

# REGIONAL RESILIENCE TOOLKIT

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## APPENDIX A ADDITIONAL INFORMATION

This appendix was developed as part of the  
U.S. Environmental Protection Agency's Regional Resilience Toolkit.



**Association of  
Bay Area Governments**



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**Photos:** All photos courtesy of BluePoint Planning unless otherwise noted.



## Appendix A Step 1. ENGAGE

Photo: Small group exercise

Testing the vulnerability assessment tools at Central Coast Climate Collaborative workshop.

### ■ Expected Outcomes

- ✓ An understanding of why trust is so important, and how to build it
- ✓ Tools for effective storytelling
- ✓ A Stakeholder Map that includes your project team, advisory group, leadership and decision makers, interest groups, and the broader community
- ✓ An Engagement and Outreach Plan that identifies goals, target audiences, key messages, tools for outreach, strategies for outreach, and an implementation plan
- ✓ A Meeting Roadmap to help plan outreach milestones
- ✓ Practical tools for planning and running a successful meeting or workshop

### ■ Worksheets in Appendix B

#### • 1.1 Identify Stakeholders

*This worksheet is designed to be used by the initial project team to identify three types of project participants: any additional project team members, an advisory group comprised of key stakeholders who will actively participate in the project, and other targeted stakeholders including interest groups and leadership that will need to be apprised of decisions as they are made.*

#### • 1.2 Stakeholder Mapping

*Use this exercise with the project team to map out interests and participation levels, and evaluate who the stakeholders are and how to engage them.*

#### • 1.3 Workshop Checklist

*Use this checklist to ensure that you have thought through all of the practical details of the meeting beforehand, and that you have everything accounted for on the day of the workshop.*

### ■ Resources

#### • Appreciative Inquiry

The AI Commons is a compilation of practical tools on Appreciative Inquiry, which is an approach to community planning and engagement that focuses on positive aspects of the community that people want to see more of, rather than on problems or things people want to change.

[appreciativeinquiry.champlain.edu](http://appreciativeinquiry.champlain.edu)

#### • Adapting to Rising Tides Good Planning Guide: Stakeholder Engagement

Use this guide to develop an approach for engaging stakeholders as part of a project team to ensure that the necessary expertise, values, and viewpoints are included in all stages of the assessment and implementation process to build resilience. While this guide, like all ART materials, is geared towards climate adaptation, the concepts can be used for assessment of any hazard.

[www.adaptingtorisingtides.org/howto/art-supplies/](http://www.adaptingtorisingtides.org/howto/art-supplies/)

#### • Asian Pacific Environmental Network

APEN convenes community partners and groups with diverse, leading edge perspectives for environmental, social, and economic justice. [open4ej.org](http://open4ej.org)

## Appendix A Step 1. Engage

- **Center for Community Action and Environmental Justice**

The Center for Community Action and Environmental Justice is a progressive, base-building, nonprofit organization that convenes people on cooperative community processes to improve social and environmental planning. [ccaej.org](http://ccaej.org)

- **Coastal Hazard Resilience Planning in California Flipbook**

This flipbook, developed by NOAA's Office for Coastal Management, the US Geological Survey, FEMA, and state partners can be used to spark ideas for addressing sea level rise and coastal flooding concerns by integrating multiple local planning initiatives. The ideas presented may be applicable to other hazards, as well. It provides a starting point for communicating the benefits of aligning hazard actions in multiple local plans and suggestions for doing so, specifically for the Local Hazard Mitigation Plan, General Plan, Climate Adaptation Plan, and Local Coastal Program. The resource is available in hard copy through USGS and NOAA and on [resilientca.org](http://resilientca.org)

- **Consensus Building Institute**

This group specializes in working with communities that face sea level rise retreat planning. Its online tools and on-the-ground facilitation skills are widely respected. [cbi.org](http://cbi.org)

- **FEMA Social Media**

FEMA offers a series of on-site courses instructing schools, first responders, and other organizations on using social media in disaster response and recovery. [www.fema.gov/social-media](http://www.fema.gov/social-media)

- **Whole Community: Planning for the Unthinkable Tabletop Exercise**

FEMA offers free tabletop exercises to help organizations respond to a disaster and fill gaps in emergency management plans. FEMA offers exercise both for the private sector ([www.fema.gov/emergency-planning-exercises](http://www.fema.gov/emergency-planning-exercises)) and for communities ([www.fema.gov/media-library/assets/documents/26713](http://www.fema.gov/media-library/assets/documents/26713)).

- **Videos on Earthquake Risks**

- **HayWired Scenario Video**

The HayWired scenario video depicts a scientifically realistic earthquake sequence, and its cascading impacts. The video was developed with USGS and local partners. [www.usgs.gov/media/videos/haywired-scenario-movie](http://www.usgs.gov/media/videos/haywired-scenario-movie)

- **Earthquake Ready Burnside Bridge**

Multnomah County in Portland, Ore. released a video to show the public how a Cascadia Subduction Zone earthquake could impact one of the city's lifelines. [multco.us/cascadia-subduction-zone-earthquake-simulation](http://multco.us/cascadia-subduction-zone-earthquake-simulation)

- **International Association of Public Participation**

A wide range of resources and tools for effective community and stakeholder outreach. [www.iap2.org](http://www.iap2.org)

- **NOAA's Introduction to Stakeholder Participation**

National Oceanic and Atmospheric Administration's guidance including a participatory mapping guide and training. [coast.noaa.gov/digitalcoast/training/stakeholder.html](http://coast.noaa.gov/digitalcoast/training/stakeholder.html)

- **Public Awareness and Public Education for Disaster Risk Reduction: A Guide**

This document provides guidance on planning and developing public awareness and public education efforts for disaster risk reduction. [www.ifrc.org/Global/Publications/disasters/reducing\\_risks/302200-Public-awareness-DDR-guide-EN.pdf](http://www.ifrc.org/Global/Publications/disasters/reducing_risks/302200-Public-awareness-DDR-guide-EN.pdf)

- **Resilient America Roundtable: Disaster Resilience: A National Imperative; 2012.**

The National Academy of Sciences studied the state of disaster resilience in the U.S. and identified promising approaches to engage communities and build resilience planning. [www.nap.edu/catalog/13457/disaster-resilience-a-national-imperative](http://www.nap.edu/catalog/13457/disaster-resilience-a-national-imperative)



# Tactical Tools for Engagement

## Stakeholder Mapping

There are a wide number of types of stakeholders that must be considered in developing an effective engagement and outreach effort. Below is a summary of the types that should be considered and identified for the planning effort.

### Overall Community Engagement

In each community, a large percentage of people may not participate directly in the planning effort regardless of the effectiveness of the outreach campaign. However, it is essential to provide information and the opportunity for the largest number of people possible to learn about the effort and to potentially participate at some point in the process. To reach this broad group, engagement activities such as community workshops, open houses, online engagement, mailings, flyers in public locations, a project website, and similar tools are useful.

### Targeted Community Outreach

Within the community, some groups will be impacted or potentially impacted by the plan, but similar to the category above, are unlikely to attend a formal meeting or be actively involved. For these groups, there is a higher need and interest to build awareness and get some level of input into the process. To engage this group, more targeted engagement efforts such as holding small coffee talks in the targeted neighborhood, holding events at the local farmers market or church, and other similar events that 'go to the community' rather than ask them to attend an event outside of their daily lives, are needed.

### Targeted Stakeholders

#### Project Team

A project manager should lead the internal project team and involve staff from relevant city departments. This staff will do the technical work behind the assessment; managing the project, and coordinating other stakeholders and engaging with their managers, executive staff, and elected officials to ensure that the process is moving along smoothly.

#### Leadership and Decision Makers

Leadership and decision maker engagement is critical to the process and implementation. A challenge with this group is that as stakeholders, they may have different priorities and varying levels of influence. Increased time and efforts should be invested to understand who and where the levers of power reside to make the plan a success. Decision makers should include internal departmental leads as well as other relevant city, county, and regional leaders. They may fall within government agencies, but also within a nonprofit network, the business community, or high profile individuals in the community.

### Interest Groups

Interest groups include organizations, non profits, and neighborhood groups who are typically actively involved or who have a clear stake in the effort. Engaging interest groups through small group meetings and interviews provide input from the organizations, interest groups, and multi-cultural communities that may not be effectively reached in broad community engagement efforts and require additional, targeted engagement. Some individual representatives may also be on the advisory group.

### Underrepresented Groups

Often the disasters that create the most significant impacts disproportionately affect unrepresentative communities. Inclusion, equity, and authentic engagement require the active and comprehensive participation of these audiences. Identifying underrepresented audiences is challenging. Each community is different, but often Environmental Justice (EJ) community members, including but not limited to non-English speakers, disadvantaged communities (DACs), Native Americans/tribal communities, the homeless, and similar groups rarely participate proactively in planning efforts. This can be due to many factors including disillusionment with government and related processes, lack of interest, time, and resources to participate, limited information about an issue, and lack of information of the relevance of a plan to their lives.

### Advisory Group

A project advisory group should include key stakeholders such as city staff not part of the project team, representatives from non-governmental and community based organizations, community members, or representatives from private entities and organizations representing the private sector, economic development, and/or business community. The advisory group provides credibility and subject matter expertise that can assist with public and political support and support the project team with volunteer time or funding.

### SB1000 Legislative Language

*(Source: California Legislative Information, Senate Bill 1000, Chapter 587, [leginfo.legislature.ca.gov](http://leginfo.ca.gov).)*

(h) (1) An environmental justice element, or related goals, policies, and objectives integrated in other elements, that identifies disadvantaged communities within the area covered by the general plan of the city, county, or city and county, if the city, county, or city and county has a disadvantaged community. The environmental justice element, or related environmental justice goals, policies, and objectives integrated in other elements, shall do all of the following:

(A) Identify objectives and policies to reduce the unique or compounded health risks in disadvantaged communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.

(B) Identify objectives and policies to promote civil engagement in the public decision making process.

(C) Identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.

### Best Practices for Telling a Story

**Present information in an unbiased, objective way.** It is imperative that the project lead (and the representatives communicating the messages) be open and unbiased. Stakeholders will lose faith if there is a sense that information is either inaccurate or critical facts are missing.

**Learn to navigate tough questions and answers.** When taking questions, whether it be from a funder, an interested community member, or general audience, it is essential to **be a good listener, not be defensive**, and to accept not having all the answers. The speaker can offer to get back to someone with a response at a later date if they do not have the information or do not feel comfortable discussing a topic within a larger group. To prepare for tricky questions, work with someone on the project team and brainstorm some of the hardest questions that might be offered to develop good, strong responses.

**Use community friendly, 'layperson's', language.** The project team should try to use language that resonates with the layperson, and is not overly technical in nature. This is true for meetings with community members, advisory groups, or interest groups. Stay away from acronyms and complicated or technical terms.

**Tailor the messages to stakeholders' needs and agenda.** It is essential to be aware of the values and concerns of the various audiences receiving the information. Emphasize tailored messages designed for specific audiences instead of generic concepts. Choice of words is critical. Avoid politically charged terms.

**Communicate in multiple languages.** To be as inclusive as possible, develop materials and messages that are designed - not just translated - for different cultures and languages. This means the messages may need to be altered to resonate with a particular audience, and photos and graphics changed to be more in line with the audiences' views. Avoid online translation tools when possible. A good translation is often expensive, but worthwhile.

## Engagement and Outreach Plan

### Goals and Outcomes

The first section of the Engagement and Outreach Plan (E&OP) should be the project's engagement and outreach goals and expected outcomes. These overarching goals and objectives should help to frame the approach to engagement and prioritize resource allocation. Goals should incorporate necessary relationships and partnerships, the community's stakeholders (stakeholder mapping), and the information, time investment, and kind of input that is appropriate for the project.

### Target Audiences

Identify, describe, and categorize the target audiences for the project. Further, identify what level of input and the objective for engagement for each audience category. This can be divided as in the stakeholder map, [Worksheet 1.2 Stakeholder Mapping](#), by the four quadrants or simplified to primary, secondary, and other depending on the complexity and detail desired for the plan.

## Key Messages and Benefits

The key messages encompass critical information to be communicated to each audience group, including benefits directly tied to the particular audience. These message should be used in every interaction and publication, and across all communication platforms. Whatever the messages are, they should adhere to these fundamental principles:

- ✓ Consistent and clear
- ✓ Accessible and engaging
- ✓ Culturally and linguistically appropriate
- ✓ Relevant in focus and purpose
- ✓ Inclusive, both culturally and geographically
- ✓ Transparent

Key messages should stem from outreach goals, overall community vision, as well as the project scope, lens, and resilience goals established in Step 2. Messages should use simple-to-understand language geared towards each of the project's audiences. The number of messages should be limited to no more than five, and ideally three or fewer. Too many messages create potential conflicts and confusion for audiences and for messengers who may not understand when to use what messages. Limiting outreach messages gives speakers and advocates a simple concept to remember and relay consistently.

Project messages should include the following elements in some form:

- ✓ Relay the intention of the outreach and engagement effort – do not assume that people know why and if they should be involved
- ✓ Describe the purpose or vision of the planning effort
- ✓ Mention critical elements that may attract and involve challenging to reach audiences or potential naysayers
- ✓ Highlight the benefits of the project and emphasize elements that will resonate with the primary project supporters (or potential supporters)

*A single message may hit one or more of these elements.*

### Examples of E&OP goals:

"Provided equal access and opportunity to all community member to participate and provide input at multiple stages in the project."

"Better involve local and regional decision makers in the process to develop advocates and more diverse voices."

### Example Key Messages

"The City is dedicated to inclusive community engagement and making our homes and business more resilient to climate change."

"The new Resilience Plan and LHMP will provide a roadmap for the next 20 years to protect and preserve our most critical community services. "

"The Plan's projects will be cost-shared with state and federal partner agencies. Our local contributions will be matched 4:1 by federal and state grants designed for resilience."

### Outreach Tools and Materials

There are many types of tools and outreach materials to help reach stakeholders and better engage them in the project. Outreach materials should be developed with particular audiences in mind and consider the best way to reach each group. Consider the use of digital, video, and print materials. The materials should reinforce the key messages and designed to be simple and clear, resonate with specific audiences, and not be overly technical in nature. The following are examples of some of the types of tools to use.

