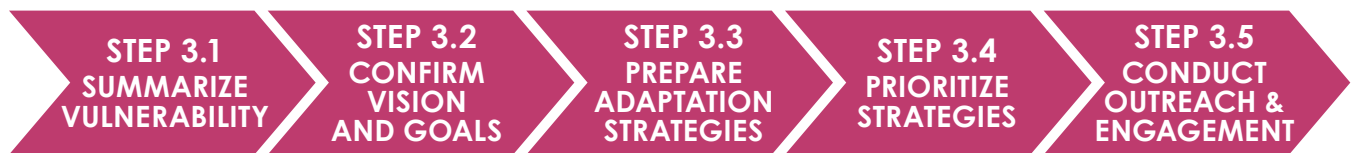


PHASE 3: DEFINE ADAPTATION FRAMEWORK AND STRATEGIES

The goal of Phase 3 is to prepare the community's adaptation framework, which identifies specific policies and implementable strategies for adapting to climate change, thus making the community more resilient. Through Phases 1 and 2, the community identified its vision, desired outcomes for the adaptation planning process, and assessed vulnerability to climate change. Phase 3 uses those findings to inform the preparation of the adaptation framework and strategies, consistent with the vision, goals, and desired outcomes of the community.

This chapter describes the steps of Phase 3 and includes examples of adaptation strategies (see Figure 12). The primary steps are: 1) summarize vulnerability, 2) confirm vision and goals, 3) prepare adaptation strategies, 4) prioritize strategies, and 5) conduct outreach and engagement.

Figure 12. Steps in Phase 3



Summary of § 65302(G)(4) Safety Element and Climate Adaptation

As noted earlier in the APG, California Government Code § 65302(G)(4) requires local jurisdictions to review and update their safety elements upon the next revision of an LHMP on or after January 1, 2017, or if a local jurisdiction has not adopted an LHMP, beginning on or before January 1, 2022, as necessary to address climate adaptation and resiliency strategies. The review and update should include preparation of the following:

- A vulnerability assessment.
- A set of adaptation and resilience goals, policies, and objectives based on the information identified in the vulnerability assessment for the protection of the community.
- A set of feasible implementation measures designed to carry out the goals, policies, and objectives including, but not limited to, all of the following:
 - ◆ Feasible methods to avoid or minimize climate change impacts associated with new uses of land.
 - ◆ The location, when feasible, of new essential public facilities outside of at-risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in at-risk areas.
 - ◆ The designation of adequate and feasible infrastructure located in an at-risk area.
 - ◆ Guidelines for working cooperatively with relevant local, regional, state, and federal agencies.

Summary of § 65302(G)(4) (continued)

- ◆ The identification of natural infrastructure that may be used in adaptation projects, where feasible. Where feasible, the plan shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration. Natural infrastructure means the preservation or restoration of ecological systems, or utilization of engineered systems that use ecological processes, to increase resiliency to climate change, manage other environmental hazards, or both. This may include, but is not limited to, flood plain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days.

Step 3.1: Summarize Vulnerability

A helpful first step in developing the framework is to review the results of the vulnerability assessment, focusing on the major climate vulnerabilities identified in Step 2.4. The *Regional Resilience Toolkit* recommends summarizing the vulnerability assessment in “problem statements” that describe the vulnerability and its consequences.¹ The purpose of the problem statements is to provide concise, plain-English descriptions of the climate vulnerabilities so that all stakeholders, decision-makers, and members of the planning team understand the nature of the challenge. This will aid in assessing how well the community is prepared to deal with the problem now (adaptive capacity) and aid in developing new policy and strategies. Underlying data and analysis should also be preserved and made available, but the problem statements allow everyone to work from a basic, common understanding.

A problem statement should succinctly describe the specific vulnerability of assets and populations (social vulnerability). It should describe the current vulnerability and the change in vulnerability due to expected climate change and changes in the community. It might also summarize the known or hypothesized causes or contributing factors, though these are not always straightforward. In fact, identifying causes is often what underlies fundamental policy debate and action. For example, the frequency

of extreme wildfires in California is increasing, but the relative importance of causes such as climate change, increased building in the wildland-urban interface, and poor forest management will vary by community. This drives policy choices—for example, whether to focus on land use and building controls or on controlled burns and forest thinning. An example problem statement might be:

Approximately 150 residences in the community are in a “very high” wildfire risk area that is projected to see a threefold increase in wildfire likelihood by 2050 due to climate change. The area has historically experienced a significant wildfire about every 25 years. Many of the residents (approximately 40 percent) are aged 60 and above. Recent development trends show an acceleration of new residential construction over the last 10 years, and the current zoning allows for up to 450 total residences. In addition, most of the area is serviced by only a single paved road, thus limiting emergency access.

Although this step is not essential for preparation of adaptation strategies, it will help the team organize vulnerabilities, identify applicable sectors for strategy development, reveal any relationships or patterns of vulnerability, and begin to consider the types of strategies needed to increase resilience.

After completing the assessment of climate change–related effects, summarize the findings to identify the most significant potential for harm in the community. These findings or “problem statements” will help to craft effective strategies and actions. Problem statements will help to:

- Communicate critical planning issues, for example, which critical assets are particularly vulnerable, what areas currently have repetitive losses, or how many high hazard areas are currently zoned for future development.
- Assist the community and stakeholders to prioritize and focus on the areas that have the greatest need for mitigation or adaptation based on the assessment of climate change–related effects.
- Create a clear and cogent “story” to help support decision-making by elected officials and other stakeholders.
- Provide a foundation for seeking funds to reduce the potential for harm and increase community resilience.

