

## chapter 10 set preparedness goals and develop your preparedness plan

Now that you have identified your priority planning areas, you are almost ready to set your preparedness goals and develop your preparedness actions to address the system stresses that climate change will impose in these areas. This chapter will guide you to take the following steps related to this goal- and action-setting stage:

- establish a vision for a *climate resilient community*, as well as related guiding principles for resilience, which you will use to inform your process of setting *preparedness goals* in your priority planning areas;
- develop, select and prioritize *preparedness actions* and write a *preparedness plan* to meet the goals you have set.

### 10.1 Establish a Vision and Guiding Principles for a Climate Resilient Community

As you consider how to deal with the system stresses that climate change bring in your priority planning areas, keep this vision in mind: preparing for climate change is not about making your community “climate proof,” but rather making it “climate resilient.”

A *climate resilient community* is one that takes proactive steps to prepare for (i.e., reduce the vulnerabilities and risks associated with) projected climate change impacts. To achieve this vision, we recommend the following five guiding principles for resilience:

**A ‘CLIMATE RESILIENT COMMUNITY’** is one that takes proactive steps to prepare for (i.e., reduce the vulnerabilities and risks associated with) projected climate change impacts.

- **Guiding Principle #1: Increase public awareness of climate change and its projected impacts on your community.** Outreach and education about climate change, how it affects your community, and what can be done to prepare for climate change can have multiple benefits. First, public education can foster public support for preparedness planning at the government level and influence changes in behaviors to decrease vulnerability and risk to climate change (e.g., water use efficiency at the household level). Secondly, public awareness about climate change impacts and preparedness planning may encourage your community to reduce individual and collective greenhouse gas emissions to prevent the worst impacts of climate change in the future. Different avenues for outreach are suggested in Chapter 5.

- **Guiding Principle #2: Increase your technical capacity to prepare for climate change impacts.** Building climate resilience requires developing a more complete understanding of how climate change affects your community at all levels of government, from public officials to managers and front-line employees. Employ your public outreach tactics inwardly (“inreach”) to create more opportunities for learning about climate change, its impacts, and how preparing for climate change might affect individual job responsibilities. You can also improve technical capacity by creating staff positions for managing preparedness actions, expanding modeling capabilities to examine various “what if” scenarios, or permanently establishing the preparedness planning team to monitor preparedness actions across various government departments.
- **Guiding Principle #3: “Mainstream” information about climate change vulnerabilities, risks, and preparedness into planning, policy, and investment decisions.** As noted throughout the guidebook, climate change will affect many aspects of local, regional, and state government. In order to remain resilient to these impacts, look to “mainstream” climate change assumptions and preparedness actions into planning, policy-making, and investment decisions. This means developing more systematic ways of addressing climate change in government activities, making decisions more robust to a range of climate change scenarios, and increasing flexibility in how government services and programs are managed.
- **Guiding Principle #4: Increase the adaptive capacity of built, natural, and human systems in your community.** Built, natural, and human systems provide many essential functions that benefit a community, including mobility (e.g., via roads and bridges), erosion and flood control (e.g., via wetlands or forests) or habitat for a wide range of plant and animal species (e.g., via estuaries and grasslands), and public health services (e.g., via hospitals and medical clinics). Maintaining the adaptive capacity of built, natural, and human systems and the services they provide will benefit your community, its economy, and quality of life.
- **Guiding Principle #5: Strengthen community partnerships that reduce vulnerability and risk to climate change impacts.** Many climate change impacts will originate outside the jurisdictional boundaries of your community (e.g., the spread of new vector-borne disease into your region), or require the cooperation of other local and regional governments, federal and state agencies, tribes, non-profit organizations, and the private sector to address effectively. Working in partnership with these organizations will not only help your preparedness efforts, but will also help you to identify new roles that others can play to improve your community’s resilience.

Once you have established your vision of a climate resilient community based on these or similar guiding principles, you are ready to set preparedness goals and develop, select, and prioritize actions relevant to your priority planning areas that will help you to meet this vision.

## 10.2 Set Preparedness Goals

The process of setting preparedness goals will provide essential structure to the next stages of your work, by identifying exactly what you want to accomplish in building resilience in your priority planning areas.