### Communications and Education

- **Talking points.** A list of key discussion points that provide clear and concise information regarding all aspects of the project and provide a consistent and accessible set of points for each potential project voice. These may be several versions, designed for each audience, such as partners; politicians/decision makers; funders; and general public.
- **Webpages.** Project websites have become more common as either an integrated piece of a jurisdiction's existing site or as a stand alone website. A project website can act as a hub for sharing information, posting meeting and event dates, and sharing presentations and other materials. A website can also have a password protected area for more sensitive documents for the project team and advisory group.
- **Social media.** Facebook, Instagram, and Twitter have become regular tools for community engagement. The effectiveness depend on the topic, audience, and reliable, consistent management of the social media presence.
- **Local media.** Inform stakeholders and the public about the resilience effort through local and regional newspapers, online news forums, broadcast media, and blogs. Press releases should be used to announce newsworthy, essential milestones and events.
- **Texting campaign.** Texting is a tool that has been used very successfully, especially in Spanish-speaking communities. Hispanics make 40% more cell phone calls than mainstream cell phone users, and they are the most likely ethnic group to text.
- **Fact sheets:** Create multi lingual project fact sheets that can be used in meetings, workshops, at local community hubs to share information and details about the project. Multiple versions can be created at different milestones if necessary. Consider including an overview of the project goals and the plan development process, along with basic information about the current conditions and state of the area. All fact sheets should include information on how to participate and be posted on the webpage, distributed at meetings, and provided at public events (street fairs, etc.).
- **Email newsletters:** Email or enewsletters can be a useful tool if managed carefully and avoids spam filters. Email blasts can provide invitations, reminders, links to new information, or offer a short newsletter on the project's process.
- **Direct mail:** Direct mail pieces to residents can reach everyone in a community, especially in areas where people might not have easy access to a computer. One of the most successful approaches to direct mail is to use a letter from a city leader, such as the mayor, which helps to legitimize the information and assure the recipient that it is valuable information and not junk mail. Direct mail can be expensive but can be used to good effect.
- **Partner announcements:** At the outset of the project, develop a list of stakeholder communications channels (for example, stakeholders' respective newsletters and websites). Throughout the project, send brief announcements to the stakeholders with a request to distribute the information to their constituents.

## Appendix A Step 1. Engage

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- **Outreach kits:** Develop a suite of informational material for use by advisory group members, other city departments, and community organizations that would like to hold a meeting to gather input on the project. The outreach kit should include talking points, fact sheets, a PowerPoint presentation, sign-in sheets, and comment cards.

### Workshops and Meetings

- **Meeting announcements and flyers** should be developed to promote and announce workshops, meetings, and other events related to the Project. All flyers and communication pieces should include links to social media, the project website, and designed for print, email, and other digital formats. The use of a QR code (a scannable icon that allows a cell phone user to access link automatically) is a useful addition to these materials.
- **Comment cards** provide another avenue to solicit input at meetings. These can be distributed at the community events and can be filled out on the spot at the event itself. They are also a valuable way to expand the email database for future mailings.
- **Project presentations** provide clear, consistent, and concise information and details to various community groups, and stakeholders.
- **Project videos** have become easier for local government to develop and use with simple digital apps and tools. Short videos can highlight new information. Local schools or colleges might make the video for free as a student project. Formal videos such as for a city council meeting recording can also be used as an outreach tool. Other new technology such as Facebook live events can be another outlet.
- **Interactive Games** such as the one pioneered by the County of Marin - Game of Floods - or other interactive games can help engage audience who may not be familiar with technical details, or for younger audiences. Another example is trade off games where participants have to prioritize choices based on some kind of trade off such as allocating a fake amount of money to projects.
- **Maps & Display Boards** are useful for open house style workshops, for helping participants understand context and for holding small group conversations, and moving away from powerpoints, particularly in outdoor venues or when technology usage may not be desired.

### Strategies and Tactics

Develop strategies and tactics that build on, and connect to the outreach goals, audiences, tools, and the methods to reach stakeholders. These elements provide a kit of parts to achieve the Engagement and Outreach Plan goals and objectives. The table on the following page is an example of how this could look.

## Appendix A Step 1. Engage

**Table A1: Example engagement and outreach strategies and tactics**

Strategy	Tactics	Target Audience	Outreach Tools
1. Engage the broader public in the decision making process	<ul style="list-style-type: none"> <li>✓ Open House</li> <li>✓ Digital Engagement (online survey, website, information on events, etc.)</li> <li>✓ Go out to the People 'Coffee talks' and 'open office hours' Farmers market booths Table/kiosk at libraries</li> </ul>	Neighborhood Groups Voters Volunteers	Talking Points Flyers Online Survey Comment Card Website Facebook
2. Develop a proactive media relations strategy	<ul style="list-style-type: none"> <li>✓ Engage local news, radio, tv and community outlets like the Patch or Nextdoor and non-English language media outlets Editorial Board Regular briefings</li> <li>✓ Build speakers group (politicians and decision makers other groups)</li> <li>✓ Utilize Social Media/Digital sources</li> </ul>	Broad Community EJ Communities	Press Kit Press Releases FAQs
3. Engage elected officials and decision makers in the process	<ul style="list-style-type: none"> <li>✓ Conduct individual briefings with elected officials</li> <li>✓ Hold a "VIP" breakfast briefing</li> </ul>	Elected Officials/ Decision Makers	Talking Points Presentation
4. Provide tools and support for advisory group members to extend the Outreach personally	<ul style="list-style-type: none"> <li>✓ Individual briefing meetings with advisory group members</li> <li>✓ Advisory group Outreach Kit and Speakers Training</li> </ul>	Targeted Stakeholders	Outreach Kit
5. Cultivate and develop partnerships	<ul style="list-style-type: none"> <li>✓ Utilize existing stakeholder list to expand and enhance outreach</li> <li>✓ Conduct small group meetings to listen to interests and needs</li> </ul>	Partners Interest Groups Elected Officials/ Decision makers	Talking Points Presentations Digital connection

### Implementation and Tracking

Establish roles, responsibilities, and a timeline for each of the E&OP strategies and tactics. Implementation can and likely should be updated several times over the project to reflect new information, and understanding of what is working well, what is missing, or helping support a new initiative or idea. It is also a good idea to establish targets and measures to track the success of the outreach and engagement effort. This can include identifying the numbers of participants in total and by stakeholder group, the persistence of engagement over the project, the number of responses to surveys, or the number of hits on a website.

### Planning and Running a Successful Meeting

A successful workshop or workshop series requires extensive pre-work, planning, and relationship building. This work cannot begin at a workshop, but these attributes can be enhanced and cemented during the process.

**General meeting protocol.** For each meeting or engagement effort, the Outreach Team (this can be a subcommittee of the project team with added specialists) will first coordinate with the project team to understand objectives for each particular milestone, what information is important to cover, and any specific requirements for different audiences. The next step includes the creation of a Meeting Plan which includes: developing an agenda with clear objectives, establishing the meeting format, identifying appropriate education, and meeting materials, as well as coordinating other logistics and outreach efforts utilizing this plan as a general guide. After each meeting or group of meetings, develop a meeting summary that will be provided for dissemination and review by meeting participants.

**A well designed agenda is central to success.** Build on the Meeting Plan to determine how much time is realistically available to cover topics, understand who will be at the meeting, and in which topics participants are interested. Assign times for each agenda item and if it seems like it is too much to cover, delete the least important items or ones that can be covered in another forum. There is no benefit to having a laundry list agenda that is impossible to cover. People appreciate a tight, well designed, and well managed meeting – and they are more likely to come to another if these elements are in place.

**Mix it up.** Design meetings to include multiple delivery forms, including presentations, discussions, exercises that get people up and moving, small group discussions, and interactive elements as discussed below.

**Use games and exercises as ways to build communication networks and enrich planning** among community partner sectors. Public safety and emergency management professionals effectively use disaster tabletop exercises as a training activity. This is one tool for engaging people to strategize how a particular disaster scenario would impact their communities. It can be used to illustrate the location of disaster impacts, think through consequences, identify strategies to reduce risk ahead of time, and lay the groundwork for long term resilience solutions through hazard mitigation and general plan actions.

**Use mapping exercises** to identify community resources (such as critical community facilities that are essential to the functioning of a community after an earthquake) or at-risk locations which combines local expertise with neighborhood problem solving. Similarly, design charrettes bring people in to discuss visual options and also builds community buy-in on implementing strategies.

**Use a skilled facilitator.** Develop dialogue and meeting support capacity in the project team and new partners to establish the best ways to support open dialogue in the assessment and implementation phases. Consider bringing in outside facilitators or trusted local conveners if they can enrich the group's ability to engage together effectively.

**Encourage participants to engage actively and equally in discussions,** and allow adequate time for all to participate and voice their opinions and recommendations for the group's consideration.

### Meeting Agendas

The following pages provide sample agendas for the four advisory group meetings identified in the Roadmap. Each agenda is designed as a three-hour meeting with specific meeting objectives and topics to cover and move the project forward. It is assumed that the advisory group is a representative body of the community and key stakeholder groups, with some understanding of resilience, but not necessarily with technical knowledge. These agendas can be modified to accommodate the community workshops. Depending on the date, logistics, and expectations, a community meeting may only be two hours and provide a mix of educational content and some input exercises.

#### Agendas:

- ✓ Meeting 1: Kickoff
- ✓ Meeting 2: Vulnerability Assessment
- ✓ Meeting 3: Prioritize Strategies
- ✓ Meeting 4. Implementation

# Advisory Group AGENDA

## Meeting #1. Kickoff

*Meeting Purpose: Kick off project, define resilience and develop the vision and goals for protecting and supporting long term safety and disaster resilience.*

### **I. INTRODUCTION AND PROJECT PROCESS (45 min)**

- Advisory Group and Project Team Introductions
- Expectations, Roles, and Responsibilities
- Review Overall Planning Process, Purpose, and Need
- Presentation and Discussion - Community Engagement and Outreach Plan

### **II. WHY RESILIENCE IS IMPORTANT (1 Hour)**

- Discussion - What Is Resilience and Why Does It Matter to our Community?
- Presentation
  - Existing Community Goals
  - Alignment with Existing Plans
  - Federal and State Policy Context and Goal to Align Plans
- Group Exercise and Discussion - Vision and Resilience Goals

### **III. SETTING THE CONTEXT: ASSETS, IMPORTANT CHARACTERISTICS & HAZARDS OF THE COMMUNITY & REGION (1 Hour)**

- Presentation - Overview of Initial Data: Community's Hazards, and Assets
- Discussion - Opportunities and Challenges for Community Resilience
- Small Group Exercise - What do we love and what do we protect? (Utilize community maps or other aids as needed)
- Report Back: What are the Community's Primary Hazards?

### **IV. WRAP UP & NEXT STEPS (15 min)**

- Next Meeting and Action Items

*Note: Include a 15-minute break as needed.*

# Advisory Group AGENDA

## Meeting #2. Risk and Vulnerability Assessment

*Meeting Purpose: Review Resilience Goals and the initial Vulnerability Assessment, and begin prioritizing actions.*

### **I. INTRODUCTION** (15 min)

- Review agenda, meeting objectives, and work completed since last meeting

### **II. CONFIRM VISION AND GOALS** (30 min)

- Review the refined Community Vision and Resilience Goals

### **III. INITIAL RISK & VULNERABILITY ASSESSMENT & STRATEGIES** (1½ hours)

- Presentation and Discussion - Review of Initial Risk and Vulnerability Assessment
- Small Group Breakouts: Rapid Vulnerability Assessment Exercise (*template in Toolkit*)
- Report Back and Discussion
- Identify Initial Strategies

### **IV. PLAN “COMMUNITY VISION & VULNERABILITY COMMUNITY WORKSHOP” #1** (45 min)

- Review and discuss agenda, topics, and format
- Discuss location and venue
- Identify roles and responsibilities

### **V. WRAP UP** (15 min)

- Next Meeting and Action Items

*Note: Include a 15-minute break as needed.*

# Advisory Group AGENDA

## Meeting #3. Prioritize Strategies

*Meeting Purpose: Refine and prioritize strategies, develop an initial Implementation Plan, and plan for the Community Workshop.*

### **I. INTRODUCTION** (15 min)

- Review agenda, meeting objectives, and work completed since last meeting

### **II. DEVELOP & PRIORITIZE STRATEGIES** (1½ hours)

- Presentation – Initial Strategies based on previous meeting
- Discussion – Refine Strategies
- Discussion – Develop/Utilize Criteria for Priorities (*worksheet in Toolkit*)
- Small Group Exercise – Prioritize Strategies  
Report Back to group 2-3 Key Priorities

### **IV. KEY ACTIONS FOR IMPLEMENTATION** (30 min)

- Discussion- Identify Key Actions to Implement Strategies  
Fill out Strategy Development and Implementation Worksheet (*included in Toolkit*)

### **IV. PLAN “STRATEGIES FOR A RESILIENT COMMUNITY WORKSHOP” #2** (30 min)

- Review and discuss agenda, topics, and format
- Discuss location and venue
- Identify roles and responsibilities

### **V. WRAP UP** (15 min)

- Next Meeting and Action Items

*Note: Include a 15-minute break as needed.*

# Advisory Group AGENDA

## Meeting #4. Implementation

*Meeting Purpose: Align strategies to financing options, review potential metrics, and develop mechanisms for ongoing engagement and implementation.*

### **I. INTRODUCTION (15 min)**

- Review agenda, meeting objectives, and work completed since last meeting

### **II. IMPLEMENTATION PLAN (20 min)**

- Overview and Review of long term Implementation Plan, and Short Term Action Plan
- Discussion

### **III. ALIGNING STRATEGIES TO FUNDING & FINANCING (1 hour)**

- Presentation – Review of Potential Funding Approaches, Highlight Examples of Existing Successful Financing, and Implementation
- Discussion
  - Align Strategies/Projects to Financing Mechanisms
  - Identify Gaps, Barriers, and Non-implementation Reasons
  - Discuss how to “Make the Case” for each Project

### **IV. POTENTIAL METRICS (30 min)**

- Presentation – Developing Metrics tied to Resilience Goals
- Discussion – Identify initial metrics to monitor success of planning effort

### **IV. ONGOING STAKEHOLDER ENGAGEMENT (15 min)**

- Identify Key Stakeholders, Experts, Implementers, and Jurisdictions
- Determine Roles for Implementation

### **VIII. WRAP UP (10 min)**

*Note: Include a 15-minute break as needed.*

# Meeting Logistics 101

This checklist gives tips for arranging a successful meeting or workshop and can be used for each individual event.

## Pre-Event Information

### ***Choose a Workshop Date & Time***

- Determine the best time and day for the workshop. In general Mondays and Fridays are not ideal because of weekend plans (but this depends on the type of workshop).
- Anticipate commute (or travel) time when setting the timeframe of a workshop.
- Check for major holidays, including religious holidays, and competing events.
- Consider the need to provide childcare for public workshops.

### ***Invitation and RSVPs***

- Use an online invitation program (e.g., Eventbrite, Evite) to help track registrants, send updates about the meeting (parking, meeting changes) with one email, create name tags from the registration lists, and minimizing the need for “sign in” at the event. This also optimizes meeting follow up.
- Describe the event and provide a link to register for the workshop in the “invitation” email.
- Include a deadline for registration (suggested deadline is 5 days before the event, but this can be looser depending on the numbers of registrants and catering requirements).
- Send a “save the date” as early as possible to allow for people to plan and schedule. Give highlights of the workshop and why people will want to attend.
- Send the invitation 4 weeks in advance, and send reminders 2 weeks and 1 week before the meeting
- Send the “save the date” and “invitation” using a “personal” email, if the project team does not have access to a mass email program. This helps avoid spam filters and increases the number of people who read the invitation. Consider whose name or organization is more likely to receive a response.
- Send out the “invitation” emails in batches of 50 or fewer to avoid spam filters.