Step 3.2: Confirm Vision and Goals

A resilience vision and associated goals are important components of an adaptation and resilience framework.

CONFIRM VISION

The objective of this step is to confirm the community's vision for adaptation and resilience. It should engage stakeholders, the project team, and decision makers. Phase 1 included preparation of a vision or definition of what adaptation and resilience means to the community. In Phase 3, a review of the vision will help frame how to address the issues in the vulnerability assessment. If the community did not prepare a vision statement during Phase 1, this is a good time to do so.

This example vision statement for resiliency is from the City of Boulder's (CO) Resilience Strategy:

Building on a legacy of frontier innovation, Boulder will cultivate a creative spirit to adapt to and thrive in a changing climate, economy, and society.

DRAFT GOALS

Goals provide direction for achieving a vision and act as guideposts throughout the planning process and implementation. As noted in the *Regional Resilience Toolkit*,² establishing resilience goals assists in:

- Building transparency into the process at the outset so that all participants understand the breadth of priorities and topics to cover.
- Engaging the project team and stakeholders early in deciding what shared outcomes they will work cooperatively to achieve and providing an opportunity for input and feedback on the project direction.
- Providing a foundation upon which future project decisions can be made and help in evaluating how well mitigation actions will meet established community values and expectations.
- Connecting to metrics and tracking and monitoring progress of the project through implementation.

Goals may be driven by a desire to protect:³

- Physical areas (e.g., new development along the shoreline, natural resource areas or assets)
- Asset classes (e.g., infrastructure, natural resources)
- Social values (e.g., protecting parks because beauty and recreation are highly held values)
- Economic values (e.g., protecting major economic drivers like large businesses)
- Character, history, sense of place (e.g., protecting historic structures or neighborhoods)
- Existing functions/activities (e.g., emergency services)
- Specific communities (e.g., vulnerable populations)

To get started, group the problem statements from Step 3.1 by themes, such as climate change effects, populations and assets at risk, or sectors. Several problem statements or groups may lead to a single adaptation goal. The APG uses 11 sectors (see Figure 4) to support organization of example strategies, which are defined in Appendix A. Communities can use the same sectors or follow an organizational approach that best fits their implementation needs.

When drafting goals, it is important to start with a review of existing goals in the community's planning documents—e.g., general plan and LHMP—and state plans such as Safeguarding California and the State Hazard Mitigation Plan. This review will help the project team determine if existing community goals support the vision, respond to the vulnerability assessment and will support integration and alignment of adaptation and resilience goals.

Goals that respond to the vulnerability assessment, such as those that seek to increase adaptive capacity, protect assets, and reduce impacts from hazards and other climate change effects, help other stakeholders see how resilience fits with existing community priorities. Goals should be clear and accessible to all stakeholders, and they should reduce or avoid long-term vulnerabilities. The goals will be supported by strategies developed in Step 3.3.

The General Plan Guidelines (2017) define a goal as a “general direction-setter.” It is an ideal future end related to the public health, safety, or general welfare. A goal is a general expression of community values and may be abstract in nature. It may not be quantifiable or time dependent.⁴

The FEMA Local Mitigation Handbook describes goals as general guidelines that explain what the community wants to achieve with the plan. They are usually broad,

policy-type statements that are long term, and they represent visions for reducing or avoiding losses from the identified hazards.⁵

Goals should be designed with consideration to how progress can be tracked or monitored. Some communities may prepare one or more “objective” statement for each goal. These objective statements are meant to be specifically measurable in some way that shows progress toward the goal. For example, a goal to reduce community vulnerability to wildfires might have objectives for the percentage of homes that meet defensible space best practices. Whether specific objective statements are prepared or not, the goal and strategy development process should proceed with consideration to developing specific indicators of progress that can be monitored.

Step 3.3: Prepare Adaptation Strategies

The project team and community should collaborate to prepare adaptation strategies after the review of vulnerabilities, development of problem statements, and confirmation of the community’s vision and goals for adaptation and resilience. Use the Vulnerability Assessment prepared in Phase 2 to identify priority areas for action and develop a framework for how those areas should be addressed.

WHAT IS A STRATEGY?

Climate adaptation strategies should be developed within a policy framework appropriate to the outcomes of this adaptation planning process, as identified in Phase 1 and confirmed in Step 3.2—that is, a general plan safety element, climate action or adaptation plan, local hazard mitigation plan, or another plan or project. The terminology should be consistent with the policy/planning document where the strategy will reside.

Each plan type or program has a defined set of terms and approaches for strategies (the APG uses the term “strategy” generally to refer to a policy, program, project, measure, or action meant to increase resilience). Some plans and policy documents use a traditional goal–objective–policy–strategy/implementation program hierarchy for organizing strategies; others focus only at the strategy level. The level of detail may also vary.

What Is a Policy?

