REGIONAL RESILIENCE TOOLKIT

APPENDIX B WORKSHEETS

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

Association of Bay Area Governments

Worksheets

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

Appendix B Step 1. Engage

Photo: Small group exercise

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

1.1 Identify Stakeholders

Purpose

Identify who should participate in the project so that the plan is well supported and leads to an actionable outcome. The stakeholders should represent a variety of voices from those that may be impacted by the project, can help fund or implement the project, or have the authority to make decisions about the project area.

The worksheet identifies three types of project participants: the project team, which leads the project; an advisory group comprised of key stakeholders who will actively participate in the project; and other targeted stakeholders, including interest groups, and leadership and decision makers who need to know about decisions in real time.

Ideally, the project team should work through this worksheet as a group, using the suggested departments and agencies as a starting point. It would be helpful in this exercise to establish guidelines or criteria for identifying participants. Some recommended criteria include:

- ✓ The stakeholder owns an asset that the city cares about
- ✓ The stakeholder has the authority to regulate, make policy, or make decisions about an asset or asset class
- ✓ The stakeholder will be affected by the assessment or potential strategies
- ✓ The stakeholder has the potential to either politically help or hinder the process of assessing hazards and implementing strategies
- ✓ The stakeholder has specialized expertise that will help the city with technical questions
- ✓ The stakeholder may be able to provide funding or otherwise assist in implementing strategies
- ✓ The stakeholder represents typically underrepresented community members
- ✓ The stakeholder may be able to make critical connections to other relevant topic areas and/or projects that the project team may not be aware of

Approach

Before kicking off the project, the project lead should work through this worksheet in conjunction with their manager, or another city authority who will be overseeing or approving the project. The worksheet can be used to establish the internal project team first, then by the full project team once convened.

Outcome

1. An initial, comprehensive list of key project participants. This list is adaptable and may change over the course of the project as more information is gathered but should represent the best understanding of who will be affected by, or have opinions about, the project.
2. An understanding of potential roadblocks or allies within the community who can either slow down or enhance the assessment and/or the implementation of resilience strategies.
3. An initial exercise to bring the project team together and begin working as a team.

1.1 Identify Stakeholders

Agency or Entity	Contact	Reason for including stakeholder
Project Team		
Comprehensive planning		
Land use		
Transportation		
Public works		
Local emergency planning/ management		
Geographic information systems		
Advisory Group		
Local Agencies		
Building code enforcement		
Fire departments/districts		
Floodplain administration		
Parks and recreation		
Public information office		
Natural and cultural resources		
Stormwater management		
Transportation (roads/bridges)		
Finance		
Economic development		
Housing		
Health and social services		
Solid waste management		
Other local agencies that may have a stake in resilience		

1.1 Identify Stakeholders

Agency or Entity	Contact	Reason for including stakeholder
Special Districts and Authorities		
Utility districts		
Parks districts		
Public and private schools		
Public and private hospitals		
Non-Governmental Organizations		
Community-based organizations		
Private sector businesses, economic development entities, or business groups		
Private utilities		
Public-private partnerships or collab-orative		
Faith-based organizations		
County, State and Federal Partners		
State office of emergency services		
State energy agency		
State office of housing and community development		
State planning office		
State water agencies		
Federal emergency management agency		

1.1 Identify Stakeholders

Agency or Entity	Contact	Reason for including stakeholder
Leadership and Decision Makers		
City council/board of commissioners		
City and/or County planning commission		
Other local, regional, or state elected officials		
Interest Groups		
Environmental groups		
Social justice groups		
Neighborhood groups		
CERT teams		
Cultural groups		

Adapted from FEMA Worksheet 2.1, Mitigation Planning Team Worksheet

1.2 Stakeholder Mapping

Purpose

Use this exercise with the project team to map out the relative interest and influence of the project's primary stakeholders. This exercise is designed to help understand the level of engagement and outreach that will be needed for each stakeholder and to determine stakeholder's desired or needed participation level. Further this exercise may identify groups that initially are not interested in the project but have high influence or will be heavily impacted by the project. These disconnected stakeholders will require a higher level of engagement and more resources to ensure they become interested enough to participate. This category may apply to disadvantaged communities or high level stakeholders.

Approach

After completing the worksheet 1.1 Identify Stakeholders, map those stakeholders' interests (or potential level of impact) and influence levels. This will help to develop targeted and effective strategies for each audience. Update during the process as more information becomes available. (Use additional sheets as needed)

Outcome

This exercise will result in a better understanding of the needs for various audiences and help to develop engagement strategies targeted to the particular needs of each stakeholder or stakeholder group.

1.2 Stakeholder Mapping

High Influence/Impact, Low Interest:
Keep Satisfied, Targeted Engagement

High Influence/Impact, High Interest:
Manage Closely, Engage Deeply

Low Influence/Low Impact, Low Interest:
Monitor and Share Information

Low Influence/Low Impact, High Interest:
Keep Informed, Consult

1.3 Workshop Checklist

Purpose

Use this Workshop Checklist to help organize and plan a workshop or meeting and to ensure that the practical details are covered beforehand, and that all of the necessary materials and tools are prepared for the day of the workshop. It also helps to plan for the meeting room layout and coordinate efforts with the meeting venue staff.

Approach

The outreach lead should be in charge of the Workshop checklist and work with the team, venue staff, and any consultants to review what will be necessary for the workshop and who will be responsible for each item. The group should determine how the room will be laid out and indicate that on the second page.

Outcome

- ✓ Clear roles and responsibilities for managing workshop logistics and ensure all necessary materials are available
- ✓ Single list for anyone to help with meeting logistics
- ✓ Meeting room layout

1.3 Workshop Checklist

Workshop Information

Workshop Name _____ Address _____

Venue Contact/☎ _____ _____

_____ _____

Location Date/Time

Pre-Event Information/Logistics

Invitation: ☐ Save the Date ☐ Calendar Invite ☐ EventBrite Date Invite Sent: Reminder?

☐ **Call in? Phone#:** ☐ **Webinar?** **Webinar Info:**

FOOD ☐ Breakfast ☐ Lunch ☐ Dinner ☐ Coffee/Tea ONLY ☐ Caterer Required? Name/Contact:

☐ Agenda Set

☐ Presentations? # _____ Due By:

Send to:

Number Attending:

In-Person: Via Phone:

Workshop Location Requirements: Other Special Requirements:

☐ AV Equip. (projector/screen) ☐ WiFi or internet ☐ Microphones ☐ Phone ☐ Wall Space Tables: Round Rectangle #_____ ☐ White Board

Materials

Item	Quantity	Responsibility
☐ Agenda		
☐ Comment Form		
☐ Sign-in Sheets		
☐ Attendee List		
☐ "Fact" Sheet		
☐ Presentation		
☐ Display Boards		
☐ Directional signs		
☐ Maps / Exercise		

Presentation Equipment

Item	Quantity	Responsibility
☐ Computer		
☐ Projector		
☐ Projector Remote		
☐ Extension Cord		
☐ Digital Camera		
☐ Video		
☐ Sound System		
☐ Lapel Mic / Microphone		

Refreshments

Item	Quantity	Responsibility
☐ Beverages		
☐ Food: Morning		
☐ Food: Lunch		
☐ Food: Afternoon		
☐ Cups, Plates, Napkins		
☐ Utensils		
☐		
☐		
☐		