**PREPAREDNESS GOAL:** what you want to accomplish in your priority planning areas through preparedness action.

Preparedness goals will vary from one community to another based on a variety of factors, including the types and magnitude of projected climate change impacts and the scale of a community's planning effort. Therefore, we do not prescribe preparedness goals here. Instead, we suggest using the guiding principles outlined in Section 10.1 as well as the following considerations, to guide development of your specific preparedness goals.

- **Try to address all of the guiding principles (as relevant) in each of your priority planning areas.** Set at least one preparedness goal for each of your priority planning areas (e.g., goals for water supply, public health, transportation infrastructure). If possible, develop preparedness goals in each priority planning area to address each of the guiding principles above.
- **Engage others outside of your team.** Work with your team and government leadership to develop clearly written, attainable, and measurable preparedness goals. Public input on the goals can be obtained through public meetings, open comment periods, or other avenues. Most importantly, the team and government leadership should agree on the goals.
- **Be clear about your timeframe.** Goal-setting will also require identifying a time period for accomplishing these goals (e.g., 10 years, 20 years, or 50 years). This time period may be based on the type of information you have collected to date on climate change impacts (i.e., if you only have information on impacts projected through the 2050s), or you may choose a time period that is consistent with other long-range planning programs (e.g., your region's comprehensive land use plan). In general, be aware that the time period you choose can affect many aspects of your planning process, including how you assess your risk (see Section 9.2) and which preparedness actions you are able to pursue (see Section 10.4). You may also choose to set different time frames for specific actions as you get further into the planning process.
- **Remember – and remind your audience – that preparing for climate change is an on-going process.** You should be open to regular re-evaluation of policies and practices in light of known and projected

**“ADAPTATION** is not one activity or decision but rather a continuous set of activities, actions, decisions, and attitudes undertaken by individuals, groups, and governments.”  
(Adger et al. 2005)

climate change impacts and other changes in the community so these policies and practices can be amended as needed.

See Box 10.1 for illustrations of specific preparedness goals associated with each of these guiding principles.

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**Checkpoint:** *Upon finishing this section, you should have a list of preparedness goals, as well as an identified time period during which you expect to accomplish these goals.*

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### Box 10.1 – Illustrations of Climate Change Preparedness Goals

In 2006, the King County Executive and King County Council directed the county’s climate team to work toward several broad preparedness goals. Through these policy statements, made in Executive Orders on Global Warming Preparedness and a Council ordinance, the Executive and Council also directed the team to develop a “Global Warming Mitigation and Preparedness Plan.” This plan was later renamed the 2007 King County Climate Plan, a document which set further detailed goals for the county government in preparing for climate change.

In developing the 2007 Climate Plan, King County’s climate team named the following six general priority planning areas (called “strategic focus areas” at that time):

- Climate Science
- Public Health, Safety, and Emergency Preparedness
- Surface Water Management, Freshwater Quality, and Water Supply
- Land Use, Buildings, and Transportation
- Economic Impacts
- Biodiversity and Ecosystems

King County developed further goals and actions in these areas related to: increasing public awareness, building technical capacity, integrating climate change assumptions into plans, policies and investments, improving the adaptability of natural ecosystems, and strengthening community partnerships.

Many of these goals and actions were written to reflect that preparedness activities already underway in King County departments as of the publication of the 2007 Climate Plan. Most goals were based on the answers to a questionnaire on climate change impacts that was circulated to a cross-section of department and division representatives in summer 2006 (see Box 8.3). These goals were then discussed with management teams of each department.

A sample of climate change preparedness goals from the King County Executive Orders, Council ordinance, and Climate Plan are provided here to illustrate the types of goals that governments can set in preparing for climate change, according to each of the guiding principles listed above.

**Guiding Principle #1: Increase public awareness of climate change and its projected impacts on your community.**

Example: “King County departments will raise awareness about climate change impacts,

adaptation, and mitigation, and will collaborate interdepartmentally with climate science experts, other agencies, and other governments to adapt to climate change.” (2007 King County Climate Plan)

## 10.3 Identify Potential Preparedness Actions

Now that you have developed preparedness goals in your priority planning areas, you are ready to develop a candidate list of preparedness actions. *Preparedness actions* are the activity or activities that your government will undertake to achieve its preparedness goals. For example, a goal for the public health planning area may include reducing mortality and morbidity rates associated with extreme heat events. Related preparedness actions would include opening additional cooling centers during extreme heat events, improving the use of early warning systems for extreme heat events, and working with the planning department to increase the use of shade trees to reduce temperatures in urban areas.