The General Plan Guidelines⁶ states that a policy is a specific statement that guides decision-making and indicates a commitment of the local legislative body to a particular course of action. A policy is based on a plan's vision and goals and helps implement them. For a policy to be useful as a guide to action, it should be clear and unambiguous. A policy is carried out by implementation strategies. An implementation measure is an action, procedure, program, or technique that carries out policy. Programs can be short- or long-term groupings of projects or services that help achieve policy goals.⁷ The FEMA Hazard Mitigation Handbook does not define policy; however, it defines actions as specific projects and activities that help achieve the goals.⁸

Levels of Detail in Adaptation Strategies

Some strategies look like general statements of policy preference or desired direction, and others are highly detailed and contain specific implementation direction. The following strategies are from the Town of Mammoth Lakes Safety Element, updated in 2019.

General Statements:

- Establish public outreach and education programs to inform residents, businesses, and visitors of air quality alerts.
- Support sustainable and feasible forest thinning by product economies and markets to create a revenue stream for mechanical treatments required to meet wildfire mitigation and protection needs.
- Increase the groundwater recharge potential within the Town boundaries and surrounding areas.
- Encourage a drought tolerant and fire-resistant landscaping demonstration garden to encourage public participation in water conservation and fire preparedness efforts.

Detailed Implementation Direction:

- Expand the Mammoth Lakes Mosquito Abatement District to include all areas within the Town boundary.
- Encourage Mammoth Community Water District (MCWD) to add water wells to increase water supply reliability during drought years.
- Improve wildfire management coordination between the Town, the Great Basin Unified Air Pollution Control District, Cal FIRE, and U.S. Forest Service (USFS), to mitigate economic impacts of prescribed or managed fires.
- Work with Mammoth Lakes Fire Protection District to create a Land Inventory using GIS to identify fuel reduction status and points of contact.

HOW TO DRAFT A STRATEGY

Each goal drafted in Step 3.2 should have a set of strategies to support its achievement. Strategies will be actions that respond to the problem statements prepared in Step 3.1. As part of strategy development, the project team should answer these questions:

- Who will be responsible for the strategy?
- How it will be achieved?
- How it will be assessed?
- What is needed to accomplish it?

Similar to the process for drafting goals, it is helpful to review existing plans and programs for strategies that could address specific vulnerabilities identified in Phase 2 before drafting new strategies.

Strategy development is iterative, especially in an inclusive and transparent process with the community. The initial round of strategy development could be a brainstorming activity that results in lists of ideas that can be revised later in response to more stakeholder feedback, and to fit the structure and requirements of the implementation mechanism. Developing strategies with agency and community stakeholders identifies opportunities to integrate adaptation planning into multiple community programs and plans.

For example, increased vulnerability of infrastructure to wildfire could be addressed through updates to a general plan safety element or an LHMP. Increased vulnerability of people to extreme heat may require coordination with local public health officials. Strategies that will be integrated into a general plan should be consistent with the current community general plan structure and the *General Plan Guidelines*.⁹

Strategies that are developed for a safety element should follow the specifications in Government Code § 65302(g)(4) ([see text box above](#)). Strategies that will be part of an LHMP should be consistent with FEMA's guidance (see text box on following page). Strategies may not fit neatly into the plan because each plan type has different objectives, organizational structure, and time frames.

It is common to categorize strategies to respond to different options for implementation. The *Regional Resilience Toolkit*¹⁰ provides examples of strategy categories or types that have been incorporated into the example strategies in Appendix C. These categories include operational; programmatic; plans, regulations, and policy development; capital improvement/infrastructure projects; education, outreach, and coordination; and evaluation.¹¹

- **Programmatic.** Strategies to expand or create new programs, activities, and initiatives.
- **Plans, regulations, and policy development.** Strategies to develop or revise policies, plans, regulations, and guidelines.
- **Capital improvement/infrastructure projects.** Strategies designed to address physical and functional deficiencies and needs in the built and natural environment.
- **Education/outreach/coordination.** Strategies related to initiating or expanding partnerships and relationships, communicating and sharing information, and expanding awareness.
- **Evaluation.** Strategies to improve feedback, input, and data and information or conduct further or new analyses.

The *Regional Resilience Toolkit* has worksheets and tools to support strategy development. These worksheets provide sources for and examples of strategies that address common hazards and assets.

FEMA LHMP Guidance for Mitigation Actions

LHMPs are required to have mitigation goals, actions, and a plan for implementation, which provides a framework to identify, prioritize, and implement actions to reduce the potential for harm from climate change–related effects. FEMA suggests considering vulnerability assessment findings, outreach findings, community goals, and state hazard mitigation goals when developing hazard mitigation measures.¹²

FEMA suggests the following types of mitigation actions to address long-term vulnerability:

- Local plans and regulations
- Structure and infrastructure projects
- Natural system protection
- Education and awareness programs¹³

Uncertainty

Given the inevitable margin of uncertainty in future impacts and societal conditions, communities should develop policies and strategies consistent with several principles. The “low/no regrets” principle suggests that actions taken would still have value even if future conditions are different from those projected (for better or worse). For example, conserving additional land in flood-prone areas gives a community an open space benefit even if worse flooding does not materialize. Conversely, seawalls can help protect coastal areas, but they cause more rapid erosion elsewhere and are not an effective long-term adaptation strategy, so the resources to implement this action could have been better spent elsewhere.