Supplies

Item	Quantity	Responsibility	Item	Quantity	Responsibility
☐ Name Tags			☐ Flip Chart pads		
☐ Notepads			☐ Easels		
☐ Pens + Baskets			☐ Clipboards		
☐ Post-its			☐ Scissors		
☐ Index Cards			☐ Masking Tape		
☐ Markers or Pens			☐ Duct Tape		
☐ Dots			☐ Scotch Tape		
☐			☐ Paper Clips		

Follow Up / Completion

Item	Complete	Posted/Sent
☐ Meeting Notes		
☐ Attendees List		
☐ Presentation Links		
☐		
☐		
☐		
☐		
☐		

OTHER SPECIAL EQUIPMENT

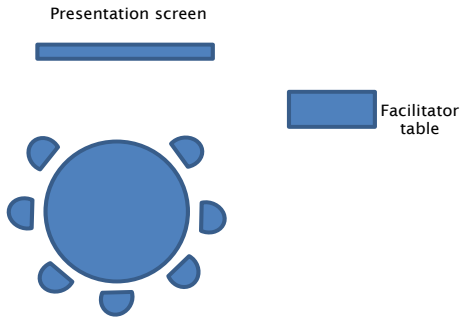
Item	Quantity	Responsibility	Item	Quantity	Responsibility

Notes:

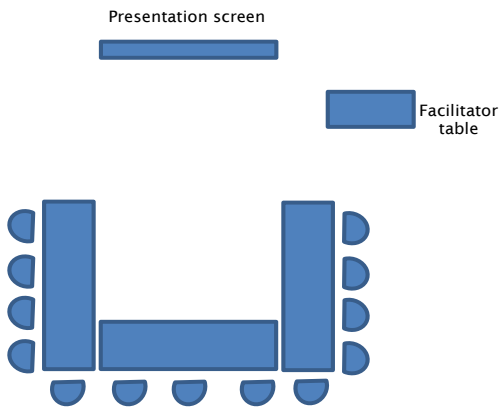
1.3 Workshop Checklist

Sample Room Set-ups

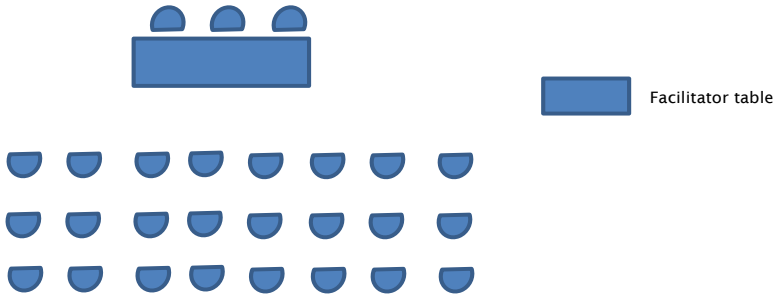
Small Group Workshop



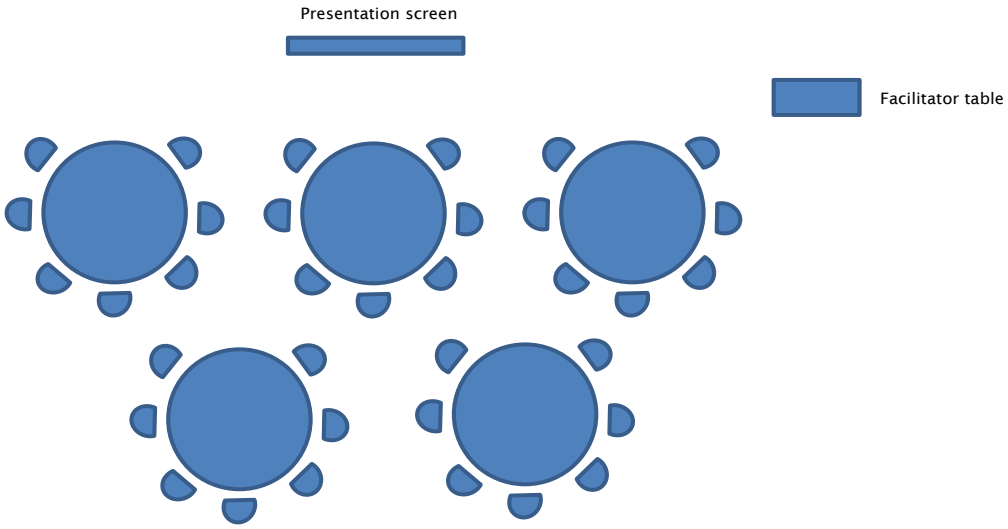
Advisory Group Workshop



Panel Presentation Workshop



Large Group Workshop



Appendix B Step 2. ASSESS

Photo. Emigrant National Wilderness, California

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

2.1 Develop Resilience Goals Exercise

Purpose

Use this worksheet with the advisory group or in a community workshop to note and track initial resilience goals. This can be enlarged and used as a worksheet for a small group break out or as a summary of a discussion.

Approach

Start by brainstorming what resilience means to participants and to the community as a whole. After about 15 minutes of discussion, identify broad goal areas that will help the community to achieve that concept of resilience. Goal areas may range from broad ideas such as economic stability and health to more specific items such as a complete and redundant transportation network or energy grid. Once the general areas are determined, begin to refine the goals to become full statements that are as specific and meaningful as possible. Try to avoid vague or broad goals that the agency or organization has no control.

Outcome

- ✓ Identification of a concept of what resilience means to the community or organization.
- ✓ Broad goal areas
- ✓ Initial information on potential resilience goals for the plan.
- ✓ Common understanding between participants about where the community would like the plan to lead.

2.1 Develop Resilience Goals Exercise

What does resilience mean to the community?

General Goal Areas

Goal 1.

Goal 2.

Goal 3.

2.2 Develop Hazard Impact Statements

Purpose

Use this worksheet with the project team or advisory group to develop preliminary hazard impact statements. This worksheet is adapted from FEMA Worksheet 5.1, Hazards Summary Worksheet and uses the same classifications and approach. Either tool can be used and both and will help to determine the most critical hazards to address.

Approach

Following the narrative in the Toolkit, first identify likely hazards for the community and develop short profiles for each. Use the list below of potential hazards, adding any specific hazards to your community. Use the classifications to help characterize and focus the potential threat for each hazard on the worksheet on the next page.

Potential Hazards

- Avalanche
- Dam Failure
- Drought
- Earthquake
- Erosion
- Expansive Soils
- Extreme Heat
- Flood
- Hail
- Hurricane
- Landslide
- Lighting
- Sea Level Rise
- Severe Wind
- Severe Winter Weather
- Storm Surge
- Subsidence
- Tornado
- Tsunami
- Wildfire

Classification Definitions

Location (Geography)

- **Negligible:** Small region of planning area
- **Limited:** Some region of the planning area
- **Significant:** Large region of planning area
- **Extensive:** All or almost all of planning area

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

- **Weak**, resulting in little to no damage
- **Moderate**, resulting in some damage and loss of services for days
- **Severe**, resulting in devastating damage and loss of services for weeks or months
- **Extreme**, resulting in catastrophic damage and uninhabitable conditions

Probability of Future Events

- **Unlikely:** Minimal or almost no chance of recurrences.
- **Occasional**: Small probability or chance of recurrence.
- **Likely**: Strong probability or chance of recurrence.
- **Highly Likely:** Almost certain chance of recurrence.