**PREPAREDNESS ACTION:** the activity or activities that your government will undertake to achieve its preparedness goals.

Example: “King County will help the region to understand and reduce risks of fall and winter flooding associated with climate change impacts.” (2007 King County Climate Plan)

**Guiding Principle #2: Increase your technical capacity to prepare for climate change impacts.**

Example: “King County will be a primary leader in research, monitoring, and use of climate science in public policy decisions.” (2007 King County Climate Plan)

**Guiding Principle #3: “Mainstream” information about climate change vulnerabilities, risks and preparedness into planning, policy, and investment decisions.**

Example: “[King County will] review and update [King County’s] land use and environmental policies and regulations to protect natural resources from global warming threat.”

Example: “King County will protect the integrity and safe operation of regional transportation infrastructure from climate change impacts.” (2007 King County Climate Plan)

Example: “[King County will] use its existing waste and wastewater infrastructure for multiple uses and in innovative ways that... provide an additional natural resources hedge against impacts expected from global warming [such as declining water supply.]”

**Guiding Principle #4: Increase the adaptive capacity of built, natural and human systems.**

Example: “[King County will] use land use and transportation plans... to conserve natural resources and protect environmentally sensitive areas in ways that are coordinated, equitable, and supportive of global warming mitigation and adaptation.”

Example: “King County will work to support the resilience of salmon, fish, wildlife, habitat conditions, and biodiversity to climate change impacts.” (2007 King County Climate Plan)

**Guiding Principle #5: Strengthen community partnerships that reduce vulnerability and risk to climate change impacts.**

Example: “King County plans will guide the region to build preparedness for climate change impacts into all major investments in land and infrastructure.” (2007 King County Climate Plan)

Example: “King County will implement the adopted 2006 King County Flood Hazard Management Plan, work to create a Flood Control Zone District by June 1, 2007, and work to establish a countywide fee for funding of necessary investments in the areas that are most vulnerable to increased fall and winter flooding.” (2007 King County Climate Plan)

Think broadly when developing your list of candidate actions. This is your chance to brainstorm. There is no “one size fits all” prescription for determining which preparedness actions are best; you will need to evaluate the appropriateness of different actions for your community based on a number of factors, including your priority planning area vulnerabilities and the types of resources available to your community. At a general level, your actions will involve any combination of the following:

- **Modifying policies, practices, and procedures.** Existing regulations, policies, operating practices, development plans, and other modes of governing may need to be modified to increase resiliency. In particular, look for the following policy “red flags” – regulations, policies, practices and procedures that:
  - do not allow regular re-evaluation and adjustment in accordance with changing conditions;
  - require planning based strictly on the past, or pin certain decisions to certain periods or seasonal patterns;
  - reinforce trends that increase vulnerability or reduce adaptive capacity (e.g., development along flood plains).

Specific modifications may include improving drought plans, retreating from or abandon vulnerable areas, changing building and zoning codes, adjusting utility prices, or developing contingency plans for low probability but high consequence events (UKCIP 2007). As you look at existing regulations, policies, etc., also consider whether the procedures and guidelines used to formulate new regulations need to be updated so that future regulations are more climate resilient.

- **Diversifying options.** You may increase your adaptive capacity and in turn reduce your vulnerability to climate change by providing a “buffer” against climate change impacts. Examples include developing new groundwater sources or wastewater reclamation capacity to diversify your water supply, or diversifying your community’s economic base to move away from relying on sources of revenue that may be negatively affected by climate change (e.g., winter recreation).
- **Building new or upgrading existing infrastructure.** You may need to develop new infrastructure or upgrade existing infrastructure to accommodate climate change impacts. Illustrations of this include expanding stormwater collection systems, expanding wastewater treatment capacity, increasing bridge heights, or strengthening flood control levees.
- **Improving community awareness and preparedness.** Outreach and education will be needed to generate support for specific preparedness actions. Outreach and education can also be used to effect voluntary change at the individual household level, such as water conservation.