The “low/no regrets” principle is good for short- and mid-term decision making but as timeframes extend and uncertainty increases potential “regret” becomes more difficult to determine. The Center for Ocean Solutions¹⁴ suggests using a “triggers approach” derived from the adaptive pathways model. The idea is to identify the general conditions under which a policy may fail. For example, a seawall to mitigate sea-level rise may fail when sea-level rise reaches a certain point or coastal storms change in frequency or intensity. This identification can then be used to establish “triggers” or “thresholds” when modified or new mitigation strategies would be required. The establishment of triggers or thresholds can be integrated into Phase 4.

The “triggers approach” can be extended by developing adaptive pathways (see Appendix B for an overview of the adaptive pathways approach, examples, and additional resources.) Adaptive pathways begin by developing future scenarios of climatic and social conditions to identify when a policy may fail. The idea is then to develop strategies that are either robust for any future scenario or can be modified or changed without significant cost or effort (and to identify in advance how these changes would be implemented). It may be the case, though, that future conditions would require a shift to a very different policy approach. For example, increased levels of sea level rise could trigger a policy shift from coastal armoring to coastal retreat. The adaptive pathways approach is a way to tease out these future possibilities to potentially inform current policy development. It is a novel and advanced approach that some communities may want to consider.

EXAMPLE ADAPTATION STRATEGIES

In support of Phase 3, Appendix D provides example adaptation strategies that can be implemented on a local or regional level to address many potential climate impacts. These are not intended as a comprehensive list of strategies but as thought starters to help the project team draft adaptation strategies tailored to the community's circumstances. Adaptation strategies are organized by sector and respond to climate hazards common in that sector. Appendix D examples include a description of the climate change effect and strategy, factors to consider, the category or strategy type, sector overlap if applicable, potential responsible agency types, possible funding sources, and examples and/or sources for the strategy itself. Strategies will require adjustment or greater specificity for application in a community. Communities should expect to go beyond these strategies to address all their high-priority adaptation needs. This may include bolstering programs that are already locally effective or developing innovative strategies based on particular characteristics.

Climate change impacts often interact, and some adaptation strategies may address multiple climate impact areas. The discussion of each strategy notes overlaps with other climate impact areas. Also, an adaptation strategy is easier to implement if it has co-benefits—that is, if it addresses other community needs in addition to climate change adaptation.

Strategies can direct budgeting and capital spending, education and outreach, program delivery, operational changes, project review, and regulations and permitting, among others. Strategies can be mandatory or voluntary, perhaps with incentives or disincentives. Local governments should look at all the strategy implementation powers, tools, and partnerships they possess to move their community to a more resilient future.

Co-benefits

A co-benefit is an additional beneficial result of an action to increase resiliency, such as greenhouse gas reduction or increased open green space. When evaluating adaptation strategies, the project team should consider additional purposes they could serve:

- Cost savings
- Air quality improvement
- Water quality protection
- Stormwater management
- Increased public safety
- Recreation, open space, and tourism
- Greenhouse gas emissions reduction
- Public health improvement
- Enhanced or restored natural systems
- Economic continuity

Ideally, all strategies will have one or more co-benefits. In some cases, the co-benefit may be more compelling than the primary adaptation benefit. For example, identifying land to preserve as open space as a wildfire buffer has a co-benefit as a community amenity. Clearly showing co-benefits of strategies is effective for communicating to the public and decision-makers the value of doing climate adaptation planning. Co-benefits can be linked to other community planning goals and thus support the principle of integrating climate adaptation across all community plans and policies.

Example: Gateway Cities Climate Action Planning Framework

The Gateway Cities Council of Governments prepared a regional [Climate Action Planning Framework](#) to help its member communities advance their goals for economic development, public health, air quality, climate resiliency, equity, and job creation while planning for the impacts of climate change. The Framework includes a GHG Reduction Measure Toolkit and a Climate Change Adaptation Toolkit. The Climate Change Adaptation Toolkit provides cities with baseline information on climate hazards and adaptation measures to help prepare them for the potential impacts of climate change. It includes Climate Adaptation Model General Plan Language to help cities integrate climate change adaptation into their climate action plan, general plan, and/or LHMP, and meet the requirement of State legislation (i.e., SB 379).

Additional Resources for Adaptation Strategy Development

- California Climate Adaptation Clearinghouse: <https://resilientca.org/>
- *State General Plan Guidelines, Appendix A Example Model Goals, Objectives, and Policies and Programs*: http://opr.ca.gov/docs/OPR_Appendix_A_final.pdf
- U.S. Climate Resilience Toolkit, Appendix B: <https://toolkit.climate.gov/>
- Climate Adaptation Knowledge Exchange (CAKEx): <https://www.cakex.org/>
- Georgetown University Adaptation Clearinghouse: <https://www.adaptationclearinghouse.org/>
- Urban Sustainability Directors Network's *Guide to Equitable, Community-Driven Climate Preparedness Planning*: https://www.usdn.org/uploads/cms/documents/usdn_guide_to_equitable_community-driven_climate_preparedness-high_res.pdf
- NAACP's *Our Communities Our Power: Advancing Resistance and Resilience in Climate Change Adaptation Action Toolkit*: <https://live-naacp-site.pantheonsite.io/wp-content/uploads/2019/04/Our-Communities-Our-Power-TOOLKIT-FINAL.pdf>
- Local and Regional Government Alliance on Race & Equity's *Racial Equity: Getting To Results* https://www.racialequityalliance.org/wp-content/uploads/2017/09/GARE_GettingtoEquity_July2017_PUBLISH.pdf
- The Greenlining Institute's *Making Equity Real in Climate Adaptation and Community Policies and Programs: A Guidebook* <https://greenlining.org/publications/reports/2019/equitable-building-electrification-a-framework-for-powering-resilient-communities/>

ADDITIONAL CONSIDERATIONS FOR STRATEGY DEVELOPMENT

Equity

Vulnerability has underlying historical roots that should be considered when developing strategies. The Movement Strategy Center, an organization that supports visions and relationships necessary to move from incremental change to transformation, describes vulnerability as a consequence and not a condition.¹⁵ For example, a community that has been underserved by health care may be more vulnerable to health impacts from extreme heat events. Cooling centers are a common strategy to deal with the immediate impacts of heat, but strategies aimed at improving overall public health should be considered as well.