Overall Significance

Based on the above criteria, summary of overall risk:

- **Low**: Two or more criteria indicate minimal impact.
- **Medium**: The criteria fall mostly in the middle ranges and the impacts are noticeable but not devastating.
- **High:** The criteria consistently indicates serious impacts that could be devastating.

Outcome

✓ Preliminary hazard statements

2.2 Develop Hazard Impact Statements

Adapted from FEMA Worksheet 5.1, Hazards Summary Worksheet

Hazard 1.	
Area impacted *(Negligible, Limited, Significant, Extensive)*	
Maximum probable magnitude/strength *(Weak, Moderate, Severe, Extreme)*	
Probability of future events *(Unlikely, Occasional, Likely, Highly Likely)*	
Overall significance ranking *(Low, Medium High)*	

Hazard 2.	
Area impacted *(Negligible, Limited, Significant, Extensive)*	
Maximum probable magnitude/strength *(Weak, Moderate, Severe, Extreme)*	
Probability of future events *(Unlikely, Occasional, Likely, Highly Likely)*	
Overall significance ranking *(Low, Medium High)*	

Hazard 3.	
Area impacted *(Negligible, Limited, Significant, Extensive)*	
Maximum probable magnitude/strength *(Weak, Moderate, Severe, Extreme)*	
Probability of future events *(Unlikely, Occasional, Likely, Highly Likely)*	
Overall significance ranking *(Low, Medium High)*	

2.3 Identify Important Community Assets

Purpose

Use this worksheet with the advisory group or in a community meeting to develop an initial listing of important community assets. This worksheet can be enlarged for small group discussions.

Approach

Using the Toolkit as a guide, use the table to begin documenting the community's assets. For each asset, determine if it is a single asset (e.g., City Hall), a class of assets (e.g., schools), or a representative asset (e.g., secondary roadway). Determine the level of vulnerability of each asset to the hazards identified. Finally, note how the asset functions in the community. For example, does the asset serve all the community with a critical service (e.g., hospital), does it serve a neighborhood only as a mostly recreational element (e.g., a park) or is it for a special subset of the community (e.g., senior housing). Build off the asset classes on Figure 31 in the Toolkit and identify those most critical to the community. (Use additional pages as needed)

Outcome

- ✓ Initial list of community assets to evaluate and incorporate into the plan.

2.3 Identify Important Community Assets

Community Asset (Asset Class)	Asset Type	Level of Vulnerability (High, Medium, Low)	Function

2.4 Community Asset Data Identification

Purpose

Have a general sense of the types of assets in the community to help guide the vulnerability assessment and focus resources in areas with the most impact. Gathering information on assets now can also help to identify where data gaps exist.

Approach

Work through this worksheet with the project team or have a team member tasked with data collection to work through the worksheet and review with the team. For the asset class column, check off the boxes of the asset classes and sub-classes to include in the assessment. In the Data Sources column, check off sources that apply to the community that might contain the data needed to assess the asset classes accurately.

Outcome

After completing this worksheet with the team, the scope of the assessment should be clear (which asset classes you think you will include) as well as where to find the data and if data gaps exist. In some cases, data may not be available for all the asset classes. If this is the case, decide whether to include the asset class; if so, what kind of resources will it take to find new sources of data?

2.4 Community Asset Data Identification

Asset Class: People	Data Sources
☐ Total population – current and future	☐ U.S. Census ☐ American community survey ☐ Regional Association of Governments (ie. ABAG, SCAG) ☐ Priority development areas ☐ County quick facts ☐ Local general plan or specific plans ☐ Local housing element ☐ Local zoning code
Population with access or functional needs, including: ☐ Age dependent, children and seniors ☐ Medically or mobility dependent ☐ Language constraints ☐ Low income ☐ Lack of education ☐ Culture or ethnicity ☐ Cost burdened (housing and/or transportation) ☐ Transit dependent (no car) ☐ Housing tenure (renters)	☐ U.S. Census ☐ American community survey ☐ County health department status reports ☐ Local general plan or specific plans ☐ Local studies ☐ Local housing element ☐ Local hazard mitigation plan ☐ Nonprofit or community based organizations

Asset Class: Building Stock	Data Sources
☐ Publicly owned buildings	☐ County tax assessor parcel data
Privately owned buildings: ☐ Residential buildings, e.g., single and multi family, mobile homes, senior and dependent housing ☐ Nonresidential buildings, e.g., industrial, commercial or institutional structures	☐ U.S. Census ☐ American community survey ☐ County tax assessor parcel data ☐ Local general plan or specific plans ☐ Local housing element ☐ Local zoning code ☐ Google Earth/Maps
☐ Future buildings, growth areas and infrastructure	☐ Regional association of governments ☐ Priority development areas ☐ Capital plans ☐ City and county budgets ☐ Local general plan or specific plans ☐ Local housing element ☐ Local zoning code ☐ Local growth boundaries or growth phasing ordinances

2.4 Community Asset Data Identification

Asset: Critical Response Facilities	Data Sources
☐ Public health infrastructure, e.g., hospitals and medical facilities	☐ County tax assessor parcel data ☐ Local safety element ☐ Local Emergency Operations Plans ☐ Local area formation commission municipal service reviews
☐ Police stations	☐ County tax assessor parcel data, department annual reports
☐ Fire stations	☐ County tax assessor parcel data
☐ Public schools	☐ County tax assessor parcel data

Asset: Community Services	Data Sources
☐ Community facilities, e.g., day cares, food banks, senior centers, grocery stores	☐ County tax assessor parcel data ☐ City licensing and regulating authorities ☐ Local general and specific plans ☐ Local zoning ☐ Google
☐ Places of worship	☐ (Same as above)
☐ Education and research institutions, e.g., schools, colleges, universities	☐ (Same as above)
☐ Waste transfer stations, landfills, recycling and reclamation facilities, incinerators, etc.	☐ CalRecycle ☐ County environmental health departments
☐ Household hazardous waste collection sites	☐ CalRecycle ☐ County environmental health departments

Asset: Utilities Infrastructure	Data Sources
☐ Water systems, including reservoirs and dams	☐ Urban water management plans ☐ Local integrated regional watershed management plan
☐ Wastewater, e.g., industrial and sanitary sewer systems)	☐ Urban water management plans ☐ Local integrated regional watershed management plan ☐ Local water utility
☐ Flood control infrastructure	☐ County tax assessor parcel data ☐ City/county public works or flood control district ☐ Local general plan or specific plans ☐ Google ☐ Department of water resources
☐ Stormwater (storm drain) system	☐ City/county public works ☐ Special studies within cities and counties ☐ Local agency formation commission
☐ Power utilities, e.g., electricity generation, distribution, transmission systems	☐ California Energy Commission ☐ California Public Utilities Commission ☐ Local utility

2.4 Community Asset Data Identification

☐ Pipelines, e.g., fuel and natural gas	☐ National Pipeline Mapping System ☐ California Energy Commission ☐ Kinder Morgan
☐ Oil refineries	☐ EPA ☐ Air Resources Board ☐ State employment statistics ☐ County and city general plans