### ***Choosing a Workshop Location/Venue***

- When selecting a venue, consider how convenient it is for attendees arriving on foot, by car, by public transportation, or in other ways.
- Confirm the capacity of the venue to fit the needs of the workshop.
- Check for internet/WiFi access for webinars and telephone lines for conferencing if needed.
- Determine rental needs: tables, chairs, audio/visual equipment, white boards, etc.
- Discuss with the venue staff wayfinding signage for room location/building location.
- Is the space intended for meetings or is it designed for a different purpose (i.e. gallery space, lecture hall, etc)? Room design may impact the acoustics, set up, lighting/glare, and overall function of the space.
- Identify any set up requirements (e.g., union requirements, access for wheelchairs or strollers, or any fixed equipment in the venue)
- Confirm that you can have access to the room 1 hour before and 1 hour after the event for set up and clean up.
- If you are offering childcare, locate it somewhat separate from the event, at least visually and audibly.

# Appendix A Step 1. Engage

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## ***Food and Caterers***

- Many venues will only allow the use of specific caterers. If providing refreshments, discuss the requirements with the venue manager. Think about having light morning refreshments, vegetarian, and al la carte items available for lunch, and an afternoon sweet such as cookies.
- Regardless of other food provision, coffee, tea, and water should be available for the entire day.
- If there is no lunch, provide a list of local dining options and allow an adequate amount of time for the lunch period. Consider building in incentives to ensure that participants return after a lunch break.

## **On the Day of the Workshop**

### ***Questions to Ask the Venue Staff on the Day of the Workshop***

- Have a venue staff contact in case anything is needed and for catering help.
- Ask the venue staff for the restroom and drinking fountain locations, as well as the WiFi sign in information and any recycling/compost specifics.
- Put up wayfinding signage and make sure it is visible and legible on the day of the workshop.

### ***Welcome/Sign in Station***

- Have the “welcome station” personally attended to greet people and answer questions about the day’s events.
- Sign in station should have name tags, sign in, pens, agendas, and handouts.

### ***During the Workshop and Conclusion***

- Take pictures throughout the workshop of the activities.
- At the conclusion of the workshop take photos of all the flip chart or wallgraphic notes and collect comment cards/feedback.

## **After the Workshop**

### ***Making Workshop Materials Available***

- Decide (before the workshop) on a location/website to share access to the slide presentations, agendas, handouts, and other meeting documents for participants.
- Send a “thank you for attending” email and link to workshop materials to the attendees.



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## Appendix A Step 2. ASSESS

**Photo. Emigrant National Wilderness, California**

**Reduced snow and drought conditions increased potential for wildfires and tree vulnerabilities.**

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### ■ Expected Outcomes

- ✓ Goals to guide the planning process, risk and vulnerability assessment, and development of mitigation and adaptation actions
- ✓ Prioritized hazards, hazard scenarios, and maps to be used in the vulnerability assessment
- ✓ Assessment methodology and approach
- ✓ An inventory of assets, by asset class and specific assets, to be used in the assessment
- ✓ Exposure analysis – maps and data describing which assets are exposed to which hazards
- ✓ Assessment information about risk, vulnerability, and potential consequences
- ✓ Vulnerability problem statements
- ✓ **Fulfillment of Element B1 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element B2 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element B3 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element B4 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element C3 in FEMA's Local Mitigation Plan Review Tool Checklist**

### ■ Worksheets in Appendix B

#### • **2.1 Develop Resilience Goals Exercise**

*Use this worksheet with the project team and advisory group to establish initial resilience goals.*

#### • **2.2 Develop Hazard Impact Statements**

*Use this worksheet with the project team to develop preliminary hazard impact statements.*

#### • **2.3 Identify Important Community Assets**

*Use this worksheet with the advisory group to develop an initial listing of important community assets.*

#### • **2.4 Community Asset Data Identification**

*Use this worksheet with the project team to develop a general sense of the types of assets the community has and where data may be found. This worksheet can help guide the vulnerability assessment scope and focus resources in areas with the most impact, as well as identify data gaps.*

#### • **2.5 Vulnerability Assessment Scoping**

*Use this scoping worksheet to help plan the community assessment. To help decide which assets to evaluate and if they will be evaluated as individual assets, as an entire asset class, or if representative assets will be selected, consider both the community's goals and if data and information is readily available to begin answering the assessment questions.*

#### • **2.6 Rapid Vulnerability Assessment Exercise**

*Use this exercise with the project team and/or advisory group to get a sense of the types of information that is needed to conduct the assessment. This exercise expedites and simplifies the Vulnerability assessment questions to provide a quick overview of the vulnerability of an asset. It is designed to be used with a hypothetical asset and hazard, though specifics for the jurisdiction's community can be used. This exercise is designed to be a warm up, not a substitute for doing a more detailed vulnerability assessment on any asset or asset class.*

#### • **2.7/2.8 Vulnerability Assessment Questions Worksheets (Individual or Representative Asset; Asset Class)**

*Vulnerability assessment questions help to understand the underlying causes and components of vulnerability*

and the potential consequences of those vulnerabilities. These worksheets can be used by asset owners or project team members to quickly provide a snapshot of what data is available on assets and where data gaps are. Prior to providing this worksheet to asset owners, the project team should make an effort to fill in readily available public information for the asset owner to confirm.

### ■ Resources

- **FEMA Worksheet 5.1 Hazards Summary Worksheet**

Use this worksheet, or adapt to meet the project, to summarize hazard information and prioritize hazards based on the geographic area affected, the maximum probable magnitude or strength of the hazard, and the probability of the hazard in the future to produce an overall significance rating.  
[mitigationguide.org/wp-content/uploads/2013/05/Worksheet-5.1.pdf](https://www.mitigationguide.org/wp-content/uploads/2013/05/Worksheet-5.1.pdf)

- **ABAG Risk Landscapes document**

ABAG has developed a comprehensive document that describes the hazards the region faces as well as key asset classes and how they are vulnerable to hazards. For the Bay Area, the language in Risk Landscapes is available to provide regional context to hazard descriptions. However, jurisdictions will still need to describe localized hazards. Others may still find useful generalized language or concepts about hazards and asset classes.  
[resilience.abag.ca.gov/wp-content/documents/mitigation\\_adaptation/RiskProfile\\_4\\_26\\_2017\\_optimized.pdf](https://resilience.abag.ca.gov/wp-content/documents/mitigation_adaptation/RiskProfile_4_26_2017_optimized.pdf)

- **ABAG Open Data webpage**

ABAG has gathered 40+ data layers from various partners that illustrate many of the hazards the Bay Area faces. These data layers can be downloaded from the website for use in identifying which hazards are applicable for Bay Area jurisdictions. Some of the data is collected and generated by ABAG; however, most of the data is generated by other agencies and curated here. In some instances, these data sets are unchanged from their original source; in other cases, ABAG has translated the data for use by cities and counties. [resilience.abag.ca.gov/open-data](https://resilience.abag.ca.gov/open-data)

- **Adapting to Rising Tides (ART) Resources at [www.adaptingtorisingtides.org/howto/art-supplies](http://www.adaptingtorisingtides.org/howto/art-supplies)**

While all ART materials are geared towards climate adaptation, the concepts can be used for assessment of any hazard.

- **ART How-to Guide: Exposure Analysis**

This guide can help pinpoint the assets and geographies that are most likely to be affected by the community's hazards and helps identify and prioritize where further, targeted mapping, analysis, or studies are needed.

- **ART How-To Guide: Assessment Questions**

This guide provides additional help for using the ART Assessment Questions to collect data and information on assets that will inform the characterization of vulnerability and consequences for assets and asset classes.

- **ART How-to Guide: Profile Sheets**

This guide provides additional help preparing profile sheets that summarize, for a specific asset, the findings of the assessment of vulnerability and consequences due to identified hazards.

- **ART Engagement Exercise: Functions & Values Mapping**

This exercise, provided by our partners at Bay Conservation and Development Commission, can be used by the planning team early on to establish the team's priorities and goals through geographically identifying key functions and values that are critical for the economy, public health and safety, community, and environment in the project area.

- **ART Supply Good Planning Guide: Transparent Decision Making**

This guide provides guidance for using transparent decision making in a risk and vulnerability assessment and implementation process that makes sure that all aspects of sustainability are considered, that the process and outcomes are well communicated, balanced throughout the process, and build a strong and actionable case for adaptation.
- **ART Supply How-to Guide: Communicating About Climate Impacts**

This resource can help the team develop hazard impact statements that communicate the impacts being addressed in the project to the advisory group and other stakeholders.
- **ART Scope and Scale Issue Paper**

This issue paper provides additional thinking about two fundamental questions about the appropriate scope and scale of resilience assessments: how does scope and scale affect assessment and planning outcomes? And how can planning for hazards identify and communicate issues that cut across different asset and geographic scales? If unsure of how to scope the assessment after reading this chapter, the following paper may help.
- **Coastal Hazard Resilience Planning in California flipbook**

This flipbook, developed by NOAA's Office for Coastal Management, the US Geological Survey, FEMA, and state partners, can be used to spark ideas for addressing sea level rise and coastal flooding concerns by integrating multiple local planning initiatives. The ideas presented may be applicable to other hazards, as well. It provides a starting point for communicating the benefits of aligning hazard actions in multiple local plans and suggestions for doing so, specifically for the Local Hazard Mitigation Plan, General Plan, Climate Adaptation Plan, and Local Coastal Program. The resource is available in hard copy through USGS and NOAA and on [resilientca.org](http://resilientca.org).
- **CalAdapt**

The state's toolkit of climate change research with statewide data for multiple climate change related hazards. [cal-adapt.org](http://cal-adapt.org)
- **CalOES's MyPlan website**

This website, developed and hosted by the California Office of Emergency Services, is an online mapping tool designed to explore hazards in the area. This can be done by entering a location into the map and exploring which hazards are nearby. This tool can be used to develop exposure maps for generalized areas. This tool can be particularly helpful outside of the Bay Area where ABAG has not collected hazard layers via the Open Data website.  
[www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/myplan-internet-mapping-tool](http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/myplan-internet-mapping-tool)
- **California Earthquake Hazards Zone Application**

Developed by the California Geological Survey, this is an online map that allows users to check whether a property is located in any of CGS's mapped earthquake hazard zones, including fault rupture, liquefaction, and earthquake induced landslide zones. [www.conservation.ca.gov/cgs/geohazards/eq-zapp](http://www.conservation.ca.gov/cgs/geohazards/eq-zapp)
- **Fire and Resource Assessment Program**

This resource from CalFire provides mapping and GIS data for fire risks. Data can be viewed through maps, online data viewers, or downloaded for staff GIS use. [frap.fire.ca.gov](http://frap.fire.ca.gov)
- **EPA's Adaptation Resource Center (ARC-X)**

EPA offers an interactive resource to help local governments effectively deliver services to their communities even as the climate changes. Decision makers can create an integrated package of information tailored specifically to their needs. Once users select areas of interest, they will find information about: the risks posed by climate change to the issues of concern; relevant adaptation strategies; case studies

illustrating how other communities have successfully adapted to those risks and tools to replicate their successes; and EPA funding opportunities. [www.epa.gov/arc-x](http://www.epa.gov/arc-x)

- **Smart Growth Fixes for Climate Adaptation and Resilience**

Florida has excellent guidance on post-disaster redevelopment planning. See pp. 22-23 of Smart Growth Fixes for Climate Adaptation and Resilience for links to the state's guidance and to individual county plans. [www.epa.gov/smartgrowth/smart-growth-fixes-climate-adaptation-and-resilience](http://www.epa.gov/smartgrowth/smart-growth-fixes-climate-adaptation-and-resilience)

- **Seven Principles for Equitable Adaptation**

This article is a good resource with clear approaches to protecting vulnerable populations. Kaswan, Alice. "Seven Principles for Equitable Adaptation." *Sustainable Development Law & Policy* 13, no. 1 (2012): 41-46, 67-69. [digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1527&context=sdlp](http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1527&context=sdlp)

- **EPA - Climate Resilience Evaluation and Awareness Tool (CREAT) Climate Scenarios Projection Map**

This map provides easy-to-access scenario based climate change projections drawn from CREAT. The impacts from a changing climate, including extreme heat and more intense storms, present challenges to water, wastewater, and stormwater utilities and the communities they serve. Understanding how climate change may affect a utility's ability to maintain and deliver adequate, reliable, and sustainable water supplies and clean water services is the first step in climate related planning. [www.arcgis.com/home/item.html?id=3805293158d54846a29f750d63c6890e](http://www.arcgis.com/home/item.html?id=3805293158d54846a29f750d63c6890e)

- **EPA's I-WASTE Tool**

This tool includes a waste materials estimator and provides access to technical information, regulations, and guidance to work through important waste management issues to assure safe and efficient removal, transport and management of waste materials. [www2.ergweb.com/bdrtool/login.asp](http://www2.ergweb.com/bdrtool/login.asp)

- **General Plan Guidelines Data Mapping Tool**

This tool, developed by OPR, draws data sets from multiple sources to allow users to incorporate local, regional, and statewide data sets into analysis. While the tool is geared towards general plans, it does include a number of hazard and asset layers to assist with vulnerability assessments.