The Asian Pacific Environmental Network's *Mapping Resilience* report identifies numerous principles for more equitable planning:¹⁶

- Ensure meaningful and active engagement with the most impacted communities.
- Practice both adaptation and mitigation simultaneously.
- Promote equity by prioritizing and protecting the most vulnerable populations.
- Encourage actions that provide multiple benefits.
- Consider unintended consequences and avoid maladaptive practices that cause harm.
- Maximize transparency and accountability.
- Drive decision making through strong scientific evidence and local knowledge.
- Create adaptive processes that provide flexibility and opportunity for revision.
- Advance a just transition toward a diversified and regenerative economy.¹⁷

Additionally, the Climate Justice Working Group has 10 guiding principles for adaptation strategy development (see [text boxes later in this section](#)). Similarly, ICARP has 7 principles (see [ICARP box in the Introduction](#)). These principles focus on helping frontline communities, collaborating with multiple stakeholders, avoiding maladaptation (adaptation strategies that are actually harmful for the community) and promoting co-benefits in strategy development.

Climate Justice Working Group

The Climate Justice Working Group offers the following vision, principles, and policy and funding recommendations to guide California's adaptation efforts through 2025.

Vision

By 2030, we envision a resilient California where our most vulnerable communities are ready to respond to the physical, environmental, economic and health impacts brought on by climate change, and thrive after climate events. California must proactively bring public and private investments into vulnerable communities to foster robust and thriving communities that are engaged, healthy, just, economically viable, and safe from environmental threats.

Guiding Principles

1. Actively engage frontline communities in research, planning, implementation, education, and decision making about potential climate change impacts and about the development, funding, implementation, and evaluation of adaptation and resilience policies. Create enabling conditions for frontline communities' early, continuous, and meaningful participation in the development of adaptation policy and funding decisions. Partner with local leaders and community-based organizations to enhance the effectiveness of adaptation research and innovation, education, decision making, and policy implementation. This overarching principle applies to all of the subsequent climate justice principles and recommendations.
2. Identify and reduce frontline communities' vulnerabilities to climate change, with a focus on physical, economic, and quality-of-life factors.
3. When planning for infrastructure investments, prioritize actions that increase the resilience of essential facilities and associated services that provide health care, food, drinking water, evacuation routes, and emergency shelter for frontline communities. Reduce community health and safety risks from potential damage to sensitive facilities such as water treatment plants, hazardous waste facilities, and power plants and transmission lines.

Climate Justice Working Group (continued)

4. Promote adaptation policies, funding decisions, and implementation actions that increase training, employment and economic development opportunities among frontline communities. Where applicable, prioritize opportunities that advance a “just transition” from dependence on fossil fuels and further enhance community resilience to the impacts of climate change.
5. Promote and support regional and local adaptation efforts that generate multiple benefits across sectors.
6. During planning and implementation of land use and community development decisions, consider and avoid negative consequences of actions, including displacement, that could inadvertently increase frontline communities’ and individuals’ climate vulnerability.
7. Promote adaptation co-benefits of toxic chemical and greenhouse gas reduction policies by supporting those that also reduce frontline communities’ climate vulnerability and enhance their resilience.
8. Ensure that adaptation policies, funding decisions, and implementation actions comply with relevant laws and policies that are designed to protect and advance civil rights and environmental justice.
9. Promote local, regional, and state agency transparency, accountability, and adaptive management by developing and applying easy-to-understand climate justice metrics, data and information resources, and annual reporting protocols.
10. Identify needed funding, establish needed funding mechanisms, and allocate adequate funding to support adaptation policy development, implementation, and evaluation in frontline communities.

Source: *The Climate Justice Working Group, Advancing Climate Justice in California: Guiding Principles and Recommendations for Policy and Funding Decisions, 2017, Accessed August 2019, <https://www.healthyworldforall.org/en/express-img/17081516-3570-img1.pdf>.*

Step 3.4: Prioritize Adaptation Strategies

In Step 3.3 the project team and community developed adaptation strategies based on the vulnerability assessment and community engagement (see Section 3.5, Conduct Outreach and Engagement). In this step the project team should prioritize those adaptation strategies. This will aid in making decisions about complex issues, and it will make the strategy development process transparent and easier to communicate to community staff and residents. Prioritization of strategies should consider several factors:

- **Vulnerability Score (from Step 2.4).** Which strategies will be effective at addressing assets or systems with the highest vulnerability?
- **Administrative Operability.** Who will implement the strategy and what is their organizational capacity?
- **Cost.** How much will the strategy cost to implement?
- **Funding.** What resources are available to pay for implementation?
- **Bond funding.** (e.g., LA County's Measure W, California Prop 68), tax programs (e.g., Bay Area's Measure AA, tax-increment financing), public-private partnerships, and others as summarized in Phase 4.
- **Effectiveness/Benefit.** How effective is the strategy at addressing the problem and/or what is the benefit? What future losses might be avoided?
- **Efficiency.** How do the costs compare to the effectiveness/benefit? (What is the benefit-cost ratio?) What are direct and additional indirect benefits of the strategy?
- **Co-benefits.** What are the co-benefits of the strategy?
- **Environmental Performance.** What are the potential environmental impacts or considerations of implementing the strategy? Does the strategy support nature-based approaches and natural systems?
- **Equity.** Who pays the cost and who receives the benefits (including co-benefits)?
- **Legality.** Is the strategy consistent with applicable laws?
- **Responsiveness/Appropriateness.** How responsive or appropriate is the strategy to the needs and conditions of everyone in the community, especially those on the frontline?
- **Timing.** When will implementation begin and how long will it take?
- **Monitoring.** How will the strategy be tracked and monitored for effectiveness? Is there a key performance indicator?

Yurok Tribe and Climate Change: An Initial Prioritization Plan

The Yurok Tribe in northern California prepared a Climate Change Adaptation Plan for Water & Aquatic Resources (2014–2018) using a similar multiphase adaptation planning process. Step 3 of the process was “Identify and Prioritize Solutions.” A particular focus were the importance of traditional knowledge derived primarily from interviews with elders and the adoption of holistic thinking in all phases of the process. From these was derived a set of four criteria for evaluating potential strategies (Section 8.2):

1. Address important areas of concern [identified in the vulnerability assessment].
2. Are in line with the Yurok holistic world view on the inter-connectedness of all things.
3. Provide benefits across multiple habitats and species.
4. The degree of benefit provided and whether they might cause harm in some way.

As an example, one strategy that came from this approach was: “Continue to reinvigorate traditional Yurok values and practices.” The plan states: “Traditional Yurok values and practices are a form of resilience that have helped Yurok survive and thrive amidst the numerous challenges they have experienced (Ch. 1). ‘[These values] have carried Yurok throughout time,’ notes Joe Hostler, with the Yurok Tribe Environmental Program, and will help Yurok in a future with climate change as well” (Section 8.2).¹⁸ The strategy then details specific actions to implement the strategy and address climate change.

Cost/Benefit Assessment for Adaptation Actions

The two resources below illustrate ways in which communities can assess and balance the benefits associated with adaptation actions and the costs. Balancing these is critical to communities to achieve the most effective and implementable outcomes.

- Using a NOAA framework, the San Diego Regional Climate Collaborative compared the trade-offs (cost vs. benefits) of various coastal adaptation strategies. This assessment evaluated the utility of the NOAA Framework and demonstrated the outcomes for two southern California cities. The outcomes balanced costs of the strategies against the potential losses associated with various scenarios.¹⁹
- In *Economic Analysis of Nature-Based Adaptation to Climate Change: Ventura County, California*, the Nature Conservancy assessed the potential costs and benefits of engineered measures (coastal armoring) compared to nature-based adaptation measures. The Nature Conservancy's publication summarizes the evaluation methods and the findings as an example to other jurisdictions. This type of analysis gives a community insight into the reasoning behind actions to address sea level rise.²⁰

The *Regional Resilience Toolkit* suggests looking at four “frames” when prioritizing strategies:²¹

- **Society and equity.** Effects on communities and the services on which they rely, with specific attention to disproportionate impacts due to social, political, or economic inequality.
- **Economy.** Economic aspects that may be affected, such as costs of physical infrastructure damages or lost revenues during recovery periods.
- **Environment.** Environmental aspects that may be affected, including ecosystem functions and services and species diversity.
- **Governance.** Factors such as organizational structure, ownership of assets, management responsibilities of assets, jurisdictional mandates, regulations, or funding options that affect how a community can respond to a hazard.

The *Regional Resilience Toolkit* includes an Evaluation Criteria Worksheet (Appendix B, Step 3.3, pages 3.8 to 3.9) that places these frames into a scoring matrix to help evaluate and prioritize which strategies to implement. The considerations listed above can be used to effectively evaluate the strategies. The project team, advisory groups, and key stakeholders who would have a role in implementation should be involved in scoring and prioritizing strategies. It is important to get feedback from a variety of stakeholders outside of the core project team, especially those representing frontline communities, because they will most likely evaluate the strategies differently. To develop an effective implementation plan, it is essential to get input on who could assist and what could possibly hinder the implementation of a strategy.

Each strategy can be scored by whether it meets the criteria, does not meet the criteria, or has a negative effect. Higher scores typically demonstrate a higher priority and feasibility of implementation. Based on these scores, the strategies can be grouped under Very High Priority, High Priority, and Important. Multiple scores can be averaged across worksheets.

The [Adapting Rising Tides \(ART\) Program](#) offers an online ART Portfolio, which includes reports, resources, examples, how to guides, and supplies to support climate adaptation planning. ART Supplies includes a helpful [How-To Guide, “Developing Evaluation Criteria,”](#) which provides more information and guidance to support preparation of an evaluation worksheet.

Step 3.5: Conduct Outreach and Engagement

There are many creative, easy, and affordable ways to involve stakeholders in brainstorming and drafting adaptation strategies. This outreach is meant to build on the information about climate change effects and the involvement with the vulnerability assessment to now develop solutions.