Asset: Transportation Infrastructure	Data Sources
☐ Local streets and roads	☐ Transportation element
☐ Federal and state highways	☐ Metropolitan Transportation Commission 2011TeleAtlas ☐ CA Department of Transportation
☐ Bridges, tubes and tunnels	☐ CA Department of Transportation ☐ Local toll authority
☐ Railroads, passenger and freight lines	☐ Metropolitan Transportation Commission 2011TeleAtlas ☐ Amtrak ☐ Regional transportation agency
☐ Transit services (bus, BART, light rail)	☐ Metropolitan Transportation Commission 2011TeleAtlas ☐ Local transit agency
☐ Ferry service	☐ Highway and transportation district ☐ Water emergency transportation authority
☐ Bike/pedestrian routes	☐ Local general plan ☐ Bicycle, trail, and walkability Ppans ☐ Parks and recreation plan
☐ Airport	☐ Federal Aviation Administration ☐ Regional airport planning committee
☐ Seaports and marine terminals	

Asset: Communication Infrastructure	Data Sources
☐ Land line telephone systems	☐ Communication service providers
☐ Cable systems	☐ Communication service providers
☐ Cellular telephone antennae	☐ Communication service providers
☐ Underground communication conduits	☐ Communication service providers

Asset: Recreation, Open Space and Working Lands	Data Sources
☐ Park and recreation facilities	☐ California protected areas database ☐ Parks and recreation master plan
☐ Designated open space	☐ California protected areas database ☐ Conservation lands network explorer tool ☐ General plan open space element

2.4 Community Asset Data Identification

☐ Bike/pedestrian trails	☐ Local general plan ☐ Bicycle, trail, and walkability plans ☐ Parks and recreation master plan
☐ Natural areas	☐ Natural resource plans ☐ General plan open space element ☐ Open space plan ☐ Local coastal plan
☐ Agricultural and working lands	☐ National land cover database ☐ County tax assessor parcel data ☐ Local general plan

Asset: Hazardous Materials Sites and Contaminated Lands	**Data Sources**
☐ Hazardous materials sites, e.g., RCRA regulated sites, CUPA sites	☐ US EPA Envirofacts
☐ Landfills (open and closed)	☐ US EPA Envirofacts ☐ State Water Resources Control Board Geotracker
☐ Clean up sites, e.g., US EPA or DTSC regulated brown-field, cleanup sites, or landfills	☐ US EPA Envirofacts ☐ State Water Resources Control Board Geotracker

2.5 Vulnerability Assessment Scoping

Purpose

Use this scoping worksheet to help plan and scope the community's vulnerability assessment. Regulatory triggers, the interests of stakeholders, community goals, internal capacity, and availability of asset data are all factors that may influence the scope of the assessment.

Approach

It is recommended to work through this worksheet as a team. Use the community's goals and the results of the **Community Asset Data Identification Worksheet** to help determine the degree of analysis to perform on each asset type. For each asset type, put a check box in the column of the most in-depth assessment possible (or would like to achieve) for that asset type. Also note whether or not assessing that asset will help meet community goals, and whether or not the data is available or if data gaps exist.

Outcome

Upon completion of this worksheet, the team will have a road map that will help plan and execute the vulnerability assessment.

2.5 Vulnerability Assessment Scoping

Assets	Exposure Analysis	Assessment Questions			Would assessing this asset help achieve the community's goals?	Is there sufficient data available to conduct the assessment?
	Individual Asset	Individual Asset	Asset Class	Represent. Assets		
Publicly owned buildings	X					
Critical response facilities	X					
Police						
Fire						
Public schools						
Public health facilities						
Residential buildings						
Non-residential buildings						
People						
Total population						
Population with access or functional needs						
Community services						
Utility infrastructure						
Power						
Water supply						
Wastewater						
Waste management facilities						
Stormwater/flood control						
Transportation						
Roads						
Rail						
Seaport						
Airport						
Bike/pedestrian routes						
Communication						
Recreation, open space and working lands						
Hazardous materials sites and contaminated lands						

2.6 Rapid Vulnerability Assessment Exercise

Purpose

This exercise is intended to familiarize the project team and/or advisory group with the types of information that is needed to conduct the assessment. This **Rapid Vulnerability Assessment 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 community specifics can be used. This is designed to be a warm-up exercise, not a substitute for doing a more detailed vulnerability assessment on any asset or asset class.

Approach

Use this exercise in a workshop or group setting with the project team and/or advisory group. Have people work in small groups of 2-3 with either a hypothetical asset or a specific asset. The team may want to walk through each section and describe what people should be thinking through in each section and/or have each group talk through their results. This worksheet can be used to do a preliminary assessment to identify gaps in stakeholder representation and/or data necessary for assessments.

Outcome

This exercise is designed to give users a sense of how to proceed with a more in-depth asset vulnerability assessment. It is not intended to provide a detailed assessment on any asset or asset class.

2.6 Rapid Vulnerability Assessment Exercise

Asset:

Hazard (note past occurrences):	**Hazard impact statement**:

Existing Conditions *Describe the asset and highlight current conditions or stressors that could affect vulnerability*		
Physical asset functions (e.g., type of land use, community served, services provided):	Type: ☐ Residential ☐ Institutional ☐ Industrial ☐ Commercial ☐ Other:	Community Served (e.g., public, elderly): _____ _____ _____
Who owns the asset? Are owner and manager different?	Owner: ☐ Public ☐ Private	Manager: ☐ Public ☐ Private ☐ Different than owner? If so, explain:
What is the current condition of the asset? Has it recently been upgraded or retrofitted?	☐ Yes ☐ No If yes, explain when and to what standard:	

Physical Vulnerabilities *Identify conditions or design aspects that make an asset particularly vulnerable to impacts*
What characteristics make the asset more or less vulnerable to hazard? Examples include water or salt-sensitive mechanical components, flammable building materials, or location access.

2.6 Rapid Vulnerability Assessment Exercise

Functional Vulnerabilities *Describe asset function and/or relationships with or dependence on other assets that can make them vulnerable to impacts*		
Is the asset part of a networked system such that damage to other parts of the system would affect the asset's ability to function?	☐ Yes ☐ No If yes, are there alternatives to help maintain continuity of service?	
What external services does the asset rely on?	☐ Power ☐ Communications ☐ Food ☐ Water	☐ Fuel ☐ Materials/supplies ☐ Transportation ☐ Other:
If external services were interrupted, are there back up supplies in place?	☐ Yes ☐ No If yes, how long would they last (circle one): Hours Days Weeks	

Governance Vulnerabilities *Describe challenges with management, regulatory authority, or funding options for adapting to impacts*	
Is the asset protected by land or assets owned by others?	☐ Yes ☐ No If yes, describe:
What types of permits and from what agencies are necessary to maintain, repair or improve the asset?	☐ One agency ☐ Multiple agencies (circle): Local State Regional Federal
Are there funding sources that can be used to assess hazard risk, climate vulnerability or resilience?	☐ Yes ☐ No If yes, describe:

Consequences *Describe potential impacts on society, equity, the economy, and the environment*		
What scale of economic disruption would occur if the asset was damaged, disrupted, or failed?	☐ Local ☐ Regional ☐ State ☐ National	Is this based on a past event or an unplanned disruption? If yes, describe:
Who in the community would be affected by damage, disruption, or loss of asset function?	☐ People where the live ☐ People where they work ☐ People where they recreate	☐ Elderly ☐ Youth ☐ Low income ☐ Other:
What would the consequences be to ecological services be if the asset was damaged or lost?	☐ Habitat or species benefits ☐ Public access ☐ Flood risk management	☐ Water quality ☐ Other:

2.7 Vulnerability Assessment Questions: Individual or Representative Assets

Purpose

Assessment questions help to understand the underlying causes and components of vulnerability and the potential consequences of those vulnerabilities. The team can answer assessment questions in a very detailed way for individual assets that either a visual map inspection or a geospatial analysis has identified as being exposed to a hazard.