### Climate Adaptation Plans

- California Adaptation Planning Guide: Planning for Adaptive Communities, CalOES, CNRA. [resilientca.org/projects/964c2e94-aa8b-4e6a-885d-b1e5f4cc8415/](http://resilientca.org/projects/964c2e94-aa8b-4e6a-885d-b1e5f4cc8415/)
- Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments, ICLEI. [www.adaptationclearinghouse.org/resources/preparing-for-climate-change-a-guidebook-for-local-regional-and-state-governments.html](http://www.adaptationclearinghouse.org/resources/preparing-for-climate-change-a-guidebook-for-local-regional-and-state-governments.html)
- Digital Coast - NOAA's website with data, tools, and training for communities to address coastal issues. [www.noaa.gov](http://www.noaa.gov)

### Aligning planning processes

- Hazard Mitigation: Integrating Best Practices into Planning, APA. [www.planning.org/publications/report/9026884/](http://www.planning.org/publications/report/9026884/)
- State of California General Plan Guidelines, Governor's Office of Planning and Research. [www.opr.ca.gov/planning/general-plan/](http://www.opr.ca.gov/planning/general-plan/)
- Integrating Hazard Mitigation and Climate Adaptation Planning: Case Studies and Lessons Learned, ICLEI. [icleiusa.org/wp-content/uploads/2015/08/Integrating-Hazard-Mitigation-and-Climate-Adaptation-Planning.pdf](http://icleiusa.org/wp-content/uploads/2015/08/Integrating-Hazard-Mitigation-and-Climate-Adaptation-Planning.pdf)

- Plan Integration: Linking Local Planning Efforts, FEMA. [www.fema.gov/media-library-data/1440522008134-ddb097cc285bf741986b48fdcef31c6e/R3\\_Plan\\_Integration\\_0812\\_508.pdf](http://www.fema.gov/media-library-data/1440522008134-ddb097cc285bf741986b48fdcef31c6e/R3_Plan_Integration_0812_508.pdf)
- Integrating the Local Natural Hazard Mitigation Plan into a Community's Comprehensive Plan: A Guidebook for Local Governments, FEMA. [www.fema.gov/media-library-data/1388432170894-6f744a8afa8929171dc62d96da067b9a/FEMA-X-IntegratingLocalMitigation.pdf](http://www.fema.gov/media-library-data/1388432170894-6f744a8afa8929171dc62d96da067b9a/FEMA-X-IntegratingLocalMitigation.pdf)
- Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials, FEMA, 2013. [www.fema.gov/media-library-data/20130726-1908-25045-0016/integrating\\_hazmit.pdf](http://www.fema.gov/media-library-data/20130726-1908-25045-0016/integrating_hazmit.pdf)

### **Local Hazard Mitigation Plans**

- Local Mitigation Planning Handbook, FEMA. [www.fema.gov/media-library/assets/documents/31598](http://www.fema.gov/media-library/assets/documents/31598)
- State Mitigation Plan Review Guide, FEMA. [www.fema.gov/media-library/assets/documents/101659](http://www.fema.gov/media-library/assets/documents/101659)

- California State Hazard Mitigation Plan

The California State Hazard Mitigation Plan, developed by CalOES, offers a statewide perspective on hazards and asset classes at the state scale. This document may be helpful for jurisdictions outside of the Bay Area that need generalized language to describe hazards. However, jurisdictions will still need to describe localized hazards. Others outside of California may still find useful generalized language or concepts about hazards and asset classes.

[www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/state-hazard-mitigation-plan](http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning/state-hazard-mitigation-plan)



# Laying the Groundwork

## Scope and Organize the Project

This step can help the project team establish a common understanding about the purpose and need for the assessment in the first place, what the world view is that is informing the assessment, and how much effort will be required to conduct a successful project. Looking through each of the following factors will help lay out what the project team hopes the project will achieve.

### Focus on Natural Hazards

Using collective lessons learned, and resulting best practices, states, regions, and jurisdictions now have more information and tools to include natural hazard considerations in regulating and planning for the built environment.

Planning for natural hazards mitigation involves some basic steps:

- ✓ Understanding past, current, and future disaster risks and how these risks interact with critical components of the built environment, natural systems, and people;
- ✓ Understanding the consequences of potential damage to the built environment, natural systems, and people due to natural hazards; and
- ✓ Identifying and implementing strategies to reduce the hazard, reduce exposure to the hazard, reduce the damage that the hazard can inflict, or minimize the consequences of damage.

## Identify Planning Triggers and Lenses, and Coordinate with Other Plans

It is good to start the process with a meaningful outcome in mind — the implementation of resilience related actions — and to develop a more holistic project by asking a few questions before beginning. Identifying planning triggers, lenses, and desired outcomes will help deliver a more robust assessment, implementable strategies, and internal capacity to help drive the implementation of strategies. The triggers behind the process and the lenses through which resilience is defined will determine which stakeholders should be at the table. To ensure transparency throughout, asking the right questions before the assessment will produce a radically better process.

### Common Planning Triggers

- Risk or Recent Disaster
- Regulatory Landscape
- Local or National Trends
- Attracting Business and Investments

In any state, planning for resilience is good practice to ensure a more secure long-term future. Many federal agencies are requiring consideration of natural hazards, resilience, and/or climate adaptation as part of plans, permits, grant applications, etc. And increasingly, states are starting to include requirements to conduct vulnerability assessments within other planning processes, whether for transportation, housing, or other infrastructure investments.

### Resilience Lenses: Connecting Resilience with Sustainability and Equity

Though the primary lens will likely be focused on natural hazards or climate change, building community-wide resilience inherently combines aspects of environmental sustainability, economic strength, risk management, emergency preparedness, and strong social communities. True resilience incorporates the ability to withstand multiple types of stressors. A robust resilience building process incorporates multiple lenses interconnected to the primary lens.

#### Environmental Sustainability

Sustainability here means actions that increase the longevity of natural resources for future generations – not limited to actions like recycling and solar panels, but inclusive of actions like restoring wetlands and protecting water resources. The environmental sustainability lens and natural hazards resilience are tightly woven together, particularly with the actions that emerge from the assessment - often increased sustainability of a community can improve its resilience to disasters. The project will maximize resilience to disasters by ensuring that environmental sustainability is a core value.

#### Social Equity

Equity is also a critical lens of resilience. The most vulnerable populations are often most impacted by natural disasters and are the least likely to be able to effectively prepare for, respond to, and recover from disasters.

### Incorporating Hazards into Local Planning and Decision Making

Traditionally, hazard mitigation and climate adaptation actions have been relegated to their respective plans and seen as stand alone actions, separate from everyday local planning and decision making.

Whenever making decisions about land use, buildings, infrastructure, and city services, consider current and future hazards information. Jurisdictions may be triggered to do an assessment by regulation or incentive. However, the process here can be done with many different goals and outcomes and incorporated into many different decision making processes, independent of the traditional “home” for risk and vulnerability assessments. This can help ensure that a wider variety of stakeholders are involved and invested, leading to better implementation.

## Appendix A Step 2. ASSESS

The “Coastal Hazard Resilience Planning in California” flipbook, available from NOAA’s Office for Coastal Management and the US Geological Survey and on [www.resilientca.org](http://www.resilientca.org), provides tips for crosswalking hazard mitigation and climate adaptation in four local plans (Local Hazard Mitigation Plan, General Plan, Climate Adaptation Plan, and Local Coastal Program). Although the resource focuses on sea level rise and coastal flooding, the concepts presented are also applicable to other hazards. It suggests that integrating multiple local planning initiatives pays great dividends, such as reduced duplication of effort, lowered potential for policy conflicts, streamlined public outreach, and increased eligibility for implementation funding. The flipbook provides a starting point for communicating these benefits and ideas for beginning to align local plans.

**Table A2: How hazards can be incorporated into various city documents**

*Adapted from Integrating the Local Natural Hazard Mitigation Plan into a Community’s Comprehensive Plan, FEMA*

Local Plan or Document	How to incorporate hazards
General Plan	
<i>Land Use Element</i>	<ul style="list-style-type: none"> <li>– Consider hazards exposure as part of planning future land uses and include policies to control development in high hazard areas, as appropriate</li> </ul>
<i>Circulation Element</i>	<ul style="list-style-type: none"> <li>– Ensure that transportation infrastructure is in sufficient condition to withstand design forces</li> <li>– Use transportation policies to guide growth to lower hazard locations</li> <li>– Ensure redundancy in the transportation network (modes, routes) if critical infrastructure nodes may be damaged by hazards</li> </ul>
<i>Housing Element</i>	<ul style="list-style-type: none"> <li>– Analyze the exposure and vulnerability of existing housing and adopt retrofit policies if appropriate</li> <li>– Consider how to balance demand for housing, especially affordable housing, with pressure to build in high hazard areas</li> </ul>
<i>Conservation Element</i>	<ul style="list-style-type: none"> <li>– Protect natural features that can help mitigate flood and sea level rise, like floodplains, wetlands, marshes, and dunes</li> <li>– Limit development in flood prone areas like floodplains, wetlands, and marshes</li> <li>– Preserve vegetation on steep slopes to manage landslide risk</li> </ul>
<i>Open Space Element</i>	<ul style="list-style-type: none"> <li>– Utilize conservation and recreation areas to protect high hazard areas and limit other, higher density land uses</li> </ul>
<i>Safety Element</i>	<ul style="list-style-type: none"> <li>– Incorporate all findings of risk and vulnerability assessment into the safety element, or use the safety element as the Local Hazard Mitigation Plan and/or Climate Adaptation Plan. The safety element should differ very little, if at all, from the LHMP. Incorporation of climate change is now required by SB 379</li> </ul>
Zoning Ordinance	<ul style="list-style-type: none"> <li>– Limit the density of development in high hazard areas, prohibit development or require land to be placed in conservation uses in these areas, or change density in high hazard areas of existing development</li> <li>– Include special considerations for high hazard areas, such as additional mitigation guidelines, through the use of new zoning or zoning overlays</li> </ul>
Land Use Designations	<ul style="list-style-type: none"> <li>– Designate high hazard areas as conservation areas, or include special development considerations</li> </ul>
Subdivision Regulations	<ul style="list-style-type: none"> <li>– Control the location of new roads, residential lots, and public facilities to account for hazard risks</li> <li>– Include regulations and requirements to preserve environmental features and natural stormwater functions</li> </ul>

## Appendix A Step 2. ASSESS

Local Plan or Document	How to incorporate hazards
Capital Improvements Plan (CIP)	<ul style="list-style-type: none"> <li>- Limit investments that will be vulnerable through exposure to hazard areas and increase vulnerability of the community as a whole</li> <li>- Include expenditures for hazard mitigation projects</li> </ul>
Building Codes	<ul style="list-style-type: none"> <li>- Include local building code amendments that account for increased hazard exposure and create higher levels of performance during disasters</li> </ul>
Specific Plans	<ul style="list-style-type: none"> <li>- Ensure that investments in redevelopment areas do not perpetuate vulnerability</li> <li>- Incorporate hazard resilient features like green infrastructure or flood control features</li> <li>- Ensure that redevelopment is built to more hazard resistant standards if area is a high hazard area</li> </ul>
Stormwater Management Plans	<ul style="list-style-type: none"> <li>- Incorporate natural stormwater retention and detention features to limit flooding due to stormwater</li> <li>- Develop new stormwater features to account for sea level rise and temporary storm surges</li> </ul>
Emergency Management or Operations Plan	<ul style="list-style-type: none"> <li>- Ensure that emergency management plans use similar assumptions as in mitigation assessments about hazard exposure and asset vulnerability</li> </ul>
Post Disaster Redevelopment Plan	<ul style="list-style-type: none"> <li>- Develop redevelopment plans that coordinate with anticipated consequences of disasters as identified in a risk and vulnerability assessment and account for mitigation measures implemented</li> </ul>
Local Hazard Mitigation Plan	<ul style="list-style-type: none"> <li>- Meet FEMA requirements and become eligible for funding by incorporating the risk and vulnerability assessment in a Local Hazard Mitigation Plan</li> </ul>
Climate Adaptation Plan	<ul style="list-style-type: none"> <li>- Ensure that assessments about future risks due to climate change are incorporated into other risk and vulnerability assessments and all plans and decisions about existing and future development</li> </ul>
Climate Action Plan	<ul style="list-style-type: none"> <li>- Understand the life cycle of climate change - reduce greenhouse gas emissions while planning for inevitable changes through climate adaptation actions</li> </ul>
Sustainability Plan	<ul style="list-style-type: none"> <li>- Strategies that reduce the use of resources like energy and water can also help support mitigation to disasters. Tie sustainability strategies to hazard mitigation and climate adaptation strategies to ensure consistency</li> </ul>
Local Coastal Plan	<ul style="list-style-type: none"> <li>- Most coastal plans need to seriously take sea level rise and other climate hazards into account and many may also have co-located hazards, like earthquake liquefaction</li> </ul>

### Establish Resilience Goals

Resilience goals are statements used in the risk and vulnerability assessment, strategy development, and the implementation phase to define desired outcomes, build transparency into what the process is achieving, engage stakeholders, and to capture community's values throughout the process. Goals can range from broad policy type statements that represent a vision for reducing or avoiding losses from hazards to specific SMART goals (see below for more details) that articulate particular outcomes. Goals will be heavily reflective of the triggers or lenses that are guiding the assessment, and will ideally reflect the perspectives and needs of the stakeholders involved. Identifying goals can also help determine the scope and breadth of the assessment process, establishing a common lens and clarifying priorities, as well as guide the prioritization, selection, and implementation of resilience actions.

### Build on Existing Community Goals

Selecting community goals early in the planning process helps scope the assessment and prioritize which community assets should be analyzed. Later in the assessment process, community goals help to guide the development of locally meaningful mitigation and adaptation actions. To develop locally relevant goals, start with existing community goals that can be found in General Plans, Specific Plans, Climate Mitigation Plans, Climate Adaptation Plans, Sustainability Plans, Local Hazard Mitigation Plans, Coastal Area Plans, Air Quality Plans, or other local planning documents, as well as identified by stakeholder groups who represent the community.

For example, community goals to improve the quality of life or maintain affordability can be achieved, in part, by protecting housing from earthquakes and flooding, or by keeping small businesses open after a natural disaster. New goals may also emerge that focus on specific vulnerabilities identified through the risk and vulnerability assessment, such as a large elderly population that should be considered prior to a hazard event and will likely need extra support after a disaster.

Use these goals to help determine what assets, and what degree of detail for each asset, is needed to conduct a meaningful risk and vulnerability assessment. Be aware that the process of scoping and conducting a risk and vulnerability assessment may also reveal additional goals. A better understanding of the community's specific hazard and vulnerability profile may uncover issues that are not fully addressed in existing community goals.

### SMART Goals

One approach to developing goals is to establish SMART goals, or specific, measurable, achievable, results focused, and time bound goals. Using this frame or a version of this approach requires a deeper evaluation of what the project is trying to achieve and details that are sometimes difficult to identify early in the process. A SMART goal framework can increase the likelihood of attaining a goal by providing more detail and clarity at the onset. SMART goals can also make creating valuable metrics easier (more on metrics in **Step 5. Measure**). While it is often simpler to create a broad goal such as in the Santa Cruz LHMP example, "To protect human life, private property, and the environment." A corresponding SMART goal that provides more detail, specificity, and guidance is more complex, "Over the next ten years, at least 20% of sales taxes revenue will be dedicated to infrastructure upgrades and capital improvements to protect human life, private property, and the environment." Use this approach as part of a discussion framework to develop goals with community members, the advisory group, and other stakeholders.

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# Describe Hazards

Different communities are at risk from different hazards, resulting in unique risk profiles or fingerprints. One community may be located in a very high fire hazard severity zone, while another may have low wildfire risk but large flooding exposure. The scale an agency chooses for describing hazards also impacts which hazards are examined. Fortunately, there are a number of resources that communities can use to map and describe the natural hazards that will affect them. For example, in California the State Hazard Mitigation Plan and the MyPlan website both describe the natural hazards that can impact the State of California. Resources such as these should be used in combination with local data and knowledge, such as local liquefaction assessments and knowledge of past disasters, to characterize the hazards the community may face.

## Identify Past Hazard Patterns

Patterns of past disasters can help a community understand where disasters may recur and can help to estimate the likelihood of a disaster in the future. This is especially true for disasters such as earthquakes, wildfires, or flooding. Understanding past disasters can also help estimate the magnitude of impact if the disaster recurs.