OUTREACH TO DEVELOP ADAPTATION STRATEGIES

Several methods of engagement may be appropriate to gather ideas from community members, including:

- Pop-up booths at community events
- Design charrettes
- Focus groups
- Interactive workshops
- Online and mobile engagement
- Open houses
- Surveys
- Tours

What is important for any engagement activity is that it be well prepared and smoothly facilitated. The *Regional Resilience Toolkit* is a good resource for meeting logistics and a workshop checklist if templates are needed to help plan a successful event.²²

- Provide assistive technologies (products, equipment, and systems) to help people who may have difficulty speaking, typing, writing, remembering, pointing, seeing, hearing, or learning.

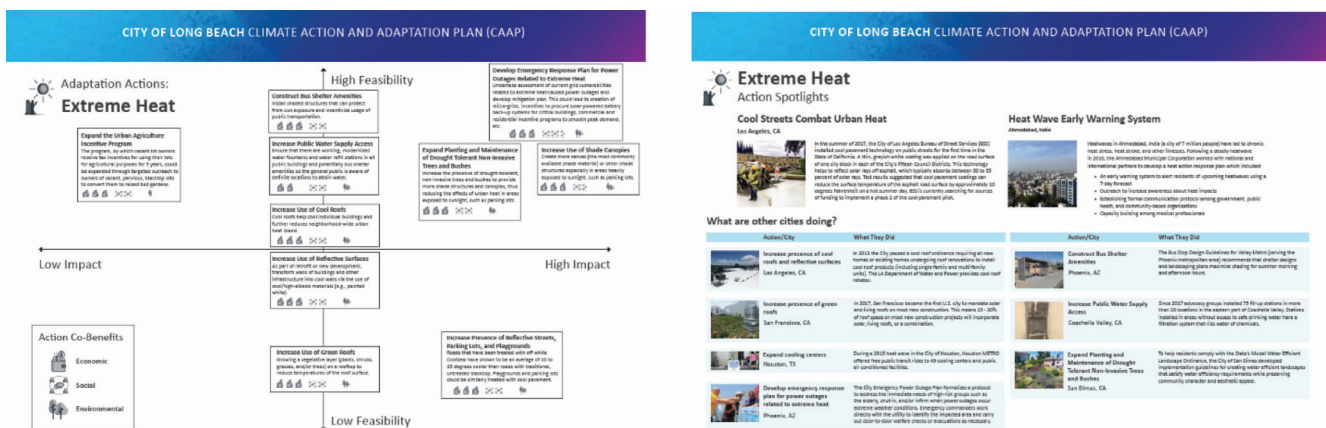
OUTREACH TO PRIORITIZE ADAPTATION STRATEGIES

Once stakeholders have brainstormed adaptation strategies, the project team should categorize and prioritize strategies before seeking additional feedback from the community. One way to help with this would be to summarize and visually illustrate aspects of each strategy, which could include:

- A cost or feasibility estimate
- A list of co-benefits, including equity implications
- Downsides to adopting the strategy
- Potential barriers or challenges
- Implementation needs
- Case study or example
- Other important information from Step 3.4

Graphically or visually presenting this information for each strategy makes it easy to review and assess through online surveys, in-person workshops, or other types of engagement. An example of how adaptation strategies could be presented to the community is taken from the Long Beach *Climate Action and Adaptation Plan* workshops and shown on Figure 14.

Figure 14. Long Beach Adaptation Strategy



Source: *City of Long Beach, Climate Action and Adaptation Plan, 2019*, accessed August 2019.

To take strategy review and prioritization a step further, some government agencies have developed games to engage residents in developing adaptation strategies. For example, the County of Marin created “Game of Floods” (see Figure 15) to educate the community about sea level rise vulnerability and adaptation. The game allows players to design collective solutions that protect airports, wastewater treatment facilities, individual properties, and more. Players work around the board collaboratively and discuss adaptation strategies, considering their effectiveness, impacts, uncertainty, and relative costs.

Figure 15. Example Game to Engage Residents



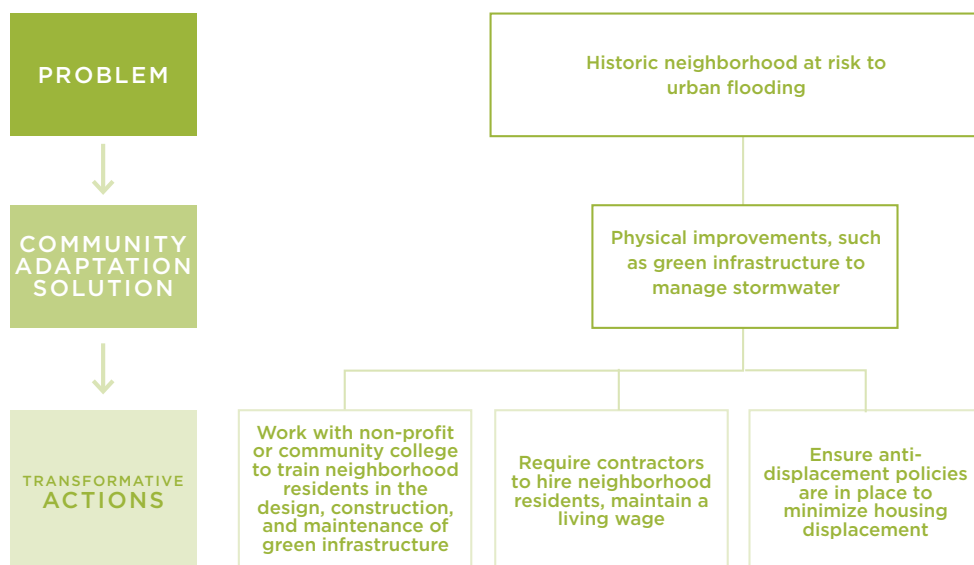
Source: County of Marin, Game of Floods, 2019, <https://www.marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/game-of-floods>.