Many of the assessment questions are broad and apply to all types of assets, while some are specific to a particular hazard or type of asset, so the team will not need to answer all of the questions for all assets. In addition, some questions can easily be answered with readily available information, while others will require research or external input. It can be difficult to know how much effort to expend when answering assessment questions. Instead of spending a lot of effort to uncover hard-to-find, or in some cases nonexistent information, flag critical data needs and knowledge gaps that require further consideration and come back to these when developing the mitigation and adaptation actions.

Approach

Project team members should first fill out the assessment question worksheet as thoroughly as possible with readily available information. Then, provide a copy of the worksheet to the asset owner or manager to verify and provide additional information. A project team member should then discuss the answers with the owner or manager to ensure an accurate understanding of the assessment answers.

Outcome

Once completed, this worksheet will provide the project team all the information it needs to write a profile sheet for each selected asset that highlights its primary vulnerabilities.

2.7 Vulnerability Assessment Questions

Existing Conditions *Describe the asset and highlight current conditions or stressors that could affect vulnerability*
1. Who owns and manages the asset? Note if the owner and manager are different entities.
2. What year was the asset built? What is the remaining service life?
3. Has there been an effort to extend the service life (e.g. improvements, seismic retrofit, mitigation actions)? If so, describe what was done and when.
Physical Vulnerabilities *Identify conditions or design aspects that make an asset particularly vulnerable to impacts*
4. Does the asset have characteristics that make it vulnerable?
- 4a. Are there water or salt sensitive components of the asset are at-grade or below-grade, e.g., mechanical or electrical equipment, pumps, utilities, building heat, ventilation, power systems, or finished basements?
- 4b. Does the asset have openings are at-grade or below-grade that are entry points for flooding, e.g., entryways, tubes, tunnels, ventilation grates?
- 4c. Are their barriers (temporary or permanent) that can protect sensitive components or at- or below-grade entry points? Are there pumps or other systems in place to remove floodwaters if they do enter?
For building assets:
5. Does the asset have characteristics that make it vulnerable to earthquakes or fires?
- 5a. Is the facility or building a mobile or manufactured structure? If yes, describe the foundation type.
- 5b. Is the facility or building constructed from unreinforced masonry? If yes, describe how and if seismic hazards have been assessed and/or mitigated.

2.7 Vulnerability Assessment Questions

- 5c. Is the facility or building multi story, constructed from concrete and was built between 1950 and 1971? If yes, describe if and how seismic hazards have been assessed and/or mitigated.
- 5d. For residential buildings (either single family or multifamily), is it cripple wall construction (typically with short unreinforced walls that raise the first floor 1-5 feet above ground level)? If yes, describe how and if seismic hazards have been mitigated (i.e. the home has been bolted to the foundation and/or the cripple wall has been strengthened).
- 5e. For 1-2 unit residences, is the building house over garage construction? For multifamily residential, are there garages or other large openings on the first floor (soft story construction)? If yes to either, describe how and if seismic hazards have been assessed and/or mitigated.
6. Has the city taken any mitigation measures against wildfire? (e.g, does the city have an inspection system for fire mitigation actions?)
Functional Vulnerabilities *Describe asset function and/or relationships with or dependence on other assets that can make them vulnerable to impacts*
7. Is the asset part of a networked system such that damage to other parts of the system would affect the asset's ability to function? Describe what alternatives exist that could help maintain continuity of service if parts of the system are disrupted.
8. What external services, such as power, communications, food or fuel supplies or materials does the asset rely on? If these external services were interrupted, are there back up supplies ready and in place, and how long would they last?
For building assets:
9. Does the asset serve sensitive populations?
9a. Does the asset serve or house the elderly or very young, mobility or medically challenged individuals, or animals? If yes, describe what systems or plans are in place to enable either shelter-in-place or safe evacuation and relocation of the facility if necessary.

2.7 Vulnerability Assessment Questions

- 9b. Does the asset serve or house community members that are resource limited, e.g., are they low or very low income, housing or transportation cost burdened, renters, or without a car? If yes, what programs or plans in place to help these members prepare for, respond to, or recover from a hazard event?
- 9c. Does the asset serve or house community members that are ethnically or culturally diverse, have limited English-speaking capacity, or are non-English speakers? If yes, what programs or plans in place to help these members prepare for, respond to, or recover from a hazard event?
For transportation assets:
10. Does the asset serves as a critical access road, emergency or lifeline route, provide sole or limited access to communities or facilities, or provide service to transit dependent communities? If yes, describe the communities, services, and facilities the asset serves.
For recreation, open space, and working lands:
11. Does the asset provide recreational access or opportunities that are unique or limited in the area and/or region, e.g., access for persons with limited mobility, interpretive programs, access to the Bay, etc.? Could these functions be easily replaced in other areas?
12. Does the asset provide or protect habitat for threatened or endangered species? Is this habitat scarce in the region? Could this habitat be established in other areas?
For utility and communication infrastructure assets:
13. Does the asset provide critical services to sensitive populations (see question 9), emergency response providers, or critical facilities?

2.7 Vulnerability Assessment Questions

Governance Vulnerabilities *Describe challenges with management, regulatory authority, or funding options for adapting to impacts*
14. Is the asset protected from flooding by land or assets owned or managed by others (e.g., structural protection, roadways, rail embankments)?
15. What types of permits (and from which agencies) are necessary to maintain, repair or improve the asset? Are there special processes for emergency repairs?
16. What funding sources currently exist that can be used to assess hazard risk or vulnerability to climate change? To improve asset resilience?
Consequences *Describe potential impacts on society, equity, the economy, and the environment*
17. What economic disruption would occur if the asset was damaged, disrupted, or failed? Local, regional, state, or national? If the answer is based on a past weather event or an unplanned disruption, describe the type and duration of that disruption.
18. How would the community, particularly sensitive populations (see question 12), be affected by damage, disruption, or loss of asset function?
19. What would consequences to ecological services be if the asset was damaged or lost (e.g. habitat or species benefits, public access to the shoreline, or water quality)? What would the effect of this loss have on locally? Regionally?

2.8 Vulnerability Assessment Questions: Asset Class

Purpose

Assessment questions help to understand the underlying causes and components of vulnerability and the potential consequences of those vulnerabilities. These questions are designed to guide the assessment of an asset class, for example public facilities, residential land uses, parks or ground transportation systems.