The state's Office of Emergency Services (OES) and FEMA should be able to provide a list of all locally relevant state and federally declared disasters. However, information about local disasters that may not have been stated or federally declared is also important. When describing past disasters, include as much information as possible, including the extent and severity of the disaster as well as the impacts (i.e. "this portion of the city has had repeated flooding even in moderate rain events," or "a fire in 2012 destroyed a transmission line interrupting power to 3,000 residents for 36 hours").

LHMPs also require a list National Flood Insurance Program (NFIP) insured structures in the community that have suffered repetitive damaged due to flooding<sup>1</sup>. This list can be obtained through the local NFIP Bureau & Statistical Agent.

## Describe and Map Current Risks

Current hazards may be indicated by hazard map layers depicting current flooding, wildfire risk areas, landslide risk areas, or earthquake ground shaking or liquefaction risk. These maps depict exposure by compiling currently known information about hazard patterns and sources and usually include a level of probability for the hazard occurrence. These layers are often based on past risk patterns or vulnerability factors such as loose soils (liquefaction), steep slopes (landslide), proximity to known faults (ground shaking), or areas with known fire fuels (fire). These maps represent hazards that could occur today and an approximation of the potential degree of severity.

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<sup>1</sup> Sources: *NFIP Flood Insurance Manual, FEMA. Revised October, 2012*  
44 CFR §79.2(g)

Exploring the current hazards that are of greatest concern is typically done by downloading any available hazards data and by reviewing local hazard maps the city, county, or district may keep. These resources can help develop local scale maps of the community, including the location, expected frequency, and severity of the hazard, such as the strength (magnitude) of an earthquake or the geographic extent or depth of flooding.

### **Describe and Map Projected Future Hazards**

While past and current disasters can give a good picture of current disaster patterns, they may not accurately predict how disasters will impact the community in the future. Changes to land use and increases in population can significantly change the location, frequency, severity, and consequences of a hazard impact. Additionally, a changing climate could intensify or exacerbate disasters in areas already at risk, expand hazards into areas where they have not occurred in the past, or create new risks that the community may be unfamiliar with. For example, as the climate changes and sea level rises, flooding will become more frequent or severe and some areas that currently experience temporary flooding may become permanently inundated.

### **Develop Hazard Impact Statements**

FEMA's Hazard Identification and Risk Assessment page provides many good links for data sources and tools for developing hazard impact statements: [www.fema.gov/hazard-identification-and-risk-assessment](http://www.fema.gov/hazard-identification-and-risk-assessment). This page includes links to Hazus, which is FEMA's methodology for estimating losses from earthquakes, hurricane winds, floods, and tsunamis. In addition, this site includes links to free data and mapping tools from other federal agency and academic institutions and for a range of natural hazards.

The Fourth National Climate Assessment provides useful information on hazards that are likely to get worse with climate change and includes regional chapters with in-depth information for different geographic areas. In addition, the Fourth National Climate Assessment has chapters dedicated to different sectors such as forests, water, and energy that may align with an asset-based vulnerability assessment. The Fourth National Climate Assessment can be found at [www.globalchange.gov/nca4](http://www.globalchange.gov/nca4).

### Prioritize the Hazards

Prioritizing hazards that have the most impact on the community is an important step in conducting a vulnerability assessment. This can help point to which assets will need the most robust assessment (based on exposure to prioritized hazards), can aid in understanding the overlap between high priority hazards and vulnerable populations, or can help engage certain stakeholders. One way of qualitatively estimating which hazards will have the most impact is done by considering the extent of exposure (this can be measured by the number of people exposed, number of buildings exposed, acres of natural resources exposed, or the value of assets exposed), the potential impacts of a hazard, and the likelihood of the hazard occurring. FEMA provides a worksheet for summarizing and prioritizing hazards in its *Local Mitigation Planning Handbook* (See Resources: FEMA Worksheet 5.1, *Hazards Summary Worksheet*).

The advisory group and other stakeholders can also provide input into prioritizing hazards by identifying additional impacts and conveying which concerns are most pressing, or most align with the community's values. Stakeholders can also help identify "thresholds" – some limit to damage or exposure that the community does not wish to exceed – to prioritize hazards. For example, if a community prioritizes limiting impacts to one asset over another (say, historic City Hall versus an underused park), a priority would be the hazard that is of most impact to that asset.

A list of prioritized hazards offers a good touch point to consider refining or reprioritized the resilience goals previously developed. In addition, knowing spatially where hazards may affect the community can guide the remainder of the vulnerability assessment, including which assets should be considered and what information needs to be gathered.

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# Select Assets

In deciding which assets to include, the team will need to determine which individual assets, representative assets, or entire asset classes will be evaluated. For example, a community can choose to include transportation infrastructure as an asset class or can assess individual transportation assets, such as bus yards, train stations, bridges, etc. Begin by first identifying which asset classes are applicable and important to the assessment, and then decide which asset classes warrant a deeper assessment.

More detail about each asset class, including the specific assets included and where to find information on them, is included in the [Worksheet 2.4 Community Asset Data Identification](#).

## Scope Matters

Focusing on a single asset class can provide a deep understanding of vulnerability and can lead to implementation of specific actions but may overlook vulnerabilities due to physical or organizational relationships among assets or agencies. For example, publicly owned buildings and critical response facilities rely on a variety of other assets to maintain function such as power, road access, and wastewater services. Starting with a broader assessment and focusing in on individual assets as necessary based on community goals, hazards identified, and the potential consequences of the hazards is a good balance between broad and detailed approaches.

Vulnerability assessments that include multiple asset classes can reveal how seemingly dissimilar assets, such as nursing homes, single access roadways, trails used by those with limited mobility, and tidal marshes that support threatened or endangered species, have similar vulnerabilities due to their unique function. Multi-class assessments can also identify complexities in regulatory and other decision making processes that cut across asset categories; for example, actions to address the vulnerability of a roadway that crosses a tidal creek can have similar regulatory challenges as improving the utility or rail crossings.

For LHMPs in California, AB 2140 (2006) requires that for jurisdictions to be eligible for a greater share of disaster assistance costs, the General Plan Safety Elements must contain an earthquake performance evaluation of public facilities that provide essential services, shelter, and critical government functions, as well as an inventory of private facilities that are potentially hazardous, including, but not limited to, multi-unit, soft story, concrete tilt-up, and concrete frame buildings. To meet these requirements, prioritize assessment of these asset classes. To comply with AB 2140 requires not just an exposure analysis, but an assessment of the actual characteristics of the buildings within that asset class.

## Scale Matters

Once critical asset classes for the assessment have been identified, determine if the class contains assets that should be evaluated individually. Scaling down to individual assets can help identify specific vulnerabilities that are often caused by particular physical and functional characteristics. An assessment of individual assets can identify specific components, critical functions, or management challenges that will increase vulnerability.

Individual assessments should be conducted for unique, critically important or high consequence assets. Individual assessments do require a greater level of effort and more detailed information than may be available. Asset class assessments should be conducted when there are many similar assets and can be supplemented by evaluating representative assets that will provide similar benefits as assessing individual assets. **Worksheet 2.5 Vulnerability Assessment Scoping Worksheet** provides guidance for selecting asset categories and for determining if they are best assessed individually or as a group.

## Diving in Deeper: Profile Sheets and Assessment Questions

Going beyond an exposure analysis requires looking at asset classes, representative assets, and individual assets. As the assessment goes deeper, more detailed information about vulnerabilities will emerge. Assessing an asset class as a whole allows for the identification of broad vulnerability factors that tell a high level story about the scale and nature of the asset classes' vulnerabilities, as well as about the consequences of failure of the asset class as a system. It can be helpful to organize findings for an entire asset class through basic types of vulnerabilities and consequence lenses.

For individual and representative assets, assessment questions can help simplify and facilitate the collection of information, both qualitative and quantitative, about asset conditions and characteristics that can either increase or reduce vulnerability and consequences for individual or representative assets. The assessment questions included in the *Toolkit* seek to uncover physical, governance, and functional factors that may indicate increased vulnerability, as well as who and what are dependent upon the asset to determine potential consequences of failure. There is a similar set of assessment questions for asset classes.

Assessment questions can be answered in a variety of ways, but one useful approach is to answer as many high level questions as possible using basic, publicly available information on the asset, such as websites and public documents. At this point, the project team conducting the assessment should reach out to the asset's owner or operator to review the answers the team has collected and to set up a time to discuss the remaining questions in detail. Often team members will have to speak to several stakeholders associated with the asset to answer all of the questions in adequate detail. Once the answers to the questions are summarized in a profile sheet, these stakeholders should review them for accuracy.

The questions in this Toolkit are based on the Bay Conservation and Development Commission's Adapting to Rising Tides (ART) Program's robust list of assessment questions that provide a framework for collecting the data and information that lead directly to the identification of vulnerabilities and consequences. The ART assessment questions, which have been applied and refined based on a number of on-the-ground assessments, can be used for a wide variety of sectors at the individual, representative or asset class scale. Answers to the questions help build an understanding of the underlying causes and components of vulnerability and the potential consequences of those vulnerabilities on society and equity, environment, and economy. These questions can also be adapted based on assets, needs, goals, hazards, and access to information.

A reduced list of assessment questions based on the full list of ART assessment questions is included in Appendix B - **Worksheets 2.7 and 2.8 Vulnerability Assessment Questions**. These represent the short list of questions that if answered, will provide a reasonably detailed understanding of vulnerability and consequences. A link to the full set is identified in Resources Step 2. Assess.

# Determine Assessment Method

Hazards become meaningful when they interact with assets within the community, including people, structures, facilities, and services. Once risk is understood, the team must conduct a vulnerability assessment to understand how assets within the community are vulnerable to the risks identified. This task prepares the team to conduct the vulnerability assessment by identifying which community assets to include and determining the best assessment method. The chosen method for assessment helps the team decide what information is needed to determine the ability of the assets to withstand hazards as well as the consequences to the community if assets are damaged in a disaster.

## Determine the Approach

Before conducting a vulnerability assessment, determine the depth of information that should be collected on individual assets, representative assets, and asset classes. Vulnerability assessments can be expanded or focused based on three different elements:

- 1. The number of asset classes included in the assessment and the number of representative assets or individual assets assessed within each class.** At a minimum, an assessment should include critical facilities like emergency response facilities and public buildings. A more comprehensive assessment may include residential units, infrastructure systems, and/or recreational spaces.
- 2. Whether the assessment evaluates assets as a class, as representative assets, or as individual assets.** The most comprehensive approach would be to evaluate all assets individually, but this will likely require more resources than are available. This process can be simplified by choosing a **representative asset** to assess that may be similar to many others, house important services, are exposed to more severe hazards or

### Repetitive and Severe Loss Properties

Repetitive and severe loss properties not only put a cost burden on the National Flood Insurance Program, they indicate areas where flooding is repetitive and severe. These properties could help pinpoint areas for changed land use or zoning to avoid similar losses in the future.

*Repetitive loss property:* an NFIP insured structure that has had at least two paid flood losses of more than \$1,000 each in any ten-year period since 1978.

*Severe repetitive loss property:* any NFIP insured single or multifamily residential properties that:

- Have incurred flood-related damage for which 4 or more separate claims payments have been made, with the amount of each claim exceeding \$5,000 and the cumulative amount exceeding \$20,000; or
- For which at least 2 separate claims payments have been made under such coverage, with the cumulative amount exceeding the market value of the building.
- In both instances, at least two of the claims must be within 10 years of each other (claims made within 10 days of each other count as one claim).

## Appendix A Step 2. ASSESS

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hazards sooner than other assets, or serve a large number of residents. If assessing a representative asset is not possible, **asset classes** can be assessed with far fewer resources, but can still provide information useful for the community. More information on scale, and deciding whether to choose individual or representative assets, can be found in the following pages.

- 3. The amount of information available on each asset.** The location and use for each asset included in the assessment is a minimum, though even location data can be a challenge to track down and organize. More information, if it is available, can make the assessment more meaningful. Including more information about how the asset is vulnerable to a hazard, or what the consequences are if it is damaged can transform the assessment into a powerful story and leads to targeted, meaningful actions.

There are many factors that go into answering the questions implied in the three elements above. The most basic limiting factor is the amount of time and resources available for the assessment. Data can also be a critical factor, especially data at the right scale. Inability to get high quality or accurate data on hazards or assets at the scale needed to do a meaningful assessment, or if the amount of resources it would take to get good data is too great, means the assessment will be scoped very differently than if there is ready access to robust, accurate, and plentiful data. Another significant factor in scoping an assessment is connected to desired outcomes and goals – what are the desired outcomes of an assessment? Very complex or specific goals may require a more detailed or focused assessment, but if the assessment is more of an exploratory first step, a high level assessment may provide all the information needed to move forward.

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# Conduct the Assessment

## Exposure Analysis

An exposure analysis is a stepwise process (for more detail reference the ART How-to Guide: Exposure Analysis):

1. Add relevant hazard layers into a new or existing map in ArcGIS. It is helpful to load all of the layers into a single map so that they can be turned on and off as needed. Many hazards are well mapped and readily available, such as earthquake shaking scenarios, current flood zones, and fire zones. For future hazards, some, such as inundation from higher tides due to sea level rise, may have ready-to-use mapping tools available to evaluate asset exposure. For hazards that are not as well studied or understood (e.g., salinity intrusion due to sea level rise or precipitation patterns) reliable information may not be readily available.
2. Gather data and map the locations of the community assets included in the assessment scope. **Worksheet 2.3 Identify Important Community Assets**, provides publicly available data sources for a range of asset categories. This step requires the location of the assets (latitude and longitude) or a previously made map layer that contains the assets.
3. Compare assets to the hazard layers. Note which assets are in which hazard zones, the magnitude of the hazard they are exposed to (for example, light, moderate, strong, very strong, violent, or very violent ground shaking) or the probability of the hazard (1% flood hazard zone vs. 0.2% flood hazard zone), and assets that are exposed to multiple hazards.
4. Create maps showing the extent of hazards and the location of assets that intersect with those hazards. It is a good idea to develop summary tables for large asset classes to communicate the different types and levels of hazards exposure.
5. Ask those with local knowledge and experience, such as stakeholders, asset owners, and community members, to review the maps and analysis to help pinpoint locations that do not adequately characterize local conditions and where additional studies, field verification, remapping or reanalysis is needed.