- **Partnership building with other communities and agencies.**

Communities do not govern in isolation, and climate change impacts do not follow jurisdictional boundaries. Preparing for climate change will require building new collaborations or strengthening existing partnerships (e.g., with other local governments, tribes, federal and state agencies, non-profit organizations, and the private sector) to address the impacts that occur both within and outside of your community's jurisdiction.

A list of general climate change preparedness goals and actions for U.S. Pacific Northwest communities is provided in Table 10.1. This list builds on the sample tables used in previous chapters to illustrate how to identify priority planning areas by conducting vulnerability and risk assessments; it features the potential goals and actions in these identified priority planning areas, as well as goals and actions for a number of other additional planning areas.

Note that the preparedness actions listed in the table are traditional government activities, many of which may already be underway in your community. Preparedness can also involve more non-traditional government activities such as research, monitoring and data collection. The aim at this point is to cast a wide net, identifying as many potential preparedness actions as possible. Once your list is assembled, you will evaluate and narrow the list of your options for implementation.

Appendix D.4 identifies a variety of sources on preparing for climate change, many of which provide information on preparedness actions. Other jurisdictions and governmental entities facing similar climate change challenges may also be good sources of information on preparedness actions. This was the approach taken by London, England in their report, *Adapting to Climate Change: Lessons for London* (see Box 10.2).

In some cases, a lack of detailed information can make it difficult to identify the most appropriate preparedness actions. For example, the fact that it is impossible to project exactly what climate change means for a certain species of shellfish or a certain pollinator means that it will be very difficult, if not impossible, to engineer resource management to specifically match anticipated climate conditions. In these cases, it may be more effective to maintain an ecosystem's overall resilience to climate change impacts rather than trying to focus on a specific segment of the ecosystem. This approach may provide other near-term benefits as well, potentially creating a "no regrets" or "win-win" result (see Section 10.4). Delaying action may also be an appropriate option if the additional time can be used to gather more information through research or monitoring (UKCIP 2007), although even in these cases there might be "no-regrets" actions that can be implemented.

**POLICY "RED FLAGS"** As you consider how you will prepare for climate change, watch for regulations, policies, practices, and procedures that:

- Do not allow regular re-evaluation and adjustment in accordance with changing conditions,
- Require planning based strictly on the past, or pin certain decisions/triggers to certain periods or seasonal patterns, and
- Reinforce trends that increase vulnerability or reduce adaptability (e.g., development along flood plains).

**Box 10.2 – Adapting to Climate Change: Lessons for London**

In order to develop a list of potential preparedness actions for the major impacts of climate change projected for London, city planners and others commissioned a report reviewing “how other major international cities are managing climate risks.” The report, *Adapting to Climate Change: Lessons for London*, describes innovative approaches used by other cities to protect their citizens and economies from extreme weather risks such as those expected to become more likely for London under climate change (London Climate Change Partnership 2006). The review examined eighteen cities’ management of the climate-related risks of

flooding, high temperatures, and limited water resources, the relevance of each city’s approach to the specific climate change risks projected for London, and the applicability of each city’s approach within London’s planning and policy framework. The report will be used by the London Climate Change Partnership, a group of public and private sector organizations across London who have responsibilities that will be affected by the impacts of climate change, to inform the formation of climate adaptation planning policies for London. The report can be downloaded from [www.london.gov.uk/climatechangepartnership/](http://www.london.gov.uk/climatechangepartnership/).

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**Checkpoint:** Upon finishing this section, you should have a list of potential preparedness actions for your priority planning areas.