Many of the assessment questions are broad and could apply to any asset class, while some are specific to particular types of assets, so the team will not need to answer all of the questions for a given asset class. While some answers can be gathered through desktop research or geospatial analysis, it is highly recommended to engage stakeholders who own, manage or can represent the asset class to uncover more detailed information about vulnerabilities and consequences.

Approach

It is recommended that a project team member fill out the assessment question worksheet as thoroughly as possible with readily available information. Then, provide a copy of the worksheet to the asset owner or manager to verify and provide additional information. A project team member should then discuss the answers with the owner or manager to ensure an accurate understanding of the assessment answers.

Outcome

Once completed, this worksheet will provide the project team all the information it needs to write a profile sheet for each selected asset that highlights its primary vulnerabilities.

2.8 Vulnerability Assessment Questions: Asset Class

Existing Conditions *Describe the asset class and highlight current conditions or stressors that could affect vulnerability*
1. Describe the type of asset in the class and the services and functions they provide.
2. Describe the location, extent, or geography of the assets within this class.
3. Describe the ownership and management of assets within this class. Are they public or private entities? Are there many or few?
Physical Vulnerabilities *Identify conditions or design aspects that make an asset particularly vulnerable to impacts*
4. Do the assets in this class have characteristics that make them vulnerable to current or future flooding, e.g., water or salt sensitive at or below grade components; openings to floodwater such as entry ways, tubes, tunnels, grates; reliance on pumps or temporary flood barriers? Are assets with these characteristics key assets or are there a large number of them?
5. Do the assets in this class have characteristics that make them vulnerable to seismic hazards (ground shaking, liquefaction, earthquake induced landslide), e.g., fragile building types, long linear assets, constructed with older standards, not seismically retrofit? Are assets with these characteristics key assets or are there a large number of them?
6. Do the assets in this class have characteristics that make them vulnerable to fire, rainfall induced landslides, or other natural hazards?

2.8 Vulnerability Assessment Questions: Asset Class

Functional Vulnerabilities *Describe asset function and/or relationships of assets in this class on other assets that can make them vulnerable to impacts*
7. Are the assets in this class networked such that damage to one part of the system would affect the function or services provided by the asset class? Describe what alternatives exist that could help maintain continuity of service if parts of the network are disrupted.
8. What external services such as power, communications, food or fuel supplies, goods or materials, or transportation access does the asset class rely on? If these external services were interrupted is there a contingency plan or back up supplies ready and in place, and how long would they last?
9. Describe how and where the asset class serves sensitive populations, e.g., elderly, very young, medically dependent or mobility challenged, low or very low income, housing or transportation cost burdened, renters, or without a car.
10. Describe how and where the asset class serves or houses community members that are ethnically or culturally diverse, have limited English-speaking capacity, or are non-English speakers. What programs or plans in place to help these members prepare for, respond to, or recover from a hazard event?
11. Describe the assets in this asset class that provide critical access, serve as an emergency or lifeline route, provide sole or limited access, or provide service to transit dependent communities.
12. Describe the recreational, educational or habitat benefits the asset class provides, noting if they are unique or limited in the area and/or region, and if their function could be easily replaced.
13. Describe how and where the asset class provides critical services to emergency response providers or critical facilities.

2.8 Vulnerability Assessment Questions: Asset Class

Governance Vulnerabilities *Describe challenges with management, regulatory authority, or funding options for adapting to impacts*
14. What policies are in place that govern or regulate the maintenance, repair or improvement of assets in this class?
15. What types of permits (and from which agencies) are necessary to maintain, repair or improve the assets within the class? Are there special processes for emergency repairs?
16. What funding sources currently exist that can be used to assess hazard risk or vulnerability to climate change? To improve resilience?
Consequences *Describe potential impacts on society, equity, the economy, and the environment*
17. What degree and scale of economic disruption would occur if the assets in this class were damaged, disrupted, or failed? Local, regional, state, or national? If based on a past weather event or an unplanned disruption, describe the type and duration of that disruption.
18. What impacts would occur to society and equity if the assets in this class were damaged, disrupted, or failed? Describe the potential consequences to health and safety, community and neighborhood social networks, community mobility, and particularly sensitive populations (see question 9).
19. What impacts would occur to ecosystem service benefits if the assets in this class were damaged, disrupted, or failed? Describe the consequences on water quality, habitats and species, public access, education or flood risk reduction if the asset class was damaged or disrupted. Would the impact be felt locally? Regionally?

Appendix B 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.

3.1 Develop Initial Problem Statements

Purpose

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.

Approach

Follow the narrative in Section 3 of the Toolkit to write problem statements describing the vulnerabilities and consequences that have been identified for each asset. This should build on the exercises in the previous section. A problem statement summarizes the particular issue that occurs when a hazard impacts an asset. This impact in combination with the potential level of importance should help to define a specific problem that must be addressed.

Outcome

✓ Detailed and specific problem statements for priority assets.

3.1 Develop Initial Problem Statements

Asset:

Hazard:

Summarize impact:

Level of urgency/importance:

Problem statement:

3.2 Strategy Idea Sources

Purpose

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 the 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.

Approach

Reference the following sources for initial strategies that can be customized for community assets and hazards.

Smart Growth Fixes for Climate Adaptation and Resilience
www.epa.gov/smartgrowth/smart-growth-fixes-climate-adaptation-and-resilience

Planning Framework for a Climate-Resilient Economy
www.epa.gov/smartgrowth/planning-framework-climate-resilient-economy

Flood Resilience *www.epa.gov/smartgrowth/flood-resilience-checklist*

Enhancing Sustainable Communities with Green Infrastructure
www.epa.gov/smartgrowth/enhancing-sustainable-communities-green-infrastructure

2011 ABAG Bay Area Regional Hazard Mitigation Plan

Hazards Addressed	Asset Classes Addressed	Source
Earthquake Landslide Wildfire Flood Security Dam failure Levee Failure Tsunami Drought Agriculture Pandemic flu	Infrastructure Health Housing Economy Government Education Environment Land Use	ABAG

Comprehensive list of strategies developed for previous Regional Hazard Mitigation Plan. Wide range of strategies, but little detail on implementation. Covers many hazard types and asset types. Some jurisdictions may be familiar with these strategies and have them included in their previous hazard mitigation plans.

resilience.abag.ca.gov/2011mitigation/ (see Appendix G)

3.2 Strategy Idea Sources

Bay Area Regional Resilience Initiative

Hazards Addressed	Asset Classes Addressed	Source
Earthquake	Governance Housing Infrastructure Economy and business	ABAG

This 2013 report identifies an action plan for the region to improve regional capacity for disaster resilience in four sectors. Many of the actions are regional in implementation, but there are several local strategies as well. Actions align with identified regional priorities adopted by ABAG's Regional Planning Committee.

resilience.abag.ca.gov/projects/resilience_initiative/

Stronger Housing, Safer Communities: Strategies for Seismic and Flood Risks

Hazards Addressed	Asset Classes Addressed	Source
Ground shaking Liquefaction Current and future flooding	Housing Community members	ABAG and BCDC, developed in coordination with AECOM

Contains 40 strategies for state, regional, and local governments to address seismic and flood hazards for current and future development. Strategies are responsive to risk statements based on vulnerability analysis of housing and community capacity. Each strategy contains 2-3 pages of implementation guidance. Also includes a table designed to guide jurisdictions towards financing options to implement the strategies.