### Answer Assessment Questions

The process of answering the assessment questions is best approached in a stepwise manner (for more detail see ART How-to Guide: Assessment Questions):

1. Get familiar with the assessment questions and the types of vulnerabilities and consequences that these questions have revealed in **Worksheets 2.7 and 2.8 Vulnerability Assessment Questions**.
2. Develop an approach for answering the questions before starting. Identify key pieces of information, like sources of data and key stakeholders to talk to such as asset owners, managers, and topic experts. The assessment questions are a tool to guide the collection and summary of targeted information in different ways. Recognize that it may be necessary to modify the approach for certain assets depending on input from the project team, availability of information, and preliminary findings as the assessment progresses.
3. Gather answers to assessment questions by conducting research to uncover readily available reports, documents, inspection and monitoring reports, and maps. Make a diligent effort to gather as much information as possible before seeking input from asset managers, owners or topic experts, as it is far easier and more efficient for them to help refine answers or provide specific resources to fill information gaps than to answer the entire worksheet. Keep in mind answers are typically a few sentences to a paragraph long. It is okay if the answer uncovers further, specific challenges that need to be further investigated.
4. Ground truth preliminary assessment answers with asset managers, owners, and topic experts. As stated above, it can be beneficial to provide the preliminary assessment answers and sources of information to the asset manager, owner, or topic expert before asking for their input. However, be sure to give them enough background on the assessment objectives if they are not already familiar with the vulnerability assessment. Since input on the preliminary assessment answers is partially based on best professional judgment, it is often helpful to ask for assistance in engaging colleagues, co-workers, others in the field, community members, and nonprofit organizations to gather needed information. Lastly, be sure to ask if there are any additional data or resources available that can help fill in information gaps. If there are none then make sure to note this data need or knowledge gap as an information challenge.

This is a good point in the planning process to revisit resilience goals used to guide the assessment phase. The assessment may have uncovered new information or highlighted new priorities, and it may be a good idea to update goals to reflect new findings. If goals were based on existing community goals and not hazard specific, this may also be a good time to develop new, hazards based goals. Goals are important because they can inform which strategies and actions a community values and should prioritize and can also indicate which strategies already have community support and may be easier to implement.

Strategies should respond directly to the problems identified in the assessment and be summarized into problem statements discussed in Step 3. Problem statements should identify the community's most pressing hazards problems, informed by goals, hazard risks, the vulnerability of assets or asset classes, and the consequences and impacts of damage or failure of key assets or asset classes.

Once strategies have been identified prioritizing those strategies and developing a plan to implement those strategies is essential. In this step, the jurisdiction should develop a long term implementation plan to encompass priority strategies in a 5 to 20-year implementation period. This enables a broad implementation plan within a policy document, General Plan, or Local Hazard Mitigation Plan. Short term, 6 months to 2-year implementation actions, align with more immediate efforts such as informing the Capital Improvement Plan.



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## Appendix A Step 3. ACT

**Photo. Fort Bragg sand dunes, California**

**Natural systems such as dunes can be effective in reducing impacts related to sea level rise and extreme storms.**

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### ■ Expected Outcomes

- ✓ Problem Statements
- ✓ Draft list of appropriate strategies to address hazard problem statements
- ✓ Basic information on each strategy to assist in evaluating and prioritizing strategies
- ✓ Prioritized list of feasible, impactful strategies with stakeholder buy in
- ✓ Completed Strategy Development and Implementation worksheets for each prioritized strategy
- ✓ A long-term implementation plan that outlines implementation 5-20 years down the line
- ✓ A short-term action plan outlining actions that can start in the near-term
- ✓ **Fulfillment of Element B3 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element C4 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element C5 in FEMA's Local Mitigation Plan Review Tool Checklist**
- ✓ **Fulfillment of Element C6 in FEMA's Local Mitigation Plan Review Tool Checklist**

### ■ Worksheets in Appendix B

#### • **3.1 Develop Initial Problem Statements**

*This worksheet should be used by the project team, as well as by the advisory group, to develop the initial problem statements that will become the basis of the strategies.*

#### • **3.2 Strategy Idea Sources**

*This handout presents a number of sources for strategies that address common hazards and asset classes. The sources can be used to provide ideas and language for local strategies that are responsive to individual problem statements. This guide is geared towards the Bay Area in California, but many of the strategies can be applicable in other areas that have similar hazards. For other types of hazards, see the Resources section for other strategy sources.*

#### • **3.3 Evaluation Criteria**

*This worksheet should be used by the project team, as well as by the advisory group, to evaluate and prioritize strategies for implementation. The worksheet uses five categories of criteria to develop a total score: feasibility, social benefits, economic benefits, environmental improvement, and community objectives. Jurisdictions can also change scoring criteria to reflect local priorities. It is important that multiple stakeholders fill out this worksheet to ensure that multiple voices and viewpoints are included in strategy prioritization.*

#### • **3.4 Strategy Development and Implementation Handout**

*This handout provides two tools to help fill out a Strategy Development and Implementation Worksheet: a description of what to include in each field, and an example from a real life strategy. Review this handout with the project team before developing a worksheet for each strategy. This will ensure the worksheets are consistently filled out and that everyone understands the key pieces of information needed to effectively develop an appropriate and responsive strategy and plan for its implementation.*

#### • **3.5 Strategy Development and Implementation**

*This blank worksheet is a template for recording key information about a strategy that can assist in fleshing out the ideas put forth in the strategy as well as key information needed to move into implementation of the strategy. The project team should fill out this worksheet for every strategy. First, as the team selects possible strategies, work through the top half of the worksheet. After going through the evaluation step, complete the bottom half of the worksheet for those strategies to be implemented.*

### ■ Resources

- **Adapting to Rising Tides (ART) Resources** at [www.adaptingtorisingtides.org/howto/art-supplies/](http://www.adaptingtorisingtides.org/howto/art-supplies/)  
While all ART materials are geared towards climate adaptation, the concepts can be used for any assessment to any hazard.
  - **ART How-to Guide: Key Planning Issues**  
This guide provides additional information on identifying the project's key planning issues for which the project team and advisory group will collaboratively develop strategies for implementation to address the issues.
  - **ART How-to Guide: Issue Statements**  
This guide helps users synthesize the existing conditions, vulnerabilities, and consequences for each asset into issue statements.
  - **ART Adaptation Response Open House Engagement Exercise**  
This guide provides instructions for an engagement exercise to be done with advisory group members and other stakeholders during an Open House-style workshop. This workshop is designed to provide familiarity to participants with the components of a strategy and to provide feedback on draft strategies that have emerged from the assessment process.
- **Bay Area Metro's Plan Bay Area 2040**  
This is a long range Regional Transportation Plan and Sustainable Communities Strategy for the nine-county San Francisco Bay Area. It discusses how the Bay Area's future growth and identifies strategies for a sustainable, equitable and economically vibrant future. [www.2040.planbayarea.org](http://www.2040.planbayarea.org)
- **The Bay Area Resilient by Design initiative** - Resilient by Design is working with regional and global partners in a locally-based, research process to identify Bay Area sites vulnerable to climate impacts. Solutions to improve community resilience through physical design projects are being planned. [www.resilientbayarea.org](http://www.resilientbayarea.org)
- **California College of the Arts** and BCDC collaborated on design-centered community planning through the college's Urban Works program. They apply innovative practices to address urban design needs. [www.cca.edu/academics/graduate/maad/urbanism](http://www.cca.edu/academics/graduate/maad/urbanism)
- **FEMA P-1000, Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety (FEMA, 2017)** This Guide provides up-to-date, authoritative information and guidance that schools, parents and local officials can use to develop a comprehensive strategy for addressing natural hazards and advocate for safe K through 12 schools in their communities. [www.fema.gov/media-library/assets/documents/132592](http://www.fema.gov/media-library/assets/documents/132592)
- **Georgetown Climate Center's Adaptation Clearinghouse**  
This online tool offers resources to help communities adapt to the effects of climate change, including specific policies adopted by states, regions, and local jurisdictions, as well as reports and guidance documents. Resources are organized by sector: water, ecosystems, energy, public health, transportation, and water. [www.adaptationclearinghouse.org/](http://www.adaptationclearinghouse.org/)
- **Marin County, Community Development Agency** - "Game of Floods" is a planning activity on climate adaptation and how communities can plan policies to promote resilience. Participants develop plans for 'Marin Island 2050,' a possible future area affected by climate impacts. [www.marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/game-of-floods](http://www.marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/game-of-floods)
- **Metropolitan Council's Local Planning Handbook Resilience Resources**  
This Minnesota regional council offers tools, data, mapping, and case studies to help jurisdictions add climate-resilient strategies to local comprehensive plans. [metro council.org/Handbook/Plan-Elements/Resilience.aspx](http://metro council.org/Handbook/Plan-Elements/Resilience.aspx)



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# Summarize Vulnerability

After conducting the vulnerability assessment, findings should be summarized to identify the most significant risks in the community. These findings will help to craft appropriate and responsive mitigation and adaptation actions and create a clear and cogent “story” to help support decision making by elected officials and other stakeholders, providing a foundation for seeking funds to reduce risks and increase resilience.

### **Developing problem statements help to communicate the critical planning issues that emerged during the vulnerability assessment.**

For example, a problem statement can highlight which critical assets are particularly at risk, what areas currently have repetitive losses, or how many high hazard areas are zoned for future development. Problem statements can help prioritize and focus on the areas that have the greatest need for mitigation or adaptation based on the risks and consequences identified. Problem statements can also help clearly communicate which issues require collaborative decision making, shared funding, or changes in laws, regulations, policies, or other processes. Problem statements can be developed for each hazard, asset class, or specific individual assets evaluated in the vulnerability assessment.

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# Develop Strategies

Strategies applicable to problem statements may already exist in city documents like past LHMPs, Safety Elements, Housing Elements, Climate Action Plans, Sustainability Plans, or Climate Adaptation Plans, from the State Hazard Mitigation Plan, or from one of the many sources included here. The strategy sources provide a wide range of robust best practices with clear explanations and implementation steps. Before fully embracing existing strategies, especially from existing, but older plans, ask the following:

- ✓ Are the identified strategies the right ones for the current goals and needs?
- ✓ Have they been tried over and over without success?
- ✓ Are they designed to get the right outcomes?

Depending on the assessment there may be a need to develop new strategies and approaches.

# Develop Implementation Plans

Building resilience cannot happen without on-the-ground implementation of actions that reduce risk and increase adaptive capacity. Successful implementation is the result of many sustained actions throughout all phases that change decision making within each jurisdiction. The actual implementation phase, is not significantly different from daily processes the jurisdiction goes through to build projects, implement policy, and make plans for future decision making. Yet, implementation is often the most challenging step due to lack of internal capacity, poor stakeholder buy in, no funding, or political obstacles.

# Appendix A Step 3. ACT

The entire planning process should be done with an eye to implementation, working to overcome challenges and build consensus throughout to facilitate successful implementation.

Implementation can be considered in two parts: Long Term Implementation Plan (5-20 years) and Short Term Action Plan (present to 2 years). A Long Term Implementation Plan is typically higher level, and used to share with stakeholders and decision makers, included in formal plan documents, and illustrates how to achieve the vision and plan goals. A Short Term Action Plan can act as a staff level working plan that details each step or tactic necessary to achieve those longer term goals and vision in a more manageable time frame, up to 2 years. There is a direct link between the action plan and annual budgets, the Capital Improvements Plan, and daily work.

Figures A1-A6 provide examples of action plans, strategy details, and implementation timelines. These examples may help other project teams as they organize strategies into achievable action plans.

**Figure A1. Massachusetts 2018 HMP Examples of Landscape-Scale Healthy Watersheds Goals, Strategies, and Action Goals**

<p><b>Goals:</b> 1. Enhance resiliency to natural hazards/climate change by integrating programs and building institutional capacity. 2. Reduce impacts of hazards and climate change with forward-looking policies. 3. Understand our vulnerabilities/risks, develop immediate/long-term risk reduction strategies for current/future conditions using the best available science. 4. Increase the resilience of State/local government, people, natural systems, the built environment, and the economy by investing in performance-based solutions. 5. Support implementation of this plan through increased education, awareness, and incentives for action for state agencies, local governments, private industry, non-profits, and the public.</p>				
<p><b>Mission:</b> Reduce the loss of life, protect natural resources, property, infrastructure, public health and economy from hazards and climate change impacts through the development of a comprehensive and integrated hazard mitigation and climate adaptation program.</p>				
<p><b>Statement on Importance of Nature-Based Solutions:</b> 7.3 Importance of Nature-Based Solutions in Hazard Mitigation and Climate Adaption Nature-based solutions (NBS) are defined as: The conservation, enhancement, and restoration of nature to reduce emissions, adaptation, and enhance resiliency. These types of solutions use natural systems, mimic natural processes, or work in tandem with traditional engineering approaches to address natural hazards like flooding, erosion, drought, and heat islands. Examples of NBS include restoring wetlands and floodplains to reduce flooding, planting trees to reduce the heat island effect, and conserving and managing agricultural soils to sequester carbon. NBS projects like open space conservation have been shown to provide habitat services, support a restoration economy, improve water quality, and improve housing value.</p>				
Action	Office	Goals	Funding	Hazard
Reassess and develop a climate change resiliency framework and criteria for all EOEEA agency land acquisition and grant funding for land acquisition to support natural resource conservation, wildlife, human health and public safety.	Executive Office of Energy and Environmental Affairs (EOEEA)	1,3	State Capital and Operating Budget	Precipitation changes, rising temperatures, extreme weather
Incorporate climate change resilience/adaptation standards into grant programs including MassWorks.	Office of Housing, Econ Development	1, 2, 3, 4	State Operating Budget	Rising temperatures, extreme weather
Regional water quality monitoring initiative. Monitors freshwater streams to detect climate-related changes in biological, thermal, hydrologic, habitat and water chemistry data, gather information on organism response and recovery.	Department of Environmental Protection (DEP)	3	State Operating Budget	Precipitation changes, rising temperatures, extreme weather
Develop an implementation plan for priority water quality restoration projects for adaptation and habitat restoration.	Ecological Restoration (DER)	1,2,3, 4,5	State Funding Capital	Precipitation Changes, Rising Temperatures
Build the capacity of regional organizations to implement climate adaptation and habitat restoration at the local level	Ecological Restoration (DER)	1,2,3, 4,5	State Capital and Operating Budget	Precip changes, rising temps, extreme weather
Review habitat management, land stewardship, agricultural and invasive species programs and policies to develop strategies that promote coordination and support climate change adaptation and mitigation goals	Executive Office of Energy and Environmental Affairs (EOEEA)	1, 3	State Operating Budget	Precip changes, rising temps, extreme weather