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CLIMATE CHANGE PREPAREDNESS GOALS AND ACTIONS IN SAMPLE PRIORITY PLANNING AREAS (AND OTHER PLANNING AREAS FOR ILLUSTRATION)		
Priority Planning Area	Preparedness Goal	Preparedness Action
Water Supply	Expand and diversify water supply	<ul style="list-style-type: none"> <li>• Connect regional water systems</li> <li>• Develop new groundwater sources</li> <li>• Construct new surface water reservoirs</li> <li>• Enhance existing groundwater supplies through aquifer storage and recovery</li> <li>• Implement new technologies such as reverse osmosis for desalination</li> <li>• Develop advanced wastewater treatment capacity for water reuse (“gray water”)</li> </ul>
	Increase usable storage in reservoirs	<ul style="list-style-type: none"> <li>• Add capacity to reservoirs by raising dam height</li> <li>• Adjust reservoir operations to reflect changing conditions</li> </ul>
	Reduce demand/improve efficiency	<ul style="list-style-type: none"> <li>• Increase billing rates for water</li> <li>• Change building codes to require low flow plumbing fixtures</li> <li>• Install high efficiency delivery systems for irrigated agriculture</li> <li>• Meter all water uses</li> <li>• Provide financial incentives (e.g., tax breaks, rebates) for switching to more efficient manufacturing processes, irrigation practices, and appliances</li> </ul>
	Increase ability to transfer water between users	<ul style="list-style-type: none"> <li>• Use water banks, water pools, and water markets to facilitate the reallocation of water resources</li> <li>• Renegotiate transboundary water agreements where applicable</li> </ul>
	Increase drought preparedness	<ul style="list-style-type: none"> <li>• Update drought management plans to recognize changing conditions</li> <li>• Increase authority to implement water restrictions and other emergency measures as needed</li> </ul>
	Increase public awareness about climate change impacts on water supplies	<ul style="list-style-type: none"> <li>• Include information on climate change impacts to water supplies and how residents can reduce water use in utility inserts, newsletters, web sites, and local newspapers</li> </ul>
	Enhance the type of information used for managing water supply	<ul style="list-style-type: none"> <li>• Expand the use of climate information (e.g. seasonal forecasts) in water resources planning and management</li> <li>• Actively monitor trends in snowpack, streamflow and other conditions affecting hydrology and water resources to anticipate problems</li> <li>• Conduct additional research on how climate change may impact you community's water supply</li> </ul>

<p>Stormwater and floodwater management</p>	<p>Increase capacity to manage stormwater</p>	<ul style="list-style-type: none"> <li>• Increase capacity of stormwater collection systems to accommodate projected changes in precipitation</li> <li>• Modify urban landscaping requirements to reduce stormwater runoff</li> <li>• Preserve ecological buffers (e.g. wetlands)</li> </ul>
	<p>Reduce property damage from stormwater and flooding</p>	<ul style="list-style-type: none"> <li>• Move or abandon infrastructure in hazardous areas</li> <li>• Change zoning to discourage development in flood hazard areas</li> <li>• Update building codes to require more flood resistant structures in floodplains</li> </ul>
	<p>Improve information used to manage stormwater and flood events</p>	<ul style="list-style-type: none"> <li>• Increase the use of climate and weather information in managing stormwater/flood risk and individual events</li> <li>• Update flood maps to reflect changing risk associated with climate change</li> <li>• Conduct additional research on how climate change may impact stormwater and flooding in your community</li> </ul>
<p>Road operations and maintenance</p>	<p>Reduce flooding and erosion impacts on infrastructure</p>	<ul style="list-style-type: none"> <li>• Increase capacity of stormwater collection systems to accommodate projected changes in precipitation</li> <li>• Modify urban landscaping requirements to reduce stormwater runoff</li> <li>• Preserve ecological buffers (e.g. wetlands)</li> </ul>
<p>Reduce damage to asphalt from warmer summer temperatures</p>	<ul style="list-style-type: none"> <li>• Increase maintenance frequency of asphalt roads</li> <li>• Investigate potential of using other road surfaces on most heavily used roads</li> </ul>	
<p><b>Additional Planning Areas for Illustration</b></p>		
<p>Salmon and marine ecosystems</p>	<p>Improve freshwater survival rates and carrying capacities</p>	<ul style="list-style-type: none"> <li>• Carefully limit harvests for selective fisheries</li> <li>• Protect and restore natural functions in watersheds (e.g., floodplains, woody debris)</li> <li>• Protect and restore instream flows</li> <li>• Minimize elevated summer water temperatures</li> <li>• Control water pollution</li> </ul>
	<p>Improve estuarine survival rates and carrying capacities</p>	<ul style="list-style-type: none"> <li>• Carefully limit harvests for selective fisheries</li> <li>• Improve hatchery practices</li> <li>• Reduce the spread of invasive species</li> <li>• Protect and restore nearshore habitat</li> </ul>
	<p>Improve marine survival and carrying capacities</p>	<ul style="list-style-type: none"> <li>• Carefully limit harvests for selective fisheries</li> <li>• Improve hatchery practices</li> </ul>
<p>Improve information used in salmon ecosystem management</p>	<ul style="list-style-type: none"> <li>• Integrate climate change information into salmon restoration planning for freshwater and estuary environments</li> </ul>	