The project team should be prepared to receive extensive feedback on the adaptation strategies and to interpret how community members understand and value each of the strategies presented. It is helpful to develop a method for capturing and incorporating feedback through sticky notes, sticky dots, photos, video recordings, or online analysis. The entity leading the outreach process should also post the outcomes of the voting and workshop summaries online or in other publicly accessible locations for transparency.

ENSURING EQUITABLE ADAPTATION STRATEGIES

During the development of adaptation strategies, the project team and community members should think about how strategies can be aligned with equity principles and how they can be transformative, addressing social inequities as well as climate change impacts. Figure 16 shows an example approach to developing adaptation strategies and achieving equity.²³

Figure 16. An Example of Community Adaptation Solutions and Transformative Actions



Source: Tina Yuen, Eric Yurkovich, Lauren Grabowski, and Beth Altshuler, [*Guide to Equitable Community-Driven Climate Preparedness Planning, prepared for Urban Sustainability Directors Network, May 2017, page 43, accessed November 2019.*](#)

As the adaptation strategies are refined, it is good to take a step back and reflect if the strategies are realistic and equitable. Table 12 shows a set of questions developed by Greenlining Institute in *Making Equity Real in Climate Adaptation and Community Resilience Policies and Programs: A Guidebook*.²⁴ The questions are partly based on the “Resiliency Guidebook: Equity Checklist” developed by the California Governor’s Office of Planning and Research.²⁵ For consistency with the guidance and terms used in the APG, Table 12 uses the term “strategy” instead of “program or policy,” which is the term in Greenlining’s original version of this table.

TABLE 12. QUESTIONS TO ENSURE EQUITY IN ADAPTATION PROCESS

TOPIC	QUESTIONS
Identifying vulnerable populations	Which vulnerable populations may be impacted by or could benefit from the strategy? How has the community identified these populations?
Targeted Funding	Does the strategy have dedicated set-asides for vulnerable communities?
Accessibility	Are the benefits of the proposed strategy broadly accessible to households throughout the community, particularly communities of color, low-income populations, housing-insecure households, people with disabilities, people experiencing homelessness, tribal and indigenous communities, and immigrant communities?
Engagement	Have you designed a process to collaborate with vulnerable populations that engages and empowers them in a meaningful, authentic and culturally appropriate manner? Which best practices for community engagement are you implementing?
Assured Benefits	What mechanisms will you use to assure particular benefits to vulnerable populations? (e.g. provide technical assistance or capacity building, provide jobs, provide extra financial resources or investments)
Disproportionate Impacts	Does the strategy generate burdens (including displacement and increased costs), either directly or indirectly, on vulnerable populations? If yes, how will you address and mitigate them?
Capacity Building	How will the strategy provide for local capacity building? (e.g. through funding, expanded knowledge base or other resources?)
Relationship Building	Does the strategy help foster the building of effective, long-term relationships and trust between diverse communities and government? Does the strategy align with and support existing community priorities, creating an opportunity to leverage resources and build collaborative partnerships?

TABLE 12. QUESTIONS TO ENSURE EQUITY IN ADAPTATION PROCESS

TOPIC	QUESTIONS
Shared and Multiple Benefits	<p>How may the strategy decrease inequality in income or wealth?</p> <p>How does the strategy increase adaptive capacity and/or reduce exposure climate change effects in frontline communities?</p> <p>Can the benefits of the strategy be targeted in progressive ways to reduce historical or current disparities?</p> <p>How may the strategy ensure safety and improve health outcomes for vulnerable populations?</p>
Economic Opportunity	<p>Does the proposed strategy support vulnerable communities through workforce development, affordable housing, or contracting opportunities?</p>
Accountability	<p>How will you evaluate the equity impact of the strategy?</p> <p>Does the proposed strategy have appropriate accountability mechanisms to ensure that vulnerable communities will equitably benefit and not be disproportionately harmed?</p>
Adaptive Management	<p>If data shows you are not on track to meet the equity outcomes, do you have a plan to adjust and correct course?</p>
Communication	<p>How will you communicate progress to stakeholders?</p>

Phase 3 Wrap-Up

Communities have a wide range of potential strategies to improve resilience to a changing climate. These strategies can take the form of new programs or initiatives, policies, regulations, physical construction projects, and evaluation efforts, among others. Strategies should be feasible and appropriate for the community with its available resources. They should be responsive to the issues identified in the vulnerability assessment, address overarching issues such as equity, and provide co-benefits to the community. They should also be flexible enough to accommodate the inherent uncertainty in climate change planning. Once a community has identified and prioritized the adaptation strategies, the community can move into the fourth phase of adaptation planning, Implement, Monitor, Evaluate, and Adjust.