## Appendix A Step 3. ACT

Figure A2. Example strategy from City of Oakland's Local Hazard Mitigation Plan

STRATEGY DEVELOPMENT INFORMATION							
<b>Strategy Name</b>	Safer Housing for Oakland: Soft Story Apartment Retrofit Program						
<b>Hazard(s) Addressed</b>	Earthquake Ground Shaking	Earthquake Liquefaction	Current Flooding	Future Flooding	Wildfire	Landslide	Other Hazards
<b>Strategy Type</b>	Evaluation	Program/ Operation		Policy Development	Coordination	Education/ Outreach	
<b>Process/ Implementation Mechanism</b>	Long-Range Planning	Land Use Planning	Capital Planning	Operations	Emergency & Hazards Planning	Project Planning & Design	New Initiatives
<b>Responsible Agency</b>	Department of Planning and Building, Building Division						
<b>Partners</b>	City of Oakland Rent Board; ABAG						
STRATEGY IMPLEMENTATION INFORMATION							
<b>Priority</b>	<b>High</b>						
<b>Actions/ Activities</b>	<p>Twenty-two thousand (22,000) rental units in Oakland are in the type of building called “soft story.” With large open spaces on the ground floor for parking or shops, these buildings lack adequate strength and stiffness in their first story.</p> <p>Safer housing, which will make Oakland more resilient to earthquakes, requires investing in seismic retrofits. Retrofitting the housing stock can help save lives and keep people in their homes and out of emergency shelters. Keeping people in their homes after an earthquake ensures that residents can go to work, send their children to school and continue to contribute to the local economy.</p> <p>The City of Oakland seeks to preserve the character of its diverse communities by designing a soft story retrofit program that (1) makes housing safer and saves lives, (2) facilitates emergency response and housing recovery, (3) keeps Oakland residents in Oakland, and (4) softens the economic blow of a major disaster. The City seeks to: (1) establish the retrofit program; (2) provide financial support to building owners to complete retrofits. As of March 2016, such an ordinance had not yet been adopted by Council.</p>						
<b>Staff Lead</b>	Dave Harlan, Department of Planning and Building, Building Division						
<b>Cost Estimate</b>	The cost of retrofitting apartment buildings is on average \$10,000 per unit. Since most buildings have between 5 and 25 units, the costs for retrofitting could range from \$50,000 to \$250,000 per building. Total activity cost: \$4 million						
<b>Benefits (losses avoided)</b>	Retrofitting soft story apartment buildings will likely save lives, minimize injuries and help keep people in their homes after a major disaster.						
<b>Potential Funding Sources</b>	City's Federal Community Development Block Grant (CDBG) funds; grants.						
<b>Timeline</b>	2016-2021						

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Figure A3. Example timeline based implementation format



Start-Up Phase A  
(2012-2015)

Implementation F  
(2015-2020)

Recommended Action

Mandatory Evaluation

Mandatory Retrofit

REV. 9/13/2011

Figure A4. Example workplan from the City of San Francisco's Community Action Plan for Seismic Safety (CAPSS)

Workplan for the CAPSS Earthquake Safety Implementation Program	
	Draft September 13, 2011
<b>Phase A Task Details</b>	
<b>Task A.1.a. Provide general public information program about building hazards and performance</b>	
<b>Schedule</b>	
<ul style="list-style-type: none"><li>• Initiate program in 2012</li></ul>	
<b>General Comments</b>	
<ul style="list-style-type: none"><li>• Much work currently underway</li><li>• Public already has much partial information, much is not correct</li><li>• Many different informational messages are current being provided. Need to have a consistent overall message, to which detailed messages can be linked</li><li>• Need to develop overall program identity and related materials</li><li>• Communications must be through a wide variety of media</li></ul>	
<b>Costs and Other Impacts</b>	
<ul style="list-style-type: none"><li>• Major impacts. Informed public can help drive policy and performance standards</li></ul>	
<b>Technical Issues</b>	
<ul style="list-style-type: none"><li>• None</li></ul>	
<b>Necessary Preliminary Work</b>	
<ul style="list-style-type: none"><li>• Need to define overall messages and goals.</li></ul>	
<b>Legislative Action Required</b>	
<ul style="list-style-type: none"><li>• None</li></ul>	
<b>Lead Agency</b>	
<ul style="list-style-type: none"><li>• ResilientSF team</li></ul>	
<b>Supporting City Agencies</b>	
<ul style="list-style-type: none"><li>• Department of Building Inspection</li><li>• Department of Emergency Management</li></ul>	
<b>External Involvement</b>	
<ul style="list-style-type: none"><li>• CAPSS ESIP advisory group</li></ul>	
<b>Implementation Cost</b>	
<ul style="list-style-type: none"><li>• May be best done under outside contract</li><li>• Communications programs may have expenses for program development, printing, etc.</li></ul>	

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Figure A5. Example action plan sample from earthquake and hazards program, Association of Bay Area Governments

## Recommended Actions Summary

Recommended Action	Level of Implementation	Short-term	Medium-term	Long-term
<b>Decision-Making</b>				
<i>G-1: Use existing intergovernmental committees to convene jurisdictions and facilitate communication around disaster recovery collaboration</i>	Regional	√		
<i>G-2: Examine the feasibility of a regional disaster recovery framework</i>	Regional		√	
<i>G-3: Integrate resilience policy into current plans and practices</i>	Regional, local			√
<i>G-4: Lead reconnaissance missions for local leaders, staff, and community leaders to areas undergoing disaster recovery</i>	Regional, local	√		
<i>G-5: Establish and maintain a recovery clearinghouse to house resources for pre-disaster recovery planning and post-disaster recovery guidance</i>	Regional, local	√		
<b>Housing</b>				
<i>H-1: Identify areas where mitigation and recovery resources are particularly important</i>	Regional, local	√		
<i>H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery</i>	Regional, local			√
<i>H-3: Use Plan Bay Area as a framework to directing resources for permanent replacement of housing</i>	Regional, local			√
<i>H-4: Address the problem of underinsured homes with more realistic hazard insurance availability</i>	Regional, local		√	
<i>H-5: Encourage accurate identification of soft-story buildings</i>	Regional, local	√		
<i>H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes</i>	Regional, local		√	
<i>H-7: Reduce personal and community losses by increasing resilient building and retrofit practices</i>	Local	√		
<i>H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training</i>	Regional		√	
<i>H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit</i>	Regional, local		√	
<b>Infrastructure</b>				
<i>I-1: Establish regional baseline assessment and system performance standards to identify vulnerabilities and define interdependencies</i>	Regional		√	
<i>I-2: Conduct a regional assessment of system interdependencies and the consequences of cascading failures</i>	Regional	√		
<i>I-3: Evaluate the usefulness of creating performance targets to establish region-wide performance goals for all infrastructure systems</i>	Regional			√
<i>I-4: Identify strategies to reduce interdependencies and develop plans to assist with implementation</i>	Regional			√

**Figure A6. Example action plan for resilient housing from earthquake and hazards program, Association of Bay Area Governments**

## Housing



### H-1: Identify areas where mitigation and recovery resources are particularly important

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-1: Identify areas where mitigation and recovery resources are particularly important</i>	Regional, local	√		

Action Category					
<i>Facilitation</i>	<b>Education/ Information</b>	<i>Evaluation</i>	<i>Policy Development</i>	<b>Further Study/ Research</b>	<b>Program and Operation</b>

By overlaying information on vulnerable housing type and vulnerable populations with hazard and Priority Development Areas policy makers can direct policies and allocate resources to strengthen housing, reduce individual losses, shorten housing reconstruction timelines, minimize economic disruption and promote long-term regional growth and economic goals.

Initial Implementation Tasks:

- Gather vulnerable population data to input into GIS
- Secure funding for ABAG staff time



### H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery

Recommended Action	Level of Implementation	Short-Term	Medium-Term	Long-Term
<i>H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery</i>	Regional, local			√

Action Category					
<i>Facilitation</i>	<b>Education/ Information</b>	<i>Evaluation</i>	<b>Policy Development</b>	<i>Further Study/ Research</i>	<b>Program and Operation</b>

If possible, while homes are being repaired, residents should be enabled to remain in their home or neighborhood through shelter-in-place policies. When residents remain, local businesses are more likely to stay in business, and families are more likely to quickly return to the routine of school and work. Regional plans to provide neighborhood support centers can enable families to remain in place by providing centralized food and water distribution, access to generators and medicine, and other needed services and supplies. Neighborhood support centers facilitate maintenance of existing neighborhood support networks.



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## Appendix A Step 4. FUND

**Photo. Lassen County wildflowers, California**

**In the shadows of Lassen National Park, a resilient landscape in historic lava flows.**

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### ■ Expected Outcomes

- ✓ How to engage funders and decision makers to implement strategies and make the business case for your projects
- ✓ Connect engagement activities to resilience-building actions
- ✓ An initial finance strategy that starts with local funding options first
- ✓ Understanding of potential local tools for self-financing
- ✓ A comprehensive resilience finance menu that includes self-funding, public-private partnerships, philanthropic opportunities, regional funds, and grants
- ✓ Understanding federal, state, and philanthropic grants that may match your funding needs

### ■ Worksheets in Appendix B

- **4.1 Funder Engagement Inventory**

*This blank worksheet is a template for mapping the potential funders that have been engaged or should be engaged in the process and to identify ability to solicit for funds for the resilience project.*

- **4.2 Local Funding Sources Inventory**

*This worksheet template is to inventory all existing potential funding sources that are already available within your community and to help assess which ones have potential as a resilience funding source.*

- **4.3 Foundation and Other Grant Funding Alignment**

*This worksheet template is to help organize and list all potential grant funding opportunities and link them to the resilience-building strategies and projects.*

### ■ Resources

- **Financial Primer Resources**

Two financial primers: Resilient by Design's Finance Tools and AECOM's Primer for Practitioners provide state-of-the-art fiscal guidance for communities grappling with seemingly insurmountable resilience funding challenges. These complementary materials lay out the public and private resource options that communities and regional alliances can consider as they develop the local resilience capital stack.

- The Resilient by Design primer focuses on the RBD Bay Area Challenge process. The project team outlines the need for an overall finance strategy, advising that obtaining pre-development project funding as an initial step to longer-term fiscal support. The primer details a decision process for Bay Area communities to use as they assemble funding and finance components for implementation. This guide provides specific regional, state, and federal grants for communities to tap.

[www.resilientbayarea.org/finance-tools](http://www.resilientbayarea.org/finance-tools)

- The AECOM report is a straight-forward explanation of the types of funding and financing options available for communities to use to implement resilience projects. The report summarizes the big picture on resilience terminology, cites crucial laws and regulations pertaining to adaptation requirements and addresses the community and equity challenges communities face. It further explains the sectoral entities that can support resilience implementation from community development corporations, land trusts, various finance institutions, as well as how communities establish partnership bodies such as joint powers authorities or infrastructure banks.

[www.aecom.com/paying-climateadaptation-california-primer-practitioners/](http://www.aecom.com/paying-climateadaptation-california-primer-practitioners/)

- **National Institute of Standards and Technology Community Resilience Planning Guide**  
The guide is designed to assist communities improve resilience “by setting priorities and allocating resources to manage risks for their prevailing hazards.” The guide can be helpful to communities in developing resilience goals that are aligned with social and economic needs, which will make securing local funding for projects more likely.  
[www.nist.gov/topics/community-resilience/community-resilience-planning-guide](http://www.nist.gov/topics/community-resilience/community-resilience-planning-guide)
- **Toward a More Resilient Community: An Overview of the Community Resilience Planning Guide for Buildings and Infrastructure Systems**  
This December 2015 National Institute of Standards and Technology (NIST) report outlines guidance on determining community resilience goals; promoting a systematic approach to incorporate resilience improvements in existing budget processes; and, implementing triple bottom line actions.  
[www.nist.gov/topics/community-resilience](http://www.nist.gov/topics/community-resilience)
- **Lessons in Regional Resilience: Case Studies on Regional Climate Collaboratives**  
This report provides case studies of several regional climate adaptation efforts, including models for regional funding.  
Georgetown Climate Center, January 2017  
[www.georgetownclimate.org/reports/lessons-in-regional-resilience.html](http://www.georgetownclimate.org/reports/lessons-in-regional-resilience.html)
- **Natural Hazard Mitigation Saves: 2018 Interim Report**  
This report adds to previous iterations with new information from studies on the utility and transportation sectors. That National Institute of Building Sciences’ (NIBS) found that there is a benefit of \$11 for every \$1 invested in hazard mitigation strategies, including updated building codes.  
[www.nibs.org/page/mitigationsaves](http://www.nibs.org/page/mitigationsaves)
- **re:focus partners**  
A range of guides and toolkits related to resilient financing options, including how to use catastrophic bonds and local procurement processes for resilience, and how to structure resilience bonds.  
[www.refocuspartners.com/library/](http://www.refocuspartners.com/library/)
- **NatureVest, The Nature Conservancy’s impact investing fund**  
This conservation finance platform works to increase the scale of land conservation through investment opportunities that offer environmental benefits alongside financial returns for investors. Investment areas include Green Infrastructure for Cities, Forests and Carbon, Ocean Protection, and Sustainable Agriculture and Water. [www.naturevesttnc.org/](http://www.naturevesttnc.org/)
- **Conservation Finance Network Toolkit**  
The Conservation Finance Network has a set of resources on the basic approaches to raising money for land conservation, and organizes them by simple, moderate, and difficult depending on the reader’s familiarity with a range of financing tools.  
[www.conservationfinancenetwork.org/2017/11/27/launching-the-conservation-finance-network-toolkit](http://www.conservationfinancenetwork.org/2017/11/27/launching-the-conservation-finance-network-toolkit)
- The Conservation Finance Network also published a report that outlines a framework for incrementally matching public, private, and philanthropic funds together for environmentally-beneficial land conservation.  
[www.conservationfinancenetwork.org/2017/04/04/report-private-capital-for-working-lands-conservation](http://www.conservationfinancenetwork.org/2017/04/04/report-private-capital-for-working-lands-conservation)

- **Investing in Communities Affected by Conflict and Crises**

This article provides an overview of how governments and partners in the nonprofit world and private sector can use impact investing support communities build back better over the long-term, instead of just focusing funding in the immediate response phase right after a disaster.

[ssir.org/articles/entry/investing\\_in\\_communities\\_affected\\_by\\_conflict\\_and\\_crises1](https://ssir.org/articles/entry/investing_in_communities_affected_by_conflict_and_crises1)

- **Community Capital Management Impact Investments for Disaster Recovery**

This investment management firm provides three short examples of impact investment bonds geared toward disaster resilience projects. These three examples highlight how private investments can support disaster-impacted and disaster-prone areas with projects that provide affordable housing to displaced residents after disasters, protect water infrastructure from natural hazards, and even support for Salvation Army work after disasters.

[blog.ccminvests.com/blog/spotlight-ccm-fixed-income-impact-investments-supporting-disaster-recovery-relief](https://blog.ccminvests.com/blog/spotlight-ccm-fixed-income-impact-investments-supporting-disaster-recovery-relief)

- **The Disaster Philanthropy Playbook**

This website offers best practices and lessons learned to help communities stave off economic decline after disasters. [disasterplaybook.org/](https://disasterplaybook.org/)

- **U.S. Climate Resilience Toolkit Funding Opportunities**

The list provides a range of government and private foundation resources that can support local climate adaptation and resilience projects. [toolkit.climate.gov/content/funding-opportunities](https://toolkit.climate.gov/content/funding-opportunities)

- **Resilience and Comprehensive Economic Development Strategies (CEDs)**

The National Association of Development Organizations, in partnership with the U.S. Economic Development Administration, has case studies and guidance documents on how regions can integrate vulnerability assessments and resilience goals action plans into economic development plans that are eligible for federal funding. [www.cedscentral.com/resilience.html](https://www.cedscentral.com/resilience.html)

- **Federal Funding Compendium for Urban Heat Adaptation**

This report compiles different federal programs that could be used to pay for urban heat mitigation projects.