CLIMATE CHANGE PREPAREDNESS GOALS AND ACTIONS IN SAMPLE PRIORITY PLANNING AREAS (AND OTHER PLANNING AREAS FOR ILLUSTRATION)		
Priority Planning Area	Preparedness Goal	Preparedness Action
Forest ecosystems and parks	Maintain mixed landscape structure	<ul style="list-style-type: none"> <li>• Expand or adjust protected areas to incorporate greater diversity of topographic and climatic conditions to allow for shifts in species distributions in response to climate change</li> <li>• Tailor timber harvest and/or prescribed burning to create a mosaic of patch sizes and age classes</li> <li>• Avoid creating monoculture forests and/or forests lacking a structural diversity (e.g., because of uniformly places or many large clearcuts)</li> </ul>
	Maintain species diversity and within-species diversity	<ul style="list-style-type: none"> <li>• Expand or adjust protected areas to incorporate greater diversity of topographic and climatic conditions to allow for shifts in species distributions in response to climate change</li> <li>• Plant local seeds and mixed species stands after harvest or disturbance</li> <li>• Reduce potential for invasive species</li> </ul>
	Reduce the impact of climatic and non-climatic stressors	<ul style="list-style-type: none"> <li>• Plant tree species or varieties known to have a broad range of environmental tolerances</li> <li>• Manage forest density to reduce susceptibility to severe fire, invasive or epidemic insects, and drought</li> <li>• Manage forests for changing fire risk and fire regime</li> <li>• Establish or enhance structural and lot development requirements in forested areas to reduce potential for fire damage</li> </ul>
	Improve information used in forests and parks management	<ul style="list-style-type: none"> <li>• Incorporate understanding of elevation-specific climate sensitivities into management strategies</li> <li>• Actively monitor trends in forest conditions, including drought stress, insects, and invasive species</li> </ul>
Coastal ecosystems	Increase public understanding of climate change impacts on forest and park ecosystems	<ul style="list-style-type: none"> <li>• Add information on climate change impacts and what the community is doing to address impacts to forest and park ecosystems in community newsletters, web sites, and trailheads</li> </ul>
	Reduce shoreline erosion	<ul style="list-style-type: none"> <li>• Preserve ecological buffers to allow for inland beach migration</li> <li>• Enhance shoreline protection where retreat and accommodation are not possible</li> </ul>
	Reduce property damage from erosion, flooding events, sea level rise	<ul style="list-style-type: none"> <li>• Reduce development in coastal hazard areas</li> <li>• Incorporate climate change impacts into design requirements for coastal structures</li> <li>• Move or abandon shoreline infrastructure</li> <li>• Restore wetlands for run-off storage and flood control</li> </ul>

Coastal ecosystems <i>continued</i>	Maintain or enhance coastal habitat	<ul style="list-style-type: none"> <li>• Preserve ecological buffers to allow for inland migration of wetlands, salt marshes, and other habitat systems</li> <li>• Reduce spread of invasive species</li> </ul>
Agriculture	Improve information used in managing coastal systems	<ul style="list-style-type: none"> <li>• Increase monitoring and control of invasive species</li> <li>• Incorporate information on sea level rise into coastal planning and ecosystem restoration</li> </ul>
	Adjust production to reflect changing conditions	<ul style="list-style-type: none"> <li>• Change planting dates</li> <li>• Consider double cropping where longer growing seasons allow</li> <li>• Change planting varieties</li> <li>• Promote greater use of heat-resistant, insect-resistant and disease-resistant crops</li> </ul>
	Improve agricultural water supply and use	<ul style="list-style-type: none"> <li>• Promote new irrigation technologies to improve water use efficiency</li> <li>• Promote water conservation</li> <li>• Use market forces to distribute water</li> <li>• Diversify and expand water infrastructure</li> </ul>
Public health	Improve information used in managing agriculture	<ul style="list-style-type: none"> <li>• Be aware of how climate change affects global agriculture</li> <li>• Work with county extension agents to distribute information to farmers on projected climate change impacts to agriculture</li> </ul>
	Reduce impacts of extreme heat events	<ul style="list-style-type: none"> <li>• Open additional cooling centers during extreme heat events</li> <li>• Extend hours for public wading pools during extreme heat events</li> <li>• Improve use of early warning systems for extreme heat events</li> <li>• Increase use of shade trees to reduce temperatures in urban areas</li> </ul>
	Improve disease surveillance and protection	<ul style="list-style-type: none"> <li>• Increase monitoring of known diseases and potential diseases moving into the area</li> <li>• Increase public education on disease prevention for West Nile and other vector-borne illnesses that could increase as a result of climate change</li> <li>• Increase emergency planning for disease outbreaks</li> </ul>
	Improve information used in managing public health	<ul style="list-style-type: none"> <li>• Monitor global trends in the spread of disease</li> </ul>

