

RESILIENT COMMUNITIES STARTER KIT

- George Mason Center for Climate Change Communications - www.climatechangecommunication.org/
- Yale Project on Climate Change Communications - <http://environment.yale.edu/climate-communication/>
- Talking Climate - <http://talkingclimate.org/guides/communicating-climate-change/>
- Climate Access - www.climateaccess.org/

CHAPTER EIGHT

- Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments – Chapter 11: Implement your preparedness plan (PDF Download)
- British Columbia Climate Action Toolkit: Planning and Implementation and Taking Action Section - www.toolkit.bc.ca/tools
- City of Los Angeles West Adams-Baldwin Hills-Leimert Implementation Tools - <https://sites.google.com/site/westadamsnpc/Implementing-the-Plan>

Western Lands
and Communities

————— A Joint Program of the —————
Lincoln Institute of Land Policy and Sonoran Institute