[www.adaptationclearinghouse.org/resources/federal-funding-compendium-for-urban-heat-adaptation.html](https://www.adaptationclearinghouse.org/resources/federal-funding-compendium-for-urban-heat-adaptation.html)

- **The Local Government Commission's new funding-navigation program** helps California communities find resilience funding for a wide range of adaptation, organized by sectors such as parks, transportation, water infrastructure, and local street repair. [FundingResource.org](https://FundingResource.org)



# Make the Business Case for Resilience

Funding challenges often arise when a resilience project or initiative transcends agency boundaries or political jurisdictions. Regional hazards, such as climate induced sea level rise or urban/wildland fire threats warrant larger scale resilience solutions. Issues centered on decision making, ownership and regional capacity to fund levees, vegetation management, sea walls or wetlands preservation will cross jurisdictional boundaries and, thus, could impede an easy pathway to implementation. Unscrambling complications arising from project

ownership and scale is difficult and often causes lengthy delays in fiscal planning and funding acquisition. In these cases, it may be difficult to find or designate the appropriate agency to serve as the hub jurisdiction or agency that can initiate and implement the specific resilience effort. Often, regional planning or funding entities have little or no governance authority; this poses a particular challenge when many jurisdictions and project partners are involved.

Adaptive approaches to match resilience needs to funding resources may include unconventional solutions: for example, different departments may coordinate on spending for capital projects, or neighboring cities may pool funding for large-scale green infrastructure projects to benefit many jurisdictions. Unexpected co-benefits arise from these imaginative multi-partner efforts—workforce development opportunities, new sources for potential matching funds, enlivened economic conditions resulting from major construction projects, and an improved physical environment that uplifts the quality of life for the community.

## Support for Local Investment

Building and sustaining stakeholder support for resilience action is an essential component of a finance strategy. This support will be the foundation of a successful resilience initiative. As a jurisdiction overhauls its internal spending plan to incorporate climate and disaster resilience improvements, develops new revenue sources, or seeks voter approval for tax measures, having solid community backing is a baseline need. Communities see these efforts as being similar to managing a fundraising drive or a political campaign. After building trust and involvement through consistent outreach and frequent public dialogue, a larger support network naturally evolves as leaders and stakeholders address community risk and develop local solutions that make sense and are doable. Use [Worksheet 4.1 Funder Engagement Inventory](#).

Local officials need to understand effective ways to activate voter interest and ensure they are addressing the community's highest priority needs. This will assure voters that they have responsive government partners and they are more readily invested in resilience outcomes. As outlined in Step 1: ENGAGE, building a base for community support calls for astute public outreach.

### **Develop an initial financial strategy that starts with locally-based funding opportunities.**

- ✓ Embed resilience budgeting into the community's fiscal planning. As resilience funding is often limited to external, limited scope grants or restricted portions of general fund or CIP budgets, local resources are undervalued. Incrementally, resilience projects and initiatives need to be part of the regular budget and decision-making discussions.
- ✓ Examine all funding sources as possible resilience monies. Comb through internal budget sources and consider how to re-purpose existing funds or create new revenue scenarios to leverage what's already available.
- ✓ Influence community-wide conversation and day-to-day decisions about long-term capital improvements to both inform the public and build support for future funding campaigns.

### **Curate a resilience finance menu.**

- ✓ Develop a feasible private-public finance strategy by connecting with impact investors, corporate partners, and local financial institutions. Local officials can align support of private capital as a crucial part of the resilience funding strategy. The role of the private market cannot be over estimated and is often not integrated into a community's financial planning.
- ✓ Pursue philanthropic contributors through private sector partnerships and by tapping local community foundations to explore potential funding through this often underused fiscal source.
- ✓ Expand the stakeholder circle to include diverse parts of the community, along with organizational and governance partners outside of local government. Regional agencies and community development banks are frequent fiscal contributors to local projects.

### **Plan before the disaster strikes.**

Communities are often not in a mindset to plan for recovery after a disaster occurs. Many people will want to see infrastructure and buildings rebuilt just as they were before the disasters. Communities can develop recovery plans before disasters happen, during what FEMA refers to as "blue sky days." These pre-disaster recovery plans can include at least five shovel-ready projects to fund along with a well-defined action plan adopted ahead of time. With these planning pieces in place, and imbedded in approved planning documents such as the Local Hazard Mitigation Plan or five-year capital improvement plans, a community can successfully cultivate funding and finance opportunities from the public and private sectors.

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**Figure A7. Summary of federal grant and other funding programs from Resilient by Design Bay Area Challenge Finance Guide, December 2017---NHA Advisors, page 42**

Federal Grant Program	Sponsoring Agency*	Requires Declared Disaster	Eligible Projects
Hazard Mitigation Grant Program	FEMA	Yes	Reduction of flood risk
Pre-Disaster Mitigation Program	FEMA	No	Reduction of flood risk
Flood Mitigation Assistance Program	FEMA	No	Reduction of flood risk
National Disaster Resilience Competition	HUD	Yes	Reduction of disaster risks
Community Development Block Grants	HUD	No	Resilient community improvements
Regional Resiliency Assessment Program	Homeland Security	No	Planning for resilient infrastructure
Coastal Resilience Grants	NOAA	No	Resilient coastal infrastructure
Office of Coastal Management Grants and Cooperative Agreements	NOAA	No	Coastal resilience planning
National Sea Grant College Program	NOAA	No	Coastal resilience planning
Standard Projects; <u>Continuing Authority Program</u>	ACE	No	Reduction of storm & flood risk, beneficial use of sediment, aquatic ecosystem restoration
Planning Studies	ACE	No	Area-wide studies not focused on a specific project
San Francisco Bay Water Quality Improvement Fund	EPA	No	Restore wetlands and watersheds, and reduce polluted runoff
Water Infrastructure and Resiliency Finance Center	EPA	No	Information center for drinking water, wastewater, and storm water infrastructure finance

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**Figure A8. Key characteristics of different financing tools from “Paying For Climate Adaptation In California - A Primer For Practitioners”, AECOM, October 2018, pgs. 14-16**

Financing Tools	Who are the Key Issuers / Involved Parties?	Key Benefits	Key Drawbacks
<b>Bonds</b>			
<b>Municipal Bonds (General Obligation Bonds, Revenue Bonds)</b>	Local or state government	Commonly used	Subject to voter approval requirements
<b>Private Activity Bonds</b>	Local or state government on behalf of private sector	Encourages private sector participation	Limited application and amount
<b>Pay for Success Financing (Social Impact bonds, Environmental Bonds)</b>	Partnership between public agency, private provider, and third-party verifier	Transfers risk of achieving intended outcomes from public sector to private sector	Limited use to date Significant monitoring and evaluation required
<b>Green Bonds</b>	Local or state government	Social impact investor appeal  Publicizes commitment of spending towards environmental purposes	Limited use to date  Lack of standardization of what it means to be “green” Administrative complexity
<b>Insurance-Linked Securities (Catastrophe Bonds, Resilience Bonds)</b>	(Re)Insurance companies, public and private organizations	Less or no correlation with markets adds investor appeal	No resilience bonds as of 2017
<b>Loans</b>			
<b>Federal Loans</b>	Federal issues; borrower can be private or public entity	Commonly used  Applicable dedicated loans for transportation and water infrastructure	Dependent on authorization from Congress
<b>Revolving Loan Funds</b>	State issues; borrower can be non-profits or public entity	Dedicated state programs focused on water and infrastructure programs	Sustainability of programs dependent on loan repayment
<b>Program Related Investments (PRIs)</b>	Philanthropies	Flexible application	Requires alignment of philanthropic goals with adaptation and resilience outcomes

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**Figure A 9. Examples of connecting strategies to funding sources**

Strategy Type	Problem Statement	Strategy	Funding Approach
<b>Operational Strategy</b>	The city lacks the staff to enforce building codes and adherence to retrofit policies.	Within the next year, build staffing capacity to implement and support plan implementation.	Develop new component to the city's permit fees to support hiring additional staff 3 FTEs for increased code and upgrade inspection capacity. Explore applying 10% the jurisdiction's mandated Strong Motion Instrumentation Program (SMIP) fees to support funding to hire additional staff inspectors.
<b>Plans, Regulations, and Policy Development Strategy</b>	Electric power outages occur on a regular basis during winter storms, resulting in businesses in core commercial areas to lose customers.	Within the next five years, require all new commercial solar installations to include energy storage with a minimum of 3 hours downtime.	The jurisdiction can offer a time limited incentive in the form of a tax rebate NTE 10% of a project's permit fee for commercial solar installations. The program will be in place for the coming five years.
<b>Education/ Outreach/ Coordination Strategy</b>	There are over fifteen agencies and twelve nonprofits involved in addressing sustainability and resilience in the city, resulting in substantial gaps, duplication, and increased competition for funding.	Develop and convene a regional sustainability council to coordinate and align the efforts of the agencies and nonprofits.	The jurisdiction will allocate, as a community partner, 1.5% of its Utility User Tax proceeds for three years as seed funding with if contributions equaling its contribution are matched from the partner agencies and nonprofits' CDBG grants.
<b>Capital Planning</b> Includes capital improvement plans and is essential if the strategy requires financial support for staff or capital improvements.	The community's capital funding needs exceed current budget allocations for major capital projects in the coming five years.	Develop a supplemental facilities funding plan with designated funding targets for the five-year period.	Hire a grants and investor development director to be funded from the jurisdiction's reserve fund for economic uncertainty, development impact fees, and Transient Occupancy tax funds.

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Strategy Type	Problem Statement	Strategy	Funding Approach
<p><b>Operations</b></p> <p>Includes annual budgeting process, and can incorporate financial planning for strategy implementation.</p>	<p>The jurisdiction is accruing significant General Fund shortages due to a decade of deferring payment into the employee retirement liability fund.</p>	<p>Establish a long-term funding mechanism that will be sustained regardless of outside issues.</p>	<p>The mayor and city council propose a new property-based city tax measure of \$25/parcel for the coming ten years to decrease the municipal liability of over \$120 million.</p>
<p><b>Emergency and Hazards Planning</b></p> <p>Includes incorporation into LHMP, emergency response plans, or preparedness planning.</p>	<p>The jurisdiction's scores of risk reduction, adaptation, land use, energy, water, and policy action plans need to integrate disaster/resilience actions.</p>	<p>Develop long-term coordinating body to align and manage integration of resilience and disaster into all of the City's plans.</p>	<p>The local government can convene an inter-departmental work group based in the city manager's Executive Team to integrate disaster and emergency planning tasks in existing plans, merge/eliminate duplicative planning initiatives and develop a two-year schedule that solves resilience action budget gaps. The city's professional development will fund this group.</p>
<p><b>Project Planning and Design</b></p> <p>Includes public/private development projects like housing developments, which may be necessary to implement specific strategies.</p>	<p>Cities often need to identify pre-development monies and staff resources in order to implement capital projects such as housing developments, large scale renovation programs and new infrastructure facilities and systems.</p>		<p>Establishing partnerships with private sector investors is a successful strategy and brings in non-governmental funding to launch major projects. As well, if state and federal funding is used for the construction, project management funds are typically eligible costs.</p>
<p><b>New Initiatives</b></p> <p>In the absence of current, existing processes utilize a new initiative that may include anything that requires a whole new effort such as a new department, legislation, or ballot measure.</p>	<p>When a municipality introduces a new climate adaptation or disaster risk reduction initiative, sustainable capital and operations funding are difficult to generate. Current General Fund and restricted fund budgets are allocated; new funding is needed.</p>		<p>Some communities have created diverse funding streams by developing a multi-faceted financial plan. Cities partner with foundations (the 100 Resilient Cities initiative), connect with impact investors (City and County of San Francisco's partnership with a private sector PACE loan provider) and seek voter approval for general obligation bond measures.</p>



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# Appendix A Step 5. MEASURE

**Photo. Trinity Lake, California**

**Low water levels in reservoir after multiple years of drought.**

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### ■ Expected Outcomes

- ✓ An understanding of how and when to use metrics
- ✓ A plan for choosing and implementing metrics in your project
- ✓ A timeline for tracking, evaluating, and reporting metrics
- ✓ Rationale for and benefits of community resilience self-evaluation
- ✓ Designing metrics to help support a living document

### ■ Resources

- **City Resilience Index: Understanding and measuring city resilience**

This document, developed by the Rockefeller Foundation and Arup for 100 Resilient Cities, outlines the concepts behind a comprehensive, technically robust, globally applicable basis for measuring city resilience. The index is comprised of 52 indicators, which are assessed based on 156 questions, combining both qualitative and quantitative data. These are aggregated in relation to the 12 goals (or indices) in the *Toolkit*.

- **Community Resilience Organizations Self-Assessment Online Tool**

This comprehensive assessment will help you understand and prioritize potential actions. It can also help your community track progress over time, as you complete actions and improve resilience. [www.gocros.org/community-resilience-selfassessment](http://www.gocros.org/community-resilience-selfassessment)

- **Coastal Community Resilience Indicators and Rating Systems**

NOAA Office for Coastal Management offers tools and related training for communities starting to assess coastal vulnerabilities as part of a local planning processes. <https://coast.noaa.gov/digitalcoast/training/resilience-indicators.html>



### What to Measure and Why?

Does the project need to determine how much more resilient the community will become? Is the project trying to establish an acceptable recovery time after a disaster? Should the project track progress in implementing the plan? The answers to these questions are likely already embedded in how the community **defines resilience** and articulated in **goals and strategies**. It is important to remember that metrics should be directly tied to resilience goals, indicate when a target is reached or missed, or if the project needs to change course.

Further, well designed **metrics can help tell a story for why resilience building is necessary**, attract political support and funding, and focus efforts while providing a feedback mechanism about whether decisions, investments, and actions to improve resilience are making a difference and can help guide future decisions. Stakeholders should be involved in defining that goal and how to measure it. Buy in and trust in the metric, the calculation method, and what it indicates, is critical to community and decision maker support, and funding.

There are many challenges to identifying and using the right metrics. It can be difficult to measure items that are qualitative (i.e., has an education program changed behavior or has a training improved outcomes?) and for quantitative indicators, the data need may not be available for a broad enough area or long enough time to determine the effectiveness of the actions. Capturing metrics and the associated data may also require more capacity (i.e., funding, equipment, personnel with sufficient skills and time) than a jurisdiction has, particularly if the benefits of metrics do not outweigh the effort needed to attain them.

Having metrics, or some form of measuring action towards a **goal** can help provide structure as the team identifies priority actions, assigns resources, and organizes information. Measuring progress towards a more resilient state can feel abstract or too unwieldy. **Using more specific metrics can help define discrete pieces of progress and provide a more concrete path towards goals**. There are a wide variety and approaches to metrics that accommodate advancement towards different ends. In the case of Rockefeller's 100 Resilient Cities framework, 52 different indicators track everything from a seismic retrofit to social justice. In other cases, a handful of well designed metrics can provide valuable information that may be easier to track.