resilience.abag.ca.gov/projects/stronger_housing_safer_communities_2015/

Adapting to Rising Tides (ART) Project

Hazards Addressed	Asset Classes Addressed	Source
Current flooding Future flooding	Community land use, facilities and Services Transportation Utilities Shorelines	BCDC

Dozens of adaptation responses that describe actions and implementation options to address flooding vulnerability. Responses are organized by category: Overarching; Community Land Use, Facilities and Services; Transportation; Utilities; and Shorelines. Also includes a guide to orient the reader to the types of information provided on the cards, and a glossary to define terms and acronyms used in the responses.

www.adaptingtorisingtides.org/wp-content/uploads/2015/04/Adaptation_Responses_Intro-All.pdf

3.2 Strategy Idea Sources

State of California Multi-Hazard Mitigation Plan

Hazards Addressed	Asset Classes Addressed	Source
Earthquake Floods Wildfire Levee failure Landslides and other earth movements Tsunami hazards Climate related hazards Volcanoes Other hazards (natural & manmade)		California Governor's Office of Emergency Services

The plan does not contain a list of strategy action but identifies several possible goals and mitigation actions that can be implemented at a local level. Each hazard section includes possible mitigation actions that can be adapted locally and developed into a strategy.

hazardmitigation.calema.ca.gov/docs/SHMP_Final_2013.pdf

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards

Hazards Addressed	Asset Classes Addressed	Source
Drought Earthquake Erosion Extreme temperatures Flood Hail Landslide Lightning Sea level rise Severe wind Severe winter weather Storm surge Subsidence Tornado Tsunami Wildfire	Structure and infrastructure Natural systems	FEMA

Comprehensive resource that communities can use to identify and evaluate a range of potential mitigation actions for reducing risk to natural hazards and disasters. Many of the strategies are fairly generic and serve as a starting point for local innovation and planning projects.

www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf

3.2 Strategy Idea Sources

Resilient City Initiative

Hazards Addressed	Asset Classes Addressed	Source
Earthquakes	Existing buildings New buildings Lifelines infrastructure	SPUR

San Francisco-based initiative to improve the resilience of the built environment. Topic specific reports provide strategy recommendations for mitigating existing buildings, improving the seismic performance of new buildings, upgrading infrastructure, helping residents shelter in place, improving preparedness, and planning for disaster recovery.

www.spur.org/featured-project/resilient-city

Center for Climate Strategies Adaptation Guidebook

Hazards Addressed	Asset Classes Addressed	Source
Climate change	Infrastructure built environment Natural systems Health and society Economic activities	Center for Climate Strategies

Comprehensive compendium of strategies that address a wide variety of climate change issues, including sea level rise, drought, extreme heat, and changing ecosystems. Strategies are not very robust but can serve as a starting point for locally developed strategies.

www.climatestrategies.us/library/library/download/908

Getting Climate Smart Strategy Toolbox

Hazards Addressed	Asset Classes Addressed	Source
Climate change	Water management Agriculture Energy, transportation and urban Infrastructure Tourism and recreation Public health and safety Oceans and coastal resources Fisheries and aquatic ecosystems	National Resources Defense Council

Similar to the previous resource, contains a comprehensive compendium of strategies that address a wide variety of climate change issues. Can serve as a starting point for locally developed strategies.

www.nrdc.org/water/climate-smart/files/getting-climate-smart-strategy-toolbox.pdf

3.3 Evaluation Criteria

Purpose

This worksheet was developed to provide a tool for evaluating and prioritizing which strategies to implement. 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 to include multiple voices and viewpoints in strategy prioritization.

Approach

This worksheet should be worked through by the project team, as well as by the advisory group and any key stakeholders that will have a role in implementation. Use this worksheet to evaluate every strategy. It is important to get as much feedback as possible on this worksheet, as each stakeholder will evaluate strategies differently, and it is critical to include the perspectives of everyone who could assist with, or possibly hinder, the implementation of strategies. For more guidance on how to use this worksheet in a group setting, refer to the **ART Adaptation Response Open House Engagement Exercise.** *www.adaptingtorisingtides.org/howto/art-supplies/*

Outcome

After several team members and stakeholders have completed this worksheet, develop a score for each strategy that will help guide its feasibility and priority. Higher scores generally denote higher feasibility and priority.

Scoring Key	
+1	Criteria definitely met
0	Unsure/do not know
-1	Criteria not met/negative effects

Strategies to Evaluate

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

3.3 Evaluation Criteria

Criteria	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5
FEASIBILITY Funding: With existing or expected funding sources					
Political support*: Likelihood of political support					
Local champion*: Supported by a strong advocate or local champion					
Administrative*: With existing operations or procedures					
Technical*: With existing technology or know how					
Legal*: With existing authorities or policies					
SOCIAL BENEFITS Access: Protects access to jobs or services					
Life safety: Protects residents lives and prevents injuries					
Awareness: Increases public awareness					
Vulnerable residents: Protects especially vulnerable community members					
Recreation: Maintains recreational or educational opportunities					
ECONOMIC BENEFITS Jobs: Promotes/retains jobs					
Commuter movement: Maintains commuter movement					
Reduces disruption: Reduces service or network disruptions					
Reduces damages*: Reduces asset damage, e.g. to structures, infra-structure					
ENVIRONMENTAL IMPROVEMENT* Habitats and biodiversity: Creates or maintains habitat & biodiversity					
Water quality: Maintains or improves water quality					
Greenhouse gases (GHG): Reduces GHG					
Water use: Reduces water use					
Energy use: Reduces energy use					
COMMUNITY OBJECTIVES* Community objectives*: Advances other community objectives					
Existing plans: Supports existing plan objectives, i.e. general plan					
TOTAL SCORE					

** Indicates overlap with FEMA Worksheet 6.1, Mitigation Action Evaluation Worksheet*

3.4 Strategy Development and Implementation Handout

Purpose

This handout provides two tools to help to 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 prior to developing a worksheet for each strategy to ensure that worksheets are filled out consistently and that everyone understands the key pieces of information that are needed to effectively develop an appropriate and responsive strategy and plan for its implementation.