**Table 10.1 – Climate Change Preparedness Goals and Actions in Sample Priority Planning Areas (and Other Planning Areas for Illustration).** This table represents possible preparedness goals and actions for the sample planning areas of water supply, stormwater management, and road operations and maintenance (for the purposes of this table, labeled as priority planning areas). It also includes possible goals and actions for other planning areas, as illustration. This list is not all-inclusive, and the appropriateness of these actions will vary on a case-by-case basis. (Sources: Mote et al. 1999; NAST 2001; Hamlet 2003; Mote et al. 2003; Kay et al. 2005a)

## 10.4 Select and Prioritize Preparedness Actions

As Table 10.1 indicates, there are a number of possible preparedness actions to take for managing climate change impacts. Given a constant reality of competition for financial and human resources, how do you know which actions to choose for your preparedness plan, and in what sequence to implement them?

The general criteria described here can help guide your selection and prioritization of the specific preparedness actions you will use (adapted from Willows and Connell 2003, Adger et al. 2005, Smith 1997). Note that actions will not – and do not need to – meet all of the listed criteria. The more criteria that are met, however, the more likely the action will help reduce your vulnerability to climate change.

As you evaluate the initial list of actions for selection, sort your choices into groups as follows:

- Tier 1 actions are those that can and will be implemented in this planning process;
- Tier 2 actions are those that could be implemented now or in the future but require additional information, resources, or authorities before implementing. Note that you may want to begin exploring these additional information, resource, and authority needs as part of your current planning effort;
- Tier 3 actions are those that are not suitable candidates at this time.

Document why certain preparedness actions were or were not selected for the current planning effort. Reasons for ranking Tier 2 and 3 actions may change over time, making some of the Tier 2 and 3 actions more relevant in the next update of the preparedness plan.

### *Key Criteria*

- **Will the actions meet your preparedness goals?** A key consideration when selecting and prioritizing actions for preparedness planning is whether the action will meet the overall preparedness goals chosen for your planning effort, and in turn your guiding principles for a climate resilient community.
- **Do the benefits of the action exceed the costs?** In general, the benefits gained from an action should exceed the costs of implementing the action. This includes economic as well as non-economic costs and benefits, which can be difficult to quantify. The benefit-cost calculation will be affected by many criteria, including your planning time horizon, the lifespan of the decision, and the frequency of specific climate change impacts (e.g., how often a particular flood threshold may be crossed). Consider using your benefit-cost analysis to help identify the “no regrets,” “low regrets,” or “win-win” scenarios as described in Section 11.2, especially in cases where there is greater uncertainty. Note also that the benefit-cost criteria will also influence specific choices associated with certain actions (e.g., the cost of enlarging your stormwater collection system by 5% versus 15%).

- **Is the action robust under a range of climate change scenarios?**

Actions should meet their intended purpose under a range of plausible future climate change scenarios. This is particularly true for decisions with a long life span or long-term implications, such as those related to infrastructure and land use changes, since these types of decisions will be affected by a greater range of climate change impacts than projects lasting only a few years. For example, a setback requirement for coastal development based on an estimate of 12 inches of sea level rise is less robust than a requirement that can accommodate a broader range of sea level rise (e.g., 6 inches to 3 feet).

Actions must also be robust to changes in the frequency or severity of specific climate impacts. Some mechanisms used to reduce climate and weather stresses in planning areas in the past could be less suitable for the long-term change that climate change represents because of a change in the frequency, intensity, duration, or extent of some climate impacts. Temporary pumps, for example, may be appropriate for managing flooding that occurs two or three times a year but would not be appropriate if the frequency increased to 100 times a year. Similarly, beach nourishment is a common response to erosion events that may not be economically feasible over the long term in some locations given the potential for climate change to increase erosion in coastal areas. This is not to say that these short-term preparedness actions do not have a role in preparedness planning. It does mean, however, that additional actions for addressing the “big picture” issue may be needed to reduce the need for short-term, crisis-oriented solutions.

- **Is the action flexible and does it increase flexibility in how a planning area is managed or functions?** Policies, practices, and procedures need to be flexible so they can be adjusted in response to changing conditions (both climate and non-climate). Can the action be easily adjusted as conditions change? Does the action make it easier to modify or reverse decisions once implemented if new information warrants a change?
- **Can the action be implemented, and in what time frame?** Ease of implementation will depend on your time frame and the availability of relevant legal and administrative authorities, staff resources, technical resources, and fiscal resources. Can a preparedness action be implemented within the existing operational framework of your community, or are additional authorities and/or resources required? In the later case, who must grant these additional authorities and resources?

Typically, actions that can be implemented under the current operational framework will be preferred in the near term compared to actions requiring significant resources or state or federal action. This may include preparedness actions such as disease monitoring or water conservation that may already be part of your community’s current operations but will need to be expanded because of climate change. In

these cases, you may choose to implement the “low hanging fruit” first while deferring action on other, more ambitious actions.

Note, however, that choosing preparedness actions is not always about choosing the actions that are easy to implement right away. In some cases, the very fact that an action requires more time or resources to complete will require implementing the action in the near-term. A good example is developing the capacity to treat and distribute “gray” (or reused) water. Because it will take time to secure the additional authorities and resources needed to develop this capacity, you may choose to begin working on this action sooner rather than later.

### *Additional Factors*

- **Are there unique “windows of opportunity” for implementing a particular action?** In some cases, the timing of key decisions being made in other planning arenas can influence the selection and implementation order of preparedness actions. For example, your community may already be planning a major upgrade of its water main system, creating a timely opportunity to install reclaimed water lines along with the new water mains. In another example, a rare opportunity to purchase development rights in an area vulnerable to sea level rise may lead to choosing this action in the near term for protecting coastal areas over other actions. Other timely windows of opportunity may include periodic license renewals (e.g., Federal Energy Regulatory Commission dam relicensing procedures) and state legislative sessions.
- **Is the action equitable?** Actions should be equitable, meaning that they should not make impacts worse in other areas or limit the adaptive capacity of other communities, vulnerable populations, or future generations. Projected losses in hydropower generating capacity due to declining snowpack should not be replaced with power produced by coal-burning power plants, which would increase greenhouse gas emissions and accelerate climate change.
- **Will the action decrease the risk of losing unique environmental or cultural resources?** Some preparedness actions may be preferred because of their potential role in protecting unique environmental or cultural resources. For example, these may include important ecosystems, Native American reservation land and burial sites, or historic districts.
- **Will the action address a risk for which there is greater scientific confidence?** The confidence the scientific community assigns to specific climate change projections will vary by climate change variable (e.g., temperature, precipitation, wind direction and speed) and by region. In the U.S. Pacific Northwest, there is greater confidence in the range of projected temperature changes than for changes in precipitation. All things being equal, actions addressing temperature-driven climate change impacts (e.g., changes in streamflow volume and timing in U.S.

Pacific Northwest rivers) may be ranked higher than actions addressing precipitation-driven impacts given the uncertainties associated with changes in precipitation amount, intensity, and frequency.

Now that you have prioritized your preparedness actions to meet the goals set for your priority planning areas, you are ready to write your preparedness plan. An illustration of how this can come together is King County's 2007 Climate Plan, which is available online.

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***Checkpoint:*** Upon completing this section, you should have a final list of preparedness actions and a plan that will be implemented in your current round of preparedness planning.

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