STRATEGY DEVELOPMENT INFORMATION							
Problem statement	*This is the problem statement that the strategy is responding to. This should come out of the vulnerability assessment and should include community goals.*						
Strategy name	*This is the name of the strategy – try to keep it to a few words.*						
Strategy summary	*This is a short description of what the strategy does.*						
Hazard(s) addressed	*Identify which hazard this strategy responds to.*						
Strategy type	**Operational** *(Strategies to enact operational and gover-nance related improvements)*	**Programmatic** *(Strategies to expand or create new programs, activities, and initiatives)*	**Plans, Regulations, and Policy Development** *(Strategies to develop or revise policies, plans, regulations, and guidelines)*	**Capital Improvement/ Infrastructure Projects** *(Strategies designed to address physical and functional deficiencies and needs in the built environment)*	**Education/ Outreach/ Coordination** *(Strategies related to initiating or expanding partnerships and relationships, communicating and sharing information, and building awareness)*	**Evaluation** *(Strategies to improve feedback, input, data and information or conduct further or new analysis)*	
Process/ implementation mechanism	**Long Range Planning** *(e.g., master plans, climate action plans)*	**Land Use Planning** *(e.g., general plan, specific plan)*	**Capital Planning** *(e.g., capital improvement plan)*	**Operations** *(e.g., annual budgeting)*	**Emergency & Hazards Planning** *(e.g., hazard mitigation plans)*	**Project Planning and Design** *(e.g., private and public devel-opment projects)*	**New Initiatives** *(e.g., legislation, ballot measure)*
Responsible agency	*Which department has the proper authority, capacity, and knowledge to implement the strategy.*						
Partners	*Internal or external stakeholders who have some decision making authority, political influence, policy or regulation authority, or who can assist with implementation.*						

STRATEGY IMPLEMENTATION INFORMATION	
Priority (Evaluation score)	*Evaluation score and priority level. Priority levels may vary by jurisdiction for different scores (for example, a score of 10 may be high priority in one jurisdiction and medium priority in another).*
Actions/ activities	*Steps that need to be taken to implement the strategy.*
Staff lead	*Who has responsibility for overseeing the project and ensuring that the actions are taken.*
Cost estimate	*General estimate of the cost of implementation. This can be quantitative or qualitative (no cost, low, medium, high).*
Benefits (losses avoided)	*General estimate of the impact of the strategy. Can be quantitative (lives, homes, or dollars saved), or qualitative (low, medium, high benefit).*
Potential funding sources	*How the implementation of the strategy might be funded. This may include general operation funds, grants, fees, or other financing tools.*
Timeline	*How long it will take to implement the strategy? Choose a date by which the action should be implemented, or use a qualitative timeline estimate (near term, long term).*
Related policies	*Goals or policies already in place that support or assist the strategy. This may be in the general plan, climate action plan, housing element, climate adaptation plan, or sustainability plan.*

Example Strategy: ABAG/BCDC Stronger Housing, Safer Communities							
STRATEGY DEVELOPMENT INFORMATION							
Problem statement	The City of East Palo Alto experiences coastal flooding during extreme storms. One-quarter of the city and many single family homes are within the coastal watershed that experiences flooding now. These storms are anticipated to increase in the future causing more frequent and extensive flooding.						
Strategy name	Reduce flood risk through integrated watershed management						
Strategy summary	Identify appropriate projects that sustain or enhance watershed functions while protecting development from shoreline flooding and riverine flooding.						
Hazard(s) addressed	Current Flooding Future Flooding						
Strategy type	**Operational**	**Programmatic**	Plans, Regulations, and Policy Development	Capital Improvement/ Infrastructure Project	Education/ Outreach/ Coordination	Evaluation	
Process/ implementation mechanism	**Long Range Planning**	**Land Use Planning**	Capital Planning	Operations	Emergency and Hazards Planning	**Project Planning and Design**	New Initiatives
Responsible agency	Planning and Building Department						
Partners	FEMA, developers						
STRATEGY IMPLEMENTATION INFORMATION							
Priority (evaluation score)	13						
Actions/ activities	Conduct additional analysis of appropriate watershed projects, partner with FEMA for guidance and assistance, incorporate projects into long term city plans, and pursue implementation of identified projects						
Staff lead	Jane Doe						
Cost estimate	$50,000 planning, $300,000 - $1 million implementation						
Benefits (losses avoided)	Improves habitats and biodiversity, improves water quality, protects vulnerable residents and recreational uses, protects built environment						
Potential funding sources	FEMA						
Timeline	18 months planning, 3-5 additional years for implementation						
Related policies	Existing policies for management of estuaries along shoreline to enhance bay shoreline flooding protection capacity						

3.5 Strategy Development and Implementation

Purpose

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.

Approach

The project team should fill out this worksheet for every strategy the team is considering including in the project. First, as the team selects possible strategies, work through the top half of the worksheet. Use this information to evaluate each strategy. After going through the evaluation step, move to the bottom half of the worksheet only for those strategies that will be implemented.

Outcome

After completing the top half of the worksheet, there will be adequate information on the strategy to evaluate and prioritize strategies. After completing the bottom half of the worksheet for the strategies, the team will have a basic roadmap for how to implement the strategy. Together, the table provides a succinct summary of each strategy adequate for the Hazard Mitigation Plan or the other plan under development, as well as a document that creates ownership and accountability for implementation.

3.5 Strategy Development and Implementation

STRATEGY DEVELOPMENT INFORMATION							
Problem statement							
Strategy name							
Strategy summary							
Hazard(s) addressed							
Strategy type	Operational	Programmatic	Plans, Regulations, and Policy Development	Capital Improvement/ Infrastructure Project	Education/ Outreach/ Coordination	Evaluation	
Process/ implementation mechanism	Long Range Planning	Land Use Planning	Capital Planning	Operations	Emergency and Hazards Planning	Project Planning and Design	New Initiatives
Responsible agency							
Partners							
STRATEGY IMPLEMENTATION INFORMATION							
Priority (evaluation score)							
Actions/ activities							
Staff lead							
Cost estimate							
Benefits (losses avoided)							
Potential funding sources							
Timeline							
Related policies							

Appendix B Step 4. FUND

Photo. Lassen County wildflowers, California

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

4.1 Funder Engagement Inventory

Purpose

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.

Approach

The project team should fill out this worksheet building from the original stakeholder list developed in Step 1, adding any additional potential funding agents in the region. For each stakeholder indicate the level of involvement in the process to date, the state of the relationship, and ability to approach for funds.

Outcome

The list should serve as a guide to indicate where additional outreach and engagement should be made, and provide a sense of ability to access funds from local and regional funders.

4.1 Funder Engagement Inventory

Strategy/Project	Stakeholder/Funder	Engagement to Date (Hi/ Med/Low)	Level of Access/ Relationship (Strong/OK/Poor)	Contact? (Yes/No/ TBD)

4.2 Local Funding Source Inventory

Purpose

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.

Approach

The project team should fill out this worksheet with assistance from the Advisory Group and other city agencies. For each funding source, determine what are the potential links to resilience building, identify the lead agency or funder, note the funds available, and the potential to leverage other matching funds or projects.

Outcome

The inventory should help develop the base funding sources in the community and indicate opportunities for implementation.

4.2 Local Funding Source Inventory

Local Financing Tools/ Mechanisms	Link to Resilience Actions	Contact (Indicate if Existing Stakeholder)	Funds Available	Leveraging Possible? (Yes/No/ TBD)

4.3 Foundation and Other Grant Funding Alignment

Purpose

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

Approach

The project team should fill out this worksheet with assistance from the Advisory Group and other city agencies. List each potential grant/foundation, indicate how the grant requirements link to the Plan's implementation strategies and projects, determine how much funding is available, include a contact name if available, and assess what the probability is for success. Success will be directly related to: Existing relationships or stakeholder who has participate in the project to date, previous success in securing a grant from the same organization, and alignment to the grants focus and foundation funding priorities.

Outcome

The exercise should help to focus the lead agency on priority grant opportunities and uncover where potential linkages with grant goals may help in implementation.

4.3 Foundation and Other Grant Funding Alignment

Grant Name/Foundation	Link to Resilience Actions	Contact (Indicate if Existing Stakeholder)	Funds Available	Potential Success? (Hi/Med/